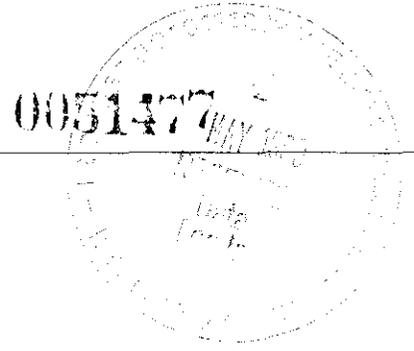




a division of Recra Environmental, Inc.

Virtual Laboratories Everywhere

HUS 16-1MA/RECRA



Recra LabNet Philadelphia Analytical Report

Client : TNU-HANFORD B99-001

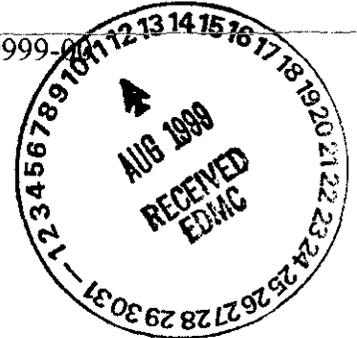
W.O. # : 10985-001-001-9999-001

RFW# : 9904L634

Date Received: 04-07-99

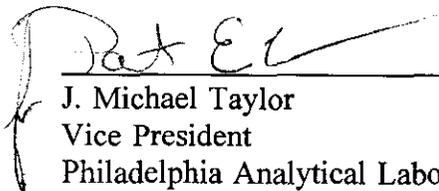
SDG# : H0376

SAF# : B99-001



INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 2 soil samples.
2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.
3. Sample holding times as required by the method and/or contract were met.
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 recovery for Insoluble Chromium VI was within the 75-125% control limits, however the matrix spike recovery for Soluble Chromium VI was below the 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.


 J. Michael Taylor
 Vice President
 Philadelphia Analytical Laboratory

4-30-99
 Date

njp&pefi04-634

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.



a division of Recra Environmental, Inc.

Virtual Laboratories Everywhere

**Recra LabNet Philadelphia
Analytical Report**

Client : TNU-HANFORD B99-001
RFW# : 9904L634
SDG# : H0376
SAF# : B99-001

W.O. # : 10985-001-001-9999-00
Date Received: 04-07-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 2 soil samples.
2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.
3. Sample holding times as required by the method and/or contract were met.
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 were within the 75-125% control limits. *Sol out Insol IN*
8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.
9. Results for solid samples are reported on a dry weight basis.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

Date

njp04-634

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.

WET CHEMISTRY METHODS GLOSSARY FOR ANALYSIS OF SOIL/SOLID SAMPLES

	<u>ASTM</u>	<u>SW846</u>	<u>OTHER</u>
%Ash	__ D2216-80		
%Moisture	__ D2216-80		__ ILMO4.0 (e)
%Solids			<input checked="" type="checkbox"/> 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: SW3000 B/7196A

198
4-25-99

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- * = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

- MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
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 04/13/99

CLIENT: TNU-HANFORD B99-001

RECRA LOT #: 9904L634

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	BOV115	% Solids	91.6	%	0.01	1.0
		Chromium VI	0.44 u	MG/KG	0.44	1.0
-002	BOV116	% Solids	93.9	%	0.01	1.0
		Chromium VI	0.46	MG/KG	0.43	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/13/99

CLIENT: TNU-HANFORD B99-001

RECRA LOT #: 9904L634

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LVI033-MB1	Chromium VI	0.40 u	MG/KG	0.40	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 04/13/99

CLIENT: TNU-HANFORD B99-001

RECRA LOT #: 9904L634

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-002	B0V116	Soluble Chromium VI	3.6	0.46	4.3	73.3	1.0
		Insoluble Chromium VI	1120	0.46	1300	86.1	20.0
BLANK10	99LVI033-MB1	Soluble Chromium VI	3.9	0.40u	4.0	97.3	1.0
		Insoluble Chromium VI	1040	0.40u	1160	89.1	20.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 04/13/99

CLIENT: TNU-HANFORD B99-001

RECRA LOT #: 9904L634

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

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION
			RESULT	REPLICATE	RPD	
-002REP	BOV116	% Solids	93.9	94.1	0.28	1.0
		Chromium VI	0.46	0.43u	NC	1.0

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

DATE RECEIVED: 04/07/99

RFW LOT # :9904L634

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0V115						
% SOLIDS	001	S	99L%S051	04/02/99	04/09/99	04/12/99
CHROMIUM VI	001	S	99LVI033	04/02/99	04/12/99	04/12/99
B0V116						
% SOLIDS	002	S	99L%S051	04/02/99	04/09/99	04/12/99
% SOLIDS	002 REP	S	99L%S051	04/02/99	04/09/99	04/12/99
CHROMIUM VI	002	S	99LVI033	04/02/99	04/12/99	04/12/99
CHROMIUM VI	002 REP	S	99LVI033	04/02/99	04/12/99	04/12/99
CHROMIUM VI	002 MS	S	99LVI033	04/02/99	04/12/99	04/12/99
CHROMIUM VI	002 MSD	S	99LVI033	04/02/99	04/12/99	04/12/99

LAB QC:

CHROMIUM VI	MB1	S	99LVI033	N/A	04/12/99	04/12/99
CHROMIUM VI	MB1 BS	S	99LVI033	N/A	04/12/99	04/12/99
CHROMIUM VI	MB1 BSD	S	99LVI033	N/A	04/12/99	04/12/99



9904L634

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

009

Client <u>TNU-Hanford B99-001</u>	Refrigerator #	<u>1</u>	<u>3</u>						<u>3</u>	<u>3</u>										
Est. Final Proj. Sampling Date	#/Type Container	Liquid																		
Project # <u>10985-001-001-0001-00</u>		Solid	<u>lg</u>	<u>lg</u>					<u>lg</u>	<u>1</u>										
Project Contact/Phone #	Volume	Liquid																		
RECRA Project Manager <u>aj</u>		Solid	<u>60</u>	<u>60</u>					<u>60</u>	<u>1</u>										
QC <u>Spec</u> Del <u>std</u> TAT <u>7 day</u>	Preservatives																			
Date Rec'd <u>4/7/99</u> Date Due <u>4/14/99</u>	ANALYSES REQUESTED	ORGANIC					INORG													
Account #		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 (✓)		Matrix	Date Collected	Time Collected	RECRA LabNet Use Only													
			MS	MSD				00244	00254	Met	1CR6										
			001	B0V115				S	4/2/99	0910	✓	✓	✓	✓							
002	B0V110	S	4/2/99	0917	✓	✓	✓	✓													

Special Instructions:
bag # B99-001

DATE/REVISIONS:
meto Cr, Pb, Hg
 2. Run matrix QC
 3. _____
 4. _____
 5. _____
 6. _____

RECRA LabNet Use Only	
Samples were: 1) Shipped <input checked="" type="checkbox"/> or Hand Delivered _____ Airbill # <u>*</u> 2) Ambient <input checked="" type="checkbox"/> or Chilled _____ 3) Received in Good Condition <input checked="" type="checkbox"/> or N _____ 4) Labels Indicate Properly Preserved <input checked="" type="checkbox"/> or N _____ 5) Received Within Holding Times <input checked="" type="checkbox"/> or N _____	COC Tape was: 1) Present on Outer Package <input checked="" type="checkbox"/> or N _____ 2) Unbroken on Outer Package <input checked="" type="checkbox"/> or N _____ 3) Present on Sample <input checked="" type="checkbox"/> or N _____ 4) Unbroken on Sample <input checked="" type="checkbox"/> or N _____ COC Record Present Upon Sample Rec't <input checked="" type="checkbox"/> or N _____ Cooler Temp. <u>4.2</u> °C

COMPOSITE WASTE

Relinquished by	Received by	Date	Time
<u>Jedrel</u>	<u>Joder</u>		

Relinquished by	Received by	Date	Time

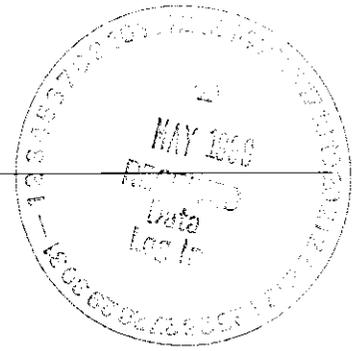
ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or N
 NOTES:
* 423579524375

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			B99-001-133	Page 1 of 1
Collector Fahlberg/Kerkow		Company Contact R Coffinan		Telephone No. 373-6425	Project Coordinator IRENT, SJ	Price Code
Project Designation 100 BC Areas - Quick Turn		Sampling Location 100 B/C 116-B-6A			SAF No. B99-001	Data Turnaround 7 days
Ice Chest No. 844		Field Logbook No. EL 1327-02			Method of Shipment Fed Ex	
Shipped To TMA/RECRA 4.2.99		Offsite Property No. A990098			Bill of Lading/Air Bill No. 423579524375 - 4.2.99	
990		COA				

POSSIBLE SAMPLE HAZARDS/REMARKS 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							
B0V115	Soil	4-2-99	0910		X	X	X			file to B0V002
B0V116	Soil	4-2-99	0917		X	X	X			B0V003

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By	Date/Time	Received By	Date/Time	(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 R. Fahlberg unavailable to relmautish samples.				Soil Water Vapor Other Solid Other Liquid	
R. Fahlberg	1515 4-2-99	Ref 1-C	1515 4-2-99						
Ref. IC	4/6/99 1110	R. Nielsen	4/6/99						
R. Nielsen	4/6/99	Fed Ex							
Relinquished By	Date/Time	Received By	Date/Time						
Fed Ex		J. J. J. J.	4/7/99 0930						
LABORATORY SECTION	Received By	Title						Date/Time	
FINAL SAMPLE DISPOSITION	Disposal Method					Disposed By		Date/Time	



**Recra LabNet Philadelphia
Analytical Report**

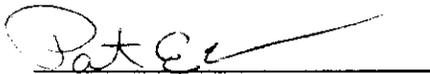
Client : TNU-HANFORD B99-001
RFW# : 9904L634
SDG/SAF# : H0376/B99-001

W.O.# : 10985-001-001-0001-00
Date Received: 04-07-99

METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 soil samples.
2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. Two fold dilutions were performed on the the ICP metals due to the sample matrix.
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. 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. All duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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.



J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory
mld/m04-634

4-29-99
Date



METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this

Recra Lot#: 9904L634

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	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Antimony	<u> </u> 6010B <u> </u> 7041 ⁵	<u> </u> 200.7 <u> </u> 204.2			<u> </u> 99
Arsenic	<u> </u> 6010B <u> </u> 7060A ⁵	<u> </u> 200.7 <u> </u> 206.2	<u> </u> 3113B		<u> </u> 99
Barium	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Beryllium	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Bismuth	<u> </u> 6010B ¹	<u> </u> 200.7 ¹		<u> </u> 1620	<u> </u> 99
Boron	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Cadmium	<u> </u> 6010B <u> </u> 7131A ⁵	<u> </u> 200.7 <u> </u> 213.2			<u> </u> 99
Calcium	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Chromium	<input checked="" type="checkbox"/> 6010B <u> </u> 7191 ⁵	<u> </u> 200.7 <u> </u> 218.2			<u> </u> SS17
Cobalt	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Copper	<u> </u> 6010B <u> </u> 7211 ⁵	<u> </u> 200.7 <u> </u> 220.2			<u> </u> 99
Iron	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Lead	<input checked="" type="checkbox"/> 6010B <u> </u> 7421 ⁵	<u> </u> 200.7 <u> </u> 239.2	<u> </u> 3113B		<u> </u> 99
Lithium	<u> </u> 6010B <u> </u> 7430 ⁴	<u> </u> 200.7		<u> </u> 1620	<u> </u> 99
Magnesium	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Manganese	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Mercury	<u> </u> 7470A ³ <input checked="" type="checkbox"/> 7471A ³	<u> </u> 245.1 ² <u> </u> 245.5 ²			<u> </u> 99
Molybdenum	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Nickel	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Potassium	<u> </u> 6010B <u> </u> 7610 ⁴	<u> </u> 200.7 <u> </u> 258.1 ⁴			<u> </u> 99
Rare Earths	<u> </u> 6010B ¹	<u> </u> 200.7 ¹		<u> </u> 1620	<u> </u> 99
Selenium	<u> </u> 6010B <u> </u> 7740 ⁵	<u> </u> 200.7 <u> </u> 270.2	<u> </u> 3113B		<u> </u> 99
Silicon	<u> </u> 6010B ¹	<u> </u> 200.7		<u> </u> 1620	<u> </u> 99
Silica	<u> </u> 6010B	<u> </u> 200.7		<u> </u> 1620	<u> </u> 99
Silver	<u> </u> 6010B <u> </u> 7761 ⁵	<u> </u> 200.7 <u> </u> 272.2			<u> </u> 99
Sodium	<u> </u> 6010B <u> </u> 7770 ⁴	<u> </u> 200.7 <u> </u> 273.1 ⁴			<u> </u> 99
Strontium	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Thallium	<u> </u> 6010B <u> </u> 7841 ⁵	<u> </u> 200.7 <u> </u> 279.2 <u> </u> 200.9			<u> </u> 99
Tin	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Titanium	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Uranium	<u> </u> 6010B ¹	<u> </u> 200.7 ¹		<u> </u> 1620	<u> </u> 99
Vanadium	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Zinc	<u> </u> 6010B	<u> </u> 200.7			<u> </u> 99
Zirconium	<u> </u> 6010B ¹	<u> </u> 200.7 ¹		<u> </u> 1620	<u> </u> 99

Other: _____

Method: _____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

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 04/26/99

CLIENT: TNU-HANFORD B99-001

RECRA LOT #: 9904L634

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	BOV115	Chromium, Total	7.8	MG/KG	0.09	2.0
		Mercury, Total	0.04	MG/KG	0.02	1.0
		Lead, Total	12.3	MG/KG	0.26	2.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 04/26/99

CLIENT: TNU-HANFORD B99-001
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 9904L634

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-002	BOV116	Chromium, Total	5.0	MG/KG	0.12	2.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	5.1	MG/KG	0.35	2.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/26/99

CLIENT: TNU-HANFORD B99-001
 WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 9904L634

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0222-MB1	Chromium, Total	0.18	MG/KG	0.06	1.0
		Lead, Total	0.18 u	MG/KG	0.18	1.0
BLANK1	99C0109-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0
BLANK1	99C0106-MB1	Mercury, Total	0.04	MG/KG	0.02	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 04/26/99

CLIENT: TNU-HANFORD B99-001

RECRA LOT #: 9904L634

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	B0V115	Chromium, Total	23.4	7.8	17.3	90.2	2.0
		Mercury, Total	0.23	0.04	0.18	111.9	1.0
		Lead, Total	55.9	12.3	43.3	100.7	2.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 04/26/99

CLIENT: TNU-HANFORD B99-001

RECRA LOT #: 9904L634

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

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION
			RESULT	REPLICATE	RPD	FACTOR (REP)
-001REP	BOV115	Chromium, Total	7.8	6.6	16.7	2.0
		Mercury, Total	0.04	0.04	20.0	1.0
		Lead, Total	12.3	13.6	10.0	2.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 04/26/99

CLIENT: TNU-HANFORD B99-001

RECRA LOT #: 9904L634

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

SAMPLE	SITE ID	ANALYTE	SPIKED	SPIKED	UNITS	%RECOV
			SAMPLE	AMOUNT		
-----	-----	-----	-----	-----	-----	-----
LCS1	99L0222-LC1	Chromium, LCS	50.2	50.0	MG/KG	100.4
		Lead, LCS	247	250	MG/KG	98.6
LCS1	99C0109-LC1	Mercury, LCS	0.95	1.0	MG/KG	95.2
LCS1	99C0106-LC1	Mercury, LCS	0.86	1.0	MG/KG	85.9

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

DATE RECEIVED: 04/07/99

RFW LOT # :9904L634

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
---------------------	-------	-----	--------	------------	-----------	----------

B0V115

CHROMIUM, TOTAL	001	S	99L0222	04/02/99	04/09/99	04/10/99
CHROMIUM, TOTAL	001 REP	S	99L0222	04/02/99	04/09/99	04/10/99
CHROMIUM, TOTAL	001 MS	S	99L0222	04/02/99	04/09/99	04/10/99
MERCURY, TOTAL	001	S	99C0109	04/02/99	04/21/99	04/21/99
MERCURY, TOTAL	001 REP	S	99C0109	04/02/99	04/21/99	04/21/99
MERCURY, TOTAL	001 MS	S	99C0109	04/02/99	04/21/99	04/21/99
LEAD, TOTAL	001	S	99L0222	04/02/99	04/09/99	04/10/99
LEAD, TOTAL	001 REP	S	99L0222	04/02/99	04/09/99	04/10/99
LEAD, TOTAL	001 MS	S	99L0222	04/02/99	04/09/99	04/10/99

B0V116

CHROMIUM, TOTAL	002	S	99L0222	04/02/99	04/09/99	04/10/99
MERCURY, TOTAL	002	S	99C0106	04/02/99	04/14/99	04/15/99
LEAD, TOTAL	002	S	99L0222	04/02/99	04/09/99	04/10/99

LAB QC:

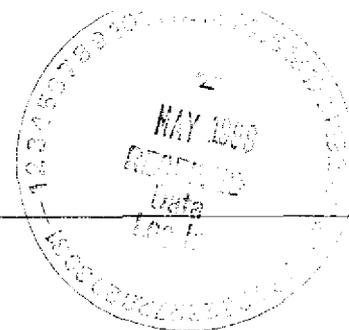
CHROMIUM LABORATORY	LC1 BS	S	99L0222	N/A	04/09/99	04/09/99
CHROMIUM, TOTAL	MB1	S	99L0222	N/A	04/09/99	04/09/99
MERCURY LABORATORY	LC1 BS	S	99C0109	N/A	04/21/99	04/21/99
MERCURY, TOTAL	MB1	S	99C0109	N/A	04/21/99	04/21/99
LEAD LABORATORY	LC1 BS	S	99L0222	N/A	04/09/99	04/10/99
LEAD, TOTAL	MB1	S	99L0222	N/A	04/09/99	04/10/99
MERCURY LABORATORY	LC1 BS	S	99C0106	N/A	04/14/99	04/15/99
MERCURY, TOTAL	MB1	S	99C0106	N/A	04/14/99	04/15/99



a division of Recra Environmental, Inc.

Virtual Laboratories Everywhere

**Recra LabNet Philadelphia
Analytical Report**



Client: TNU-HANFORD B99-001
RFW #: 9904L634
SDG/SAF #: H0376/B99-001

W.O. #: 10985-001-001-9999-00
Date Received: 04-07-99

SEMIVOLATILE

Two (2) soil samples were collected on 04-02-99.

The samples and their associated QC samples were extracted on 04-09-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for TCL Semivolatile target compounds on 04-12,13-99.

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 required holding time for analysis was met.
3. A non-target compound was detected in the sample B0V115.
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

04-07-99
Date

som\group\data\bnatnu04634.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 11 pages.

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.



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.



Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

Report Date: 04/13/99 14:26

RFW Batch Number: 9904L634

Client: TNU-HANFORD B99-001

Work Order: 10985001001

Page: 1a

	Cust ID:	B0V115	B0V115	B0V115	B0V116	SBLKTY	SBLKTY BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	99LE0432-MB1	99LE0432-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Nitrobenzene-d5		83 %	77 %	76 %	80 %	77 %	75 %
Surrogate 2-Fluorobiphenyl		83 %	75 %	78 %	80 %	76 %	75 %
Recovery Terphenyl-d14		95 %	95 %	95 %	100 %	103 %	90 %
Phenol-d5		81 %	78 %	79 %	82 %	72 %	75 %
2-Fluorophenol		77 %	73 %	74 %	78 %	70 %	70 %
2,4,6-Tribromophenol		91 %	75 %	88 %	88 %	76 %	85 %
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====							
Phenol		360 U	78 %	77 %	360 U	330 U	73 %
bis(2-Chloroethyl) ether		360 U	360 U	360 U	360 U	330 U	330 U
2-Chlorophenol		360 U	72 %	71 %	360 U	330 U	69 %
1,3-Dichlorobenzene		360 U	360 U	360 U	360 U	330 U	330 U
1,4-Dichlorobenzene		360 U	68 %	63 %	360 U	330 U	65 %
1,2-Dichlorobenzene		360 U	360 U	360 U	360 U	330 U	330 U
2-Methylphenol		360 U	360 U	360 U	360 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)		360 U	360 U	360 U	360 U	330 U	330 U
4-Methylphenol		360 U	360 U	360 U	360 U	330 U	330 U
N-Nitroso-di-n-propylamine		360 U	81 %	78 %	360 U	330 U	78 %
Hexachloroethane		360 U	360 U	360 U	360 U	330 U	330 U
Nitrobenzene		360 U	360 U	360 U	360 U	330 U	330 U
Isophorone		360 U	360 U	360 U	360 U	330 U	330 U
2-Nitrophenol		360 U	360 U	360 U	360 U	330 U	330 U
2,4-Dimethylphenol		360 U	360 U	360 U	360 U	330 U	330 U
bis(2-Chloroethoxy)methane		360 U	360 U	360 U	360 U	330 U	330 U
2,4-Dichlorophenol		360 U	360 U	360 U	360 U	330 U	330 U
1,2,4-Trichlorobenzene		360 U	72 %	70 %	360 U	330 U	69 %
Naphthalene		360 U	360 U	360 U	360 U	330 U	330 U
4-Chloroaniline		360 U	360 U	360 U	360 U	330 U	330 U
Hexachlorobutadiene		360 U	360 U	360 U	360 U	330 U	330 U
4-Chloro-3-methylphenol		360 U	75 %	80 %	360 U	330 U	77 %
2-Methylnaphthalene		360 U	360 U	360 U	360 U	330 U	330 U
Hexachlorocyclopentadiene		360 U	360 U	360 U	360 U	330 U	330 U
2,4,6-Trichlorophenol		360 U	360 U	360 U	360 U	330 U	330 U
2,4,5-Trichlorophenol		910 U	910 U	910 U	890 U	840 U	840 U

*= Outside of EPA CLP QC limits.

6

	Cust ID: B0V115		B0V115		B0V115		B0V116		SBLKTY		SBLKTY BS	
RFW#:	001		001 MS		001 MSD		002		99LE0432-MB1		99LE0432-MB1	
2-Chloronaphthalene	360	U	360	U	360	U	360	U	330	U	330	U
2-Nitroaniline	910	U	910	U	910	U	890	U	840	U	840	U
Dimethylphthalate	360	U	360	U	360	U	360	U	330	U	330	U
Acenaphthylene	360	U	360	U	360	U	360	U	330	U	330	U
2,6-Dinitrotoluene	360	U	360	U	360	U	360	U	330	U	330	U
3-Nitroaniline	910	U	910	U	910	U	890	U	840	U	840	U
Acenaphthene	360	U	75	%	77	%	360	U	330	U	75	%
2,4-Dinitrophenol	910	U	910	U	910	U	890	U	840	U	840	U
4-Nitrophenol	910	U	87	%	84	%	890	U	840	U	89	%
Dibenzofuran	360	U	360	U	360	U	360	U	330	U	330	U
2,4-Dinitrotoluene	360	U	79	%	82	%	360	U	330	U	80	%
Diethylphthalate	360	U	360	U	360	U	360	U	330	U	330	U
4-Chlorophenyl-phenylether	360	U	360	U	360	U	360	U	330	U	330	U
Fluorene	360	U	360	U	360	U	360	U	330	U	330	U
4-Nitroaniline	910	U	910	U	910	U	890	U	840	U	840	U
4,6-Dinitro-2-methylphenol	910	U	910	U	910	U	890	U	840	U	840	U
N-Nitrosodiphenylamine (1)	360	U	360	U	360	U	360	U	330	U	330	U
4-Bromophenyl-phenylether	360	U	360	U	360	U	360	U	330	U	330	U
Hexachlorobenzene	360	U	360	U	360	U	360	U	330	U	330	U
Pentachlorophenol	910	U	81	%	81	%	890	U	840	U	83	%
Phenanthrene	20	J	37	J	41	J	360	U	330	U	330	U
Anthracene	360	U	360	U	360	U	360	U	330	U	330	U
Carbazole	360	U	360	U	360	U	360	U	330	U	330	U
Di-n-butylphthalate	360	U	360	U	360	U	360	U	330	U	330	U
Fluoranthene	31	J	46	J	57	J	21	J	330	U	330	U
Pyrene	38	J	93	%	93	%	26	J	330	U	85	%
Butylbenzylphthalate	360	U	360	U	360	U	360	U	330	U	330	U
3,3'-Dichlorobenzidine	360	U	360	U	360	U	360	U	330	U	330	U
Benzo(a)anthracene	360	U	22	J	27	J	360	U	330	U	330	U
Chrysene	21	J	27	J	34	J	360	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	360	U	360	U	360	U	360	U	330	U	330	U
Di-n-octyl phthalate	360	U	360	U	360	U	360	U	330	U	330	U
Benzo(b)fluoranthene	360	U	360	U	360	U	360	U	330	U	330	U
Benzo(k)fluoranthene	360	U	360	U	21	J	360	U	330	U	330	U
Benzo(a)pyrene	360	U	360	U	360	U	360	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	360	U	360	U	360	U	360	U	330	U	330	U
Dibenz(a,h)anthracene	360	U	360	U	360	U	360	U	330	U	330	U
Benzo(g,h,i)perylene	360	U	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.

BOV115

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-001

Matrix: (soil/water) SOIL Lab Sample ID: 9904L634-001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: E041210

Level: (low/med) LOW Date Received: 04/07/99

% Moisture: 8 decanted: (Y/N) __ Date Extracted: 04/09/99

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/12/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.00

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

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

Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	6.87	90	JA

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0V116

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-001

Matrix: (soil/water) SOIL Lab Sample ID: 9904L634-002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: E041304

Level: (low/med) LOW Date Received: 04/07/99

% Moisture: 6 decanted: (Y/N) Date Extracted: 04/09/99

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/13/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

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

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKTY

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-001

Matrix: (soil/water) SOIL

Lab Sample ID: 99LE0432-MB1

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: E041208

Level: (low/med) LOW

Date Received: 04/09/99

% Moisture: decanted: (Y/N)

Date Extracted: 04/09/99

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 04/12/99

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH:

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

8

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

DATE RECEIVED: 04/07/99

RFW LOT # :9904L634

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0V115	001	S	99LE0432	04/02/99	04/09/99	04/12/99
B0V115	001 MS	S	99LE0432	04/02/99	04/09/99	04/12/99
B0V115	001 MSD	S	99LE0432	04/02/99	04/09/99	04/13/99
B0V116	002	S	99LE0432	04/02/99	04/09/99	04/13/99

LAB QC:

SBLKTY	MB1	S	99LE0432	N/A	04/09/99	04/12/99
SBLKTY	MB1 BS	S	99LE0432	N/A	04/09/99	04/12/99

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
Project Designation 100 BC Areas - Quick Turn		Sampling Location 100 B/C 116-B-6A		SAF No. B99-001	Data Turnaround 7 days	
Ice Chest No. 844		Field Logbook No. EL 1327-02		Method of Shipment Fed Ex		
Shipped To TMA/RECRA 4-2-99		Offsite Property No. A990098		Bill of Lading/Air Bill No. 423579524375 - 4200		
990		COA				

POSSIBLE SAMPLE HAZARDS/REMARKS 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								
B0V115	Soil	4-2-99	0510		X	X	X				file to B0V002
B0V116	Soil	4-2-99	0917		X	X	X				B0V003

CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By	Date/Time	Received By	Date/Time	Received By	Date/Time	(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 R. Fahlberg unavailable to relmatrix samples.				Soil Water Vapor Other Solid Other Liquid	
R. Fahlberg	4-2-99	Ref 1-C	4-2-99	R. Nielsen	4/6/99						
Ref. IC	4/6/99	R. Nielsen	4/6/99	R. Nielsen	4/6/99						
R. Nielsen	4/6/99	Fed Ex									
Relinquished By	Date/Time	Received By	Date/Time	Received By	Date/Time						
Fed Ex		J. J. J.	4/7/99								
LABORATORY SECTION	Received By	Title								Date/Time	
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By								Date/Time	



a division of Recra Environmental, Inc.

Virtual Laboratories Everywhere

**Recra LabNet Philadelphia
Analytical Report**



Client : TNU-HANFORD B99-001
RFW# : 9904L634
SDG/SAF #: H0376/ B99-001

W.O. #: 10985-001-001-0001-00
Date Received: 04-07-99

GC/MS VOLATILE

Two (2) soil samples were collected on 04-02-99.

The samples and their 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 04-11-99.

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 required holding time for analysis was met.
3. Non-target compounds were not detected in the samples.
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.
7. The method blank contained the common laboratory contaminants Methylene Chloride and Acetone at levels less than the CRQL.
8. On 04-11,12-99, the date on the GC/MS system computer of Instrument 5972H was incorrectly displayed as 04-10,11-99 respectively; however, the "file naming sequence" indicated the correct date (e.g., file name H041101 was acquired on 04-11-99). This error was identified and the system date was corrected on 04-13-99. The date acquired was manually corrected for each data file and there was no impact on the data. A copy of the Corrective Action Documentation has been included after the case narrative.


 J. Michael Taylor
 Vice President
 Philadelphia Analytical Laboratory

040799
 Date

som\group\data\voa\tnu04634.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 9 pages.

CORRECTIVE ACTION DOCUMENTATION

INSTRUCTIONS: 1) ORIGINATOR complete PERSON RESPONSIBLE FOR RESPONSE and DESCRIPTION OF PROBLEM blocks. 2) Originator forward form to PERSON RESPONSIBLE FOR RESPONSE. 3) Develop/plan a SEQUENCE OF CORRECTIVE ACTION and obtain INITIAL CA APPROVAL sign-off from supervisor. 4) Forward original form to QA for sign-off and FOLLOW-UP ACTION. This allows all pertinent action to be documented on the original form. On completion of the corrective action, the form is signed off by QA, distributed, and the original archived with the QA records.

DATE/ORIGINATOR B. Rubino 4/13/99 PAGE 1 OF 1

PERSON RESPONSIBLE FOR RESPONSE (corrective action plan and implementation of corrective action plan): Steve Wesson Beth Rubino

DISTRIBUTION: X LABORATORY MANAGER X INORGANIC MANAGER X GC/MS MANAGER GC/EXTR MANAGER X QA MANAGER QA REPORT FILE

DESCRIPTION OF PROBLEM and when identified: on instr. 5972H date was unexplainably changed. Problem detected on 4/13/99. Problem started on 4/11/99. All runs on 4/11/99 have the date of 4/10/99 and runs on 4/12/99 have date of 4/11/99. however all times OK.

CAUSE OF PROBLEM if known or suspected: Unknown - computer malfunction on data system. (5972H)

SEQUENCE OF CORRECTIVE ACTION (CA) planned (signature/date): Beth Rubino 4/13/99 1. fix all effected data on PC -> reprint all quans, cells, and tubes. 2. RFW #'s effected: 9904L634 - TNU Hanford 9904L632 - PAOEP 9904L656 - TNU - Hanford 9904L627 - WSEC PES 9904L653 - BSC 3. Include corrective action in packages and note in narratives.

INITIAL CA APPROVAL: Supervisor signature/date: Steve Wesson 04-13-99 QA signature/date: Deborah A. LaVigne 4-13-99

DESCRIPTION OF QA FOLLOW-UP ACTION (include signature/date): Review Data

FINAL CA APPROVED (QA signature/date): Deborah A. LaVigne 4-13-99

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.



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.



Cust ID: BOV115 BOV116 BOV116 BOV116 VBLKYU VBLKYU BS

RFW#: 001 002 002 MS 002 MSD 99LVH102-MB1 99LVH102-MB1

	001	002	002 MS	002 MSD	99LVH102-MB1	99LVH102-MB1
Chlorobenzene	6 U	5 U	114 %	114 %	5 U	111 %
Ethylbenzene	6 U	5 U	5 U	5 U	5 U	5 U
Styrene	6 U	5 U	5 U	5 U	5 U	5 U
Xylene (total)	6 U	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

6

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

DATE RECEIVED: 04/07/99

RFW LOT # :9904L634

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0V115	001	S	99LVH102	04/02/99	N/A	04/11/99
B0V116	002	S	99LVH102	04/02/99	N/A	04/11/99
B0V116	002 MS	S	99LVH102	04/02/99	N/A	04/11/99
B0V116	002 MSD	S	99LVH102	04/02/99	N/A	04/11/99
LAB QC:						
VBLKYU	MB1	S	99LVH102	N/A	N/A	04/11/99
VBLKYU	MB1 BS	S	99LVH102	N/A	N/A	04/11/99



9904L634

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client <u>TNU-Hanford B99-001</u>	Refrigerator #	<u>1</u>	<u>3</u>	<u>3</u>	<u>3</u>
Est. Final Proj. Sampling Date	#/Type Container	Liquid			
Project # <u>10985-001-001-0001-00</u>		Solid	<u>1g</u>	<u>1g</u>	<u>1g</u>
Project Contact/Phone #	Volume	Liquid			
RECRA Project Manager <u>AS</u>		Solid	<u>6.0</u>	<u>6.0</u>	<u>6.0</u>
QC <u>Apoe</u> Del <u>std</u> TAT <u>7 day</u>	Preservatives				
Date Rec'd <u>4/7/99</u> Date Due <u>4/14/99</u>	ANALYSES REQUESTED	ORGANIC			INORG
Account #		VOA	BNA	Pest/PCB	Herb
					Metal
					C

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 (✓)		Matrix	Date Collected	Time Collected	RECRA LabNet Use Only						
			MS	MSD				VOA	BNA	Pest/PCB	Herb	Metal	C	
	<u>001</u>	<u>B0V115</u>			<u>S</u>	<u>4/2/99</u>	<u>0910</u>	<u>✓</u>	<u>✓</u>			<u>Met D</u>		
	<u>002</u>	<u>B0V110</u>			<u>S</u>	<u>↓</u>	<u>0917</u>	<u>✓</u>	<u>✓</u>			<u>ICRG</u>		

Special Instructions: safe # B99-001

DATE/REVISIONS:
met D = Cr, Pb, Hg
2. Run matrix QC
3.
4.
5.
6.

COMPOSITE WASTE

Relinquished by	Received by	Date	Time
<u>Jedee</u>	<u>Joder</u>		

ORIGINAL REWRITTEN

Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: *423579524375

RECRA LabNet Use Only	
Samples were: 1) Shipped <input checked="" type="checkbox"/> or Hand Delivered <input type="checkbox"/>	COC Tape was: 1) Present on Outer Package <input checked="" type="checkbox"/> or N
Airbill # <u>X</u>	2) Unbroken on Outer Package <input checked="" type="checkbox"/> or N
2) Ambient or Chilled <input checked="" type="checkbox"/>	3) Present on Sample <input checked="" type="checkbox"/> or N
3) Received in Good Condition <input checked="" type="checkbox"/> or N	4) Unbroken on Sample <input checked="" type="checkbox"/> or N
4) Labels Indicate Properly Preserved <input checked="" type="checkbox"/> or N	COC Record Present Upon Sample Rec't <input checked="" type="checkbox"/> or N
5) Received Within Holding Times <input checked="" type="checkbox"/> or N	Cooler Temp. <u>4.2</u> °C

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 IRENT, SJ	Price Code	Data Turnaround 7 days
Project Designation 100 BC Areas - Quick Turn		Sampling Location 100 B/C 116-B-6A			SAF No. B99-001		
Ice Chest No. 844		Field Logbook No. EL 1327-02		Method of Shipment Fed Ex			
Shipped To TMA/RECRA 4-2-99		Offsite Property No. A990098			Bill of Lading/Air Bill No. 423579524375 - 4.20c		
990		COA					

POSSIBLE SAMPLE HAZARDS/REMARKS	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					
		Special Handling and/or Storage	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.							
	Matrix *	Sample Date	Sample Time									
	Soil	4-2-99	0510	X	X	X					Hi to B0V002	
	Soil	4-2-99	0917	X	X	X					B0V003	

CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By R. Fahlberg Date/Time 4-2-99		Received By Ref 1-C Date/Time 4-2-99		Date/Time 1515		(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 R. Fahlberg unavailable to relmaltizh samples.				Soil Water Vapor Other Solid Other Liquid	
Relinquished By Ref. IC Date/Time 4/16/99		Received By R. Nielsen Date/Time 4/16/99		Date/Time 1110							
Relinquished By R. Nielsen Date/Time 4/16/99		Received By Fed Ex Date/Time		Date/Time 30							
Relinquished By Fed Ex Date/Time		Received By J. J. J. J. Date/Time 4/7/99		Date/Time 0930							
LABORATORY SECTION		Received By				Disposal Method				Disposed By	
FINAL SAMPLE DISPOSITION		Date/Time				Date/Time				Date/Time	

Thermo NUtech

2030 Wright Avenue

P.O. Box 4040

Richmond, CA 94804-0040

(510) 235-2633 • FAX (510) 235-0438

April 26, 1999

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

Reference: P.O. #TRB-SBB-207925
Thermo Nutech N9-04-037-7712, SDG H0376



Dear Ms. Kessner:

Enclosed is the data report for two solid (soil) samples designated under SAF No. B99-001 received at Thermo Nutech on April 7, 1999. The samples were analyzed according to the accompanying chain-of-custody documents.

Please call if you have any questions regarding this report.

Sincerely,

A handwritten signature in cursive script that reads "Terrie A. Higgins".

Terrie A. Higgins
Program Manager

TAH/kcj

Enclosure: Data Package

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0376 is comprised of two solid (soil) samples designated under SAF No. B99-001 with a Project Designation of: 100 BC Areas - Quick Turn.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the TNU Sample Receipt Checklist. There was a quick turn-around time requirement for some of the requested analyses. Gamma spectroscopy data was sent by fax on April 13, 1999; Total Strontium and Isotopic Plutonium by fax on April 14, 1999; Isotopic Uranium by fax on April 16, 1999; Nickel-63 by fax on April 20, 1999 and the data package was completed with the faxing of Americium results on April 23 and April 26, 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

No problems were encountered during the processing of the samples.

2.3 Isotopic Uranium Analyses

No problems were encountered during the processing of the samples.

2.4 Isotopic Plutonium Analyses

No problems were encountered during the processing of the samples.

2.5 Americium-241 Analyses

No problems were encountered during the processing of the samples.

2.6 Gamma Scan Analyses

The aliquot for the analysis was reduced, however the target detection limits were achieved.

TMA/RICHMOND
 SAMPLE DELIVERY GROUP H0376

SDG 7712
 Contact L.A. Johnson

SAMPLE SUMMARY

Client Hanford
 Contract TRB-SBB-207925
 Case no SDG-H0376

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB		CHAIN OF CUSTODY	COLLECTED
				SAMPLE ID	SAF NO		
B0V115	100 B/C 116-B-6A	SOLID		N904037-01	B99-001	B99-001-133	04/02/99 09:10
B0V116	100 B/C 116-B-6A	SOLID		N904037-02	B99-001	B99-001-133	04/02/99 09:17
Method Blank		SOLID		N904037-04	B99-001		
Lab Control Sample		SOLID		N904037-03	B99-001		
Duplicate (N904037-01)	100 B/C 116-B-6A	SOLID		N904037-05	B99-001		04/02/99 09:10

SAMPLE SUMMARY

Page 1

SUMMARY DATA SECTION

Page 3

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-CS
 Version 3.06
 Report date 04/26/99

TMA/RICHMOND
 SAMPLE DELIVERY GROUP H0376

SDG 7712
 Contact L.A. Johnson

QC SUMMARY

Client Hanford
 Contract TRB-SBB-207925
 Case no SDG-H0376

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7712	B99-001-133	B0V115	SOLID	93.3			04/07/99	5	N904037-01	7712-001
		B0V116	SOLID	94.8			04/07/99	5	N904037-02	7712-002
		Method Blank	SOLID						N904037-04	7712-004
		Lab Control Sample	SOLID						N904037-03	7712-003
		Duplicate (N904037-01)	SOLID	93.3			04/07/99	5	N904037-05	7712-005

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-QS
 Version 3.06
 Report date 04/26/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0376

SDG 7712
 Contact L.A. Johnson

PREP BATCH SUMMARY

Client Hanford
 Contract TRB-SBB-207925
 Case no SDG-H0376

TEST	MATRIX	METHOD	PREPARATION ERROR			PLANCHETS ANALYZED				QUALI- FIERS
			BATCH	2σ %	CLIENT MORE	RE	BLANK	LCS	DUP/ORIG MS/ORIG	
Alpha Spectroscopy										
AM	SOLID	Americium 241 in Soil	2851-051	5.0	2		1	1	1/1	
PU	SOLID	Plutonium, Isotopic in Solids	2851-051	5.0	2		1	1	1/1	
U	SOLID	Uranium, Isotopic in Soil	2851-051	5.0	2		1	1	1/1	
Beta Counting										
SR	SOLID	Total Strontium in Soil	2851-051	10.0	2		1	1	1/1	
Gamma Spectroscopy										
GAM	SOLID	Gamma Scan	2851-051	15.0	2		1	1	1/1	
Liquid Scintillation Counting										
NI_L	SOLID	Nickel 63 in Soil	2851-051	10.0	2		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 04/26/99

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0376

SDG 7712
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0376

WORK SUMMARY

CLIENT SAMPLE ID		LAB SAMPLE ID		SUF-					
LOCATION	MATRIX	COLLECTED	PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD
CUSTODY	SAF No	RECEIVED							
B0V115		N904037-01	7712-001	AM		04/23/99	04/23/99	TAH	Americium 241 in Soil
100 B/C 116-B-6A	SOLID	04/02/99	7712-001	GAM		04/10/99	04/13/99	TAH	Gamma Scan
B99-001-133	B99-001	04/07/99	7712-001	NI_L		04/18/99	04/20/99	TAH	Nickel 63 in Soil
			7712-001	PU		04/13/99	04/14/99	TAH	Plutonium, Isotopic in Solids
			7712-001	SR		04/12/99	04/14/99	TAH	Total Strontium in Soil
			7712-001	U		04/15/99	04/16/99	TAH	Uranium, Isotopic in Soil
B0V116		N904037-02	7712-002	AM		04/23/99	04/23/99	TAH	Americium 241 in Soil
100 B/C 116-B-6A	SOLID	04/02/99	7712-002	GAM		04/10/99	04/13/99	TAH	Gamma Scan
B99-001-133	B99-001	04/07/99	7712-002	NI_L		04/18/99	04/20/99	TAH	Nickel 63 in Soil
			7712-002	PU		04/13/99	04/14/99	TAH	Plutonium, Isotopic in Solids
			7712-002	SR		04/12/99	04/14/99	TAH	Total Strontium in Soil
			7712-002	U		04/15/99	04/16/99	TAH	Uranium, Isotopic in Soil
Method Blank		N904037-04	7712-004	AM		04/23/99	04/26/99	TAH	Americium 241 in Soil
	SOLID		7712-004	GAM		04/12/99	04/13/99	TAH	Gamma Scan
	B99-001		7712-004	NI_L		04/18/99	04/20/99	TAH	Nickel 63 in Soil
			7712-004	PU		04/13/99	04/14/99	TAH	Plutonium, Isotopic in Solids
			7712-004	SR		04/12/99	04/14/99	TAH	Total Strontium in Soil
			7712-004	U		04/15/99	04/16/99	TAH	Uranium, Isotopic in Soil
Lab Control Sample		N904037-03	7712-003	AM		04/23/99	04/26/99	TAH	Americium 241 in Soil
	SOLID		7712-003	GAM		04/12/99	04/13/99	TAH	Gamma Scan
	B99-001		7712-003	NI_L		04/18/99	04/20/99	TAH	Nickel 63 in Soil
			7712-003	PU		04/13/99	04/14/99	TAH	Plutonium, Isotopic in Solids
			7712-003	SR		04/12/99	04/14/99	TAH	Total Strontium in Soil
			7712-003	U		04/15/99	04/16/99	TAH	Uranium, Isotopic in Soil
Duplicate (N904037-01)		N904037-05	7712-005	AM		04/23/99	04/23/99	TAH	Americium 241 in Soil
100 B/C 116-B-6A	SOLID	04/02/99	7712-005	GAM		04/12/99	04/13/99	TAH	Gamma Scan
	B99-001	04/07/99	7712-005	NI_L		04/18/99	04/20/99	TAH	Nickel 63 in Soil
			7712-005	PU		04/13/99	04/14/99	TAH	Plutonium, Isotopic in Solids
			7712-005	SR		04/12/99	04/14/99	TAH	Total Strontium in Soil
			7712-005	U		04/15/99	04/16/99	TAH	Uranium, Isotopic in Soil

WORK SUMMARY

Page 1

SUMMARY DATA SECTION

Page 6

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 04/26/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0376

WORK SUMMARY, cont.

SDG 7712
 Contact L.A. Johnson

Client Hanford
 Contract TRB-SBB-207925
 Case no SDG-H0376

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	2			1	1	1		5
GAM	B99-001	Gamma Scan	GAMMAHI	2			1	1	1		5
NI_L	B99-001	Nickel 63 in Soil	NI63LSC	2			1	1	1		5
PU	B99-001	Plutonium, Isotopic in Solids	PUPLATE	2			1	1	1		5
SR	B99-001	Total Strontium in Soil		2			1	1	1		5
U	B99-001	Uranium, Isotopic in Soil	UPLATE	2			1	1	1		5
TOTALS				12			6	6	6		30

WORK SUMMARY

Page 2

SUMMARY DATA SECTION

Page 7

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-CWS
 Version 3.06
 Report date 04/26/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0376

N904037-04

Method Blank

METHOD BLANK

SDG <u>7712</u>	Client/Case no <u>Hanford</u>	SDG- <u>H0376</u>
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N904037-04</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7712-004</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>B99-001</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Uranium 233/234	U-233/234	0.014	0.029	0.11	0.30	U	U
Uranium 235	15117-96-1	0	0.035	0.13	0.30	U	U
Uranium 238	U-238	0	0.029	0.11	0.30	U	U
Plutonium 238	13981-16-3	0.006	0.025	0.047	0.050	U	PU
Plutonium 239/240	PU-239/240	0	0.012	0.047	0.050	U	PU
Nickel 63	13981-37-8	0.269	1.1	1.8	20	U	NI_L
Americium 241	14596-10-2	0.010	0.025	0.041	0.050	U	AM
Total Strontium	SR-RAD	-0.021	0.13	0.18	1.0	U	SR
Cobalt 60	10198-40-0	U		0.006	0.050	U	GAM
Cesium 134	13967-70-9	U		0.006		U	GAM
Cesium 137	10045-97-3	U		0.005	0.050	U	GAM
Europium 152	14683-23-9	U		0.013	0.10	U	GAM
Europium 154	15585-10-1	U		0.014	0.10	U	GAM
Europium 155	14391-16-3	U		0.012	0.10	U	GAM
Americium 241	14596-10-2	U		0.012		U	GAM
Uranium 238	U-238	U		0.58		U	GAM
Uranium 235	15117-96-1	U		0.019		U	GAM

100 BC Areas-Quick Turn

QC-BLANK 30484

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0376

N904037-03

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7712</u> Contact <u>L.A. Johnson</u>	Client/Case no <u>Hanford</u> <u>SDG-H0376</u> Case no <u>TRB-SBB-207925</u>
Lab sample id <u>N904037-03</u> Dept sample id <u>7712-003</u>	Client sample id <u>Lab Control Sample</u> Material/Matrix _____ <u>SOLID</u> SAF No <u>B99-001</u>

ANALYTE	RESULT	2σ ERR	MDA	RDL	QUALI-	ADDED	2σ ERR	REC	3σ	LMTS	PROTOCOL
	pCi/g	(COUNT)	pCi/g	pCi/g	FIERS TEST	pCi/g	pCi/g	%	(TOTAL)	LIMITS	
Uranium 233/234	5.10	0.81	<u>0.38</u>	0.30	U	5.70	0.23	89	77-123	80-120	
Uranium 235	4.20	0.71	0.13	0.30	U	4.66	0.19	90	75-125	80-120	
Uranium 238	6.60	0.96	<u>0.37</u>	0.30	U	5.88	0.24	112	73-127	80-120	
Plutonium 238	5.88	0.51	<u>0.051</u>	0.050	PU	5.66	0.23	104	83-117	80-120	
Plutonium 239/240	5.83	0.51	<u>0.051</u>	0.050	PU	5.29	0.21	110	82-118	80-120	
Nickel 63	176	4.0	1.9	20	NI_L	168	6.7	105	83-117		
Americium 241	5.50	0.39	0.029	0.050	AM	5.75	0.23	96	86-114	80-120	
Total Strontium	13.7	0.42	0.17	1.0	SR	11.5	0.46	119	80-120		
Cobalt 60	0.330	0.018	0.009	0.050	GAM	0.357	0.014	92	77-123	80-120	
Cesium 137	0.330	0.013	0.009	0.050	GAM	0.347	0.014	95	77-123	80-120	

100 BC Areas-Quick Turn

QC-LCS 30483

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>04/26/99</u>

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0376

N904037-05

BOV115

DUPLICATE

SDG <u>7712</u>	Client/Case no <u>Hanford</u>	<u>SDG-H0376</u>
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
DUPLICATE	ORIGINAL	
Lab sample id <u>N904037-05</u>	Lab sample id <u>N904037-01</u>	Client sample id <u>BOV115</u>
Dept sample id <u>7712-005</u>	Dept sample id <u>7712-001</u>	Location/Matrix <u>100 B/C 116-B-6A</u> <u>SOLID</u>
	Received <u>04/07/99</u>	Collected <u>04/02/99 09:10</u>
% solids <u>93.3</u>	% solids <u>93.3</u>	Custody/SAF No <u>B99-001-133</u> <u>B99-001</u>

ANALYTE	DUPLICATE	2σ ERR	MDA	RDL	QUALI-	ORIGINAL	2σ ERR	MDA	QUALI-	RPD	3σ	PROT
	pCi/g	(COUNT)	pCi/g	pCi/g	FIERS		TEST	pCi/g	(COUNT)	pCi/g	FIERS	%
Uranium 233/234	0.530	0.23	0.17	0.30		U	0.539	0.29	0.22	2	104	
Uranium 235	0.054	0.054	0.21	0.30	U	U	0.103	0.14	0.26	U	-	
Uranium 238	0.580	0.23	0.17	0.30		U	0.511	0.23	0.22	13	90	
Plutonium 238	0	0.13	<u>0.51</u>	0.050	U	PU	0	0.15	<u>0.56</u>	U	-	
Plutonium 239/240	0.934	0.54	<u>0.51</u>	0.050		PU	1.11	0.59	<u>0.56</u>	17	118	
Nickel 63	1.62	1.5	2.5	20	U	NI_L	0.390	1.3	2.1	U	-	
Americium 241	0.082	0.041	0.039	0.050		AM	0.051	0.051	<u>0.068</u>	U	47	148
Total Strontium	8.68	1.7	<u>2.0</u>	1.0		SR	11.0	1.9	<u>2.1</u>	24	44	
Potassium 40	9.30	0.35	0.17			GAM	8.60	0.66	1.1	8	34	
Cobalt 60	0.017	0.015	0.017	0.050	J	GAM	U		0.043	U	87	230
Cesium 134	U		0.021		U	GAM	U		0.052	U	-	
Cesium 137	20.0	0.11	0.031	0.050		GAM	19.2	0.18	<u>0.081</u>	4	32	
Europium 152	U		<u>0.11</u>	0.10	U	GAM	U		<u>0.25</u>	U	-	
Europium 154	U		0.052	0.10	U	GAM	U		<u>0.13</u>	U	-	
Europium 155	U		0.084	0.10	U	GAM	U		<u>0.17</u>	U	-	
Radium 226	0.340	0.048	0.055	0.10		GAM	0.227	0.12	<u>0.13</u>	40	76	
Radium 228	0.520	0.063	0.058	0.20		GAM	0.599	0.23	<u>0.21</u>	14	71	
Thorium 228	0.470	0.034	0.046			GAM	0.633	0.11	0.12	30	45	
Thorium 232	0.520	0.063	0.058			GAM	0.599	0.23	0.21	14	71	
Americium 241	U		0.074		U	GAM	U		0.087	U	-	
Uranium 238	U		2.0		U	GAM	U		4.7	U	-	
Uranium 235	U		0.13		U	GAM	U		0.29	U	-	

100 BC Areas-Quick Turn

QC-DUP#1 30485

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>04/26/99</u>

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0376

N904037-01

BOV115

DATA SHEET

SDG <u>7712</u>	Client/Case no <u>Hanford</u>	SDG- <u>H0376</u>
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N904037-01</u>	Client sample id <u>BOV115</u>	
Dept sample id <u>7712-001</u>	Location/Matrix <u>100 B/C 116-B-6A</u>	<u>SOLID</u>
Received <u>04/07/99</u>	Collected <u>04/02/99 09:10</u>	
% solids <u>93.3</u>	Custody/SAF No <u>B99-001-133</u>	<u>B99-001</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Uranium 233/234	U-233/234	0.539	0.29	0.22	0.30		U
Uranium 235	15117-96-1	0.103	0.14	0.26	0.30	U	U
Uranium 238	U-238	0.511	0.23	0.22	0.30		U
Plutonium 238	13981-16-3	0	0.15	<u>0.56</u>	0.050	U	PU
Plutonium 239/240	PU-239/240	1.11	0.59	<u>0.56</u>	0.050		PU
Nickel 63	13981-37-8	0.390	1.3	2.1	20	U	NI_L
Americium 241	14596-10-2	0.051	0.051	<u>0.068</u>	0.050	U	AM
Total Strontium	SR-RAD	11.0	1.9	<u>2.1</u>	1.0		SR
Potassium 40	13966-00-2	8.60	0.66	1.1			GAM
Cobalt 60	10198-40-0	U		0.043	0.050	U	GAM
Cesium 134	13967-70-9	U		0.052		U	GAM
Cesium 137	10045-97-3	19.2	0.18	<u>0.081</u>	0.050		GAM
Europium 152	14683-23-9	U		<u>0.25</u>	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.13</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.17</u>	0.10	U	GAM
Radium 226	13982-63-3	0.227	0.12	<u>0.13</u>	0.10		GAM
Radium 228	15262-20-1	0.599	0.23	<u>0.21</u>	0.20		GAM
Thorium 228	14274-82-9	0.633	0.11	0.12			GAM
Thorium 232	TH-232	0.599	0.23	0.21			GAM
Americium 241	14596-10-2	U		0.087		U	GAM
Uranium 238	U-238	U		4.7		U	GAM
Uranium 235	15117-96-1	U		0.29		U	GAM

100 BC Areas-Quick Turn

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/26/99</u>

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0376

N904037-02

B0V116

DATA SHEET

SDG <u>7712</u>	Client/Case no <u>Hanford</u>	SDG-H0376
Contact <u>L.A. Johnson</u>	Case no <u>TRB-SBB-207925</u>	
Lab sample id <u>N904037-02</u>	Client sample id <u>B0V116</u>	
Dept sample id <u>7712-002</u>	Location/Matrix <u>100 B/C 116-B-6A</u>	<u>SOLID</u>
Received <u>04/07/99</u>	Collected <u>04/02/99 09:17</u>	
% solids <u>94.8</u>	Custody/SAF No <u>B99-001-133</u>	<u>B99-001</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Uranium 233/234	U-233/234	0.728	0.31	0.23	0.30		U
Uranium 235	15117-96-1	0	0.073	0.28	0.30	U	U
Uranium 238	U-238	0.607	0.25	0.23	0.30		U
Plutonium 238	13981-16-3	0	0.13	<u>0.50</u>	0.050	U	PU
Plutonium 239/240	PU-239/240	0.065	0.26	<u>0.50</u>	0.050	U	PU
Nickel 63	13981-37-8	1.32	1.5	2.5	20	U	NI_L
Americium 241	14596-10-2	0.005	0.054	<u>0.099</u>	0.050	U	AM
Total Strontium	SR-RAD	1.11	1.4	<u>1.8</u>	1.0	U	SR
Potassium 40	13966-00-2	7.72	0.73	1.2			GAM
Cobalt 60	10198-40-0	U		<u>0.051</u>	0.050	U	GAM
Cesium 134	13967-70-9	U		0.062		U	GAM
Cesium 137	10045-97-3	0.726	0.072	<u>0.060</u>	0.050		GAM
Europium 152	14683-23-9	U		<u>0.13</u>	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.16</u>	0.10	U	GAM
Europium 155	14391-16-3	U		0.089	0.10	U	GAM
Radium 226	13982-63-3	0.308	0.083	0.077	0.10		GAM
Thorium 228	14274-82-9	0.508	0.088	0.079			GAM
Americium 241	14596-10-2	U		0.049		U	GAM
Uranium 238	U-238	U		5.6		U	GAM
Uranium 235	15117-96-1	U		0.16		U	GAM

100 BC Areas-Quick Turn

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/26/99</u>

TMA/RICHMOND
 SAMPLE DELIVERY GROUP H0376

Test AM Matrix SOLID
 SDG 7712
 Contact L.A. Johnson

Client Hanford
 Contract TRB-SBB-207925
 Case no SDG-H0376

METHOD SUMMARY

AMERICIUM 241 IN SOIL
 ALPHA SPECTROSCOPY

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Americium 241
Preparation batch 2851-051					
BOV115	N904037-01	7712-001			0.051 U
BOV116	N904037-02	7712-002			U
BLK (QC ID=30484)	N904037-04	7712-004			U
LCS (QC ID=30483)	N904037-03	7712-003			ok
Duplicate (N904037-01)	N904037-05	7712-005			ok

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	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 2851-051 2σ prep error 5.0 % Reference Lab Notebook #2851 pg. 051																
BOV115	N904037-01			<u>0.068</u>	<u>0.500</u>			81		<u>586</u>			21	04/23/99	04/23	SS-038
BOV116	N904037-02			<u>0.099</u>	<u>0.500</u>			75		<u>582</u>			21	04/23/99	04/23	SS-039
BLK (QC ID=30484)	N904037-04			0.041	1.00			80		<u>697</u>				04/23/99	04/23	SS-039
LCS (QC ID=30483)	N904037-03			0.029	1.00			87		<u>697</u>				04/23/99	04/23	SS-038
Duplicate (N904037-01)	N904037-05			0.039	<u>0.500</u>			78		<u>578</u>			21	04/23/99	04/23	SS-055
	(QC ID=30485)															

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	MDA <u>0.055</u> ± <u>0.057</u>
FOR 5 SAMPLES	YIELD <u>80</u> ± <u>9</u>

METHOD SUMMARIES

Page 1

SUMMARY DATA SECTION

Page 13

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-CMS
 Version 3.06
 Report date 04/26/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0376

Test PU Matrix SOLID
 SDG 7712
 Contact L.A. Johnson

Client Hanford
 Contract TRB-SBB-207925
 Case no SDG-H0376

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
 ALPHA SPECTROSCOPY

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Plutonium 238	Plutonium 239/240
Preparation batch 2851-051					
B0V115	N904037-01	7712-001		U	1.11
B0V116	N904037-02	7712-002		U	0.065 U
BLK (QC ID=30484)	N904037-04	7712-004		U	U
LCS (QC ID=30483)	N904037-03	7712-003		ok	ok
Duplicate (N904037-01)	N904037-05	7712-005		- U	ok
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 FIX	SUF- pCi/g	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 2851-051		2σ prep error 5.0 %		Reference Lab		Notebook #2851 pg. 051									
B0V115	N904037-01		<u>0.56</u>	<u>0.100</u>				83	202				11 04/13/99	04/13	SS-001
B0V116	N904037-02		<u>0.50</u>	<u>0.100</u>				94	202				11 04/13/99	04/13	SS-002
BLK (QC ID=30484)	N904037-04		0.047	1.00				93	202				04/13/99	04/13	SS-006
LCS (QC ID=30483)	N904037-03		<u>0.051</u>	1.00				87	202				04/13/99	04/13	SS-005
Duplicate (N904037-01)	N904037-05		<u>0.51</u>	<u>0.100</u>				88	202				11 04/13/99	04/13	SS-007
(QC ID=30485)															
Nominal values and limits from method			0.050	1.00				20-105	10	100			180		

PROCEDURES	REFERENCE	PUPATE
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	<u>0.33</u>	+	<u>0.52</u>
FOR 5 SAMPLES	YIELD	<u>89</u>	±	<u>9</u>

METHOD SUMMARIES

Page 2

SUMMARY DATA SECTION

Page 14

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-CMS
 Version 3.06
 Report date 04/26/99

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0376

METHOD SUMMARY
URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Test U Matrix SOLID
SDG 7712
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0376

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX PLANCHET	1: Uranium			2: Uranium			3: Uranium			RESULT RATIOS (%)				
			233/234	235	238	1+3	2σ	2+3	2σ							
Preparation batch 2851-051																
BOV115	N904037-01	7712-001	0.539	U	0.511	105	74	20	29							
BOV116	N904037-02	7712-002	0.728	U	0.607	120	71	0	12							
BLK (QC ID=30484)	N904037-04	7712-004	U	U	U											
LCS (QC ID=30483)	N904037-03	7712-003	ok	ok	ok											
Duplicate (N904037-01)	N904037-05	7712-005	ok	- U	ok	91	54	9	10							
Nominal values and limits from method			RDLs (pCi/g)	0.30	0.30	0.30	100	4								
100 BC Areas-Quick Turn						Averages 106		10								

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL-		
													PREPARED	YZED	DETECTOR
Preparation batch 2851-051													2σ prep error 5.0 %	Reference Lab	Notebook #2851 pg. 051
BOV115	N904037-01		0.26	0.500		87	101		13	04/13/99	04/15	SS-001			
BOV116	N904037-02		0.28	0.500		81	101		13	04/13/99	04/15	SS-002			
BLK (QC ID=30484)	N904037-04		0.13	1.00		80	101			04/13/99	04/15	SS-006			
LCS (QC ID=30483)	N904037-03		0.38	1.00		83	101			04/13/99	04/15	SS-005			
Duplicate (N904037-01)	N904037-05		0.21	0.500		106	101		13	04/13/99	04/15	SS-007			
(QC ID=30485)															
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	0.25 ± 0.18
FOR 5 SAMPLES	YIELD	87 ± 21

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/26/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0376

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Test SR Matrix SOLID
SDG 7712
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0376

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Total Strontium
Preparation batch 2851-051					
BOV115	N904037-01			7712-001	11.0
BOV116	N904037-02			7712-002	1.11 U
BLK (QC ID=30484)	N904037-04			7712-004	U
LCS (QC ID=30483)	N904037-03			7712-003	ok
Duplicate (N904037-01)	N904037-05			7712-005	ok
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 pCi/g	MDA g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR	
Preparation batch 2851-051		2σ prep error		10.0 %		Reference Lab		Notebook #2851		pg. 051								
BOV115	N904037-01			2.1	0.100				90		150			10	04/12/99	04/12	GRB-202	
BOV116	N904037-02			1.8	0.100				93		400			10	04/12/99	04/12	GRB-231	
BLK (QC ID=30484)	N904037-04			0.18	1.00				92		400				04/12/99	04/12	GRB-229	
LCS (QC ID=30483)	N904037-03			0.17	1.00				90		400				04/12/99	04/12	GRB-230	
Duplicate (N904037-01)	N904037-05			2.0	0.100				91		150			10	04/12/99	04/12	GRB-203	
		(QC ID=30485)																
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 MDA 1.2 ± 2.0
FOR 5 SAMPLES YIELD 91 ± 3

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/26/99

TMA/RICHMOND
 SAMPLE DELIVERY GROUP H0376

METHOD SUMMARY
 GAMMA SCAN
 GAMMA SPECTROSCOPY

Test GAM Matrix SOLID
 SDG 7712
 Contact L.A. Johnson

Client Hanford
 Contract TRB-SBB-207925
 Case no SDG-H0376

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUP- TEST FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 2851-051					
B0V115	N904037-01		7712-001	U	19.2
B0V116	N904037-02		7712-002	U	0.726
BLK (QC ID=30484)	N904037-04		7712-004	U	U
LCS (QC ID=30483)	N904037-03		7712-003	ok	ok
Duplicate (N904037-01)	N904037-05		7712-005	ok J	ok
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 SUP- TEST FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 2851-051 2σ prep error 15.0 % Reference Lab Notebook #2851 pg. 051															
B0V115	N904037-01		<u>0.081</u> 190						586			8	04/09/99	04/10	JR,07,00
B0V116	N904037-02		<u>0.060</u> 202						401			8	04/09/99	04/10	JR,07,00
BLK (QC ID=30484)	N904037-04		0.006 750						1181				04/09/99	04/12	JR,03,00
LCS (QC ID=30483)	N904037-03		0.009 750						1181				04/09/99	04/12	JR,01,00
Duplicate (N904037-01)	N904037-05		<u>0.031</u> 190						1181			10	04/09/99	04/12	JR,04,00
(QC ID=30485)															
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 MDA 0.037 ± 0.065
 FOR 5 SAMPLES YIELD _____ ± _____

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-CMS
 Version 3.06
 Report date 04/26/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0376

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Test NI L Matrix SOLID
 SDG 7712
 Contact L.A. Johnson

Client Hanford
 Contract TRB-SBB-207925
 Case no SDG-H0376

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Nickel 63
Preparation batch 2851-051					
B0V115	N904037-01	7712-001			U
B0V116	N904037-02	7712-002			U
BLK (QC ID=30484)	N904037-04	7712-004			U
LCS (QC ID=30483)	N904037-03	7712-003			ok
Duplicate (N904037-01)	N904037-05	7712-005			- 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 2851-051 2σ prep error 10.0 % Reference Lab Notebook #2851 pg. 051																
B0V115	N904037-01			2.1	0.500					100			16	04/18/99	04/18	LSC-005
B0V116	N904037-02			2.5	0.500					100			16	04/18/99	04/18	LSC-005
BLK (QC ID=30484)	N904037-04			1.8	0.500					100				04/18/99	04/18	LSC-005
LCS (QC ID=30483)	N904037-03			1.9	0.500					100				04/18/99	04/18	LSC-005
Duplicate (N904037-01)	N904037-05			2.5	0.500					100			16	04/18/99	04/18	LSC-005
	(QC ID=30485)															

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 2.2 ± 0.66
 FOR 5 SAMPLES YIELD _____ ± _____

METHOD SUMMARIES

Page 6

SUMMARY DATA SECTION

Page 18

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-CMS
 Version 3.06
 Report date 04/26/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0376

SDG 7712
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0376

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

- * LAB SAMPLE ID is the lab's primary identification for a sample.
- * DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.
- * CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.
- * QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

- * All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

REPORT GUIDES

Page 1

SUMMARY DATA SECTION

Page 19

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/26/99

SDG 7712
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0376

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

- * The preparation batches are shown in the same order as the Method Summary Reports are printed.
- * Only analyses of planchets relevant to the SDG are included.
- * Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- * The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified. Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0376

SDG 7712
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0376

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

- * TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- * SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- * The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- * PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- * For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- * The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/26/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0376

SDG 7712
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0376

DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

- * TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- * The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

- * ERRORS can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- * A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- * When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

- U The RESULT is less than the MDA (Minimum Detectable Activity).

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/26/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0376

SDG 7712
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0376

DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
- B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.
- Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.
- For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.
- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
- H Similar to 'L' except the recovery was high.
- P The RESULT is 'preliminary'.
- X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
- 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

- * An MDA is underlined if it is bigger than its RDL.

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0376

SDG 7712
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0376

DATA SHEET

- * An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.
- * A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- * When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

REPORT GUIDES

Page 6

SUMMARY DATA SECTION

Page 24

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/26/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0376

SDG 7712
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0376

LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.
- * An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is RESULT divided by ADDED expressed as a percent.
- * The first, computed limits for the recovery reflect:
 1. The error of RESULT, including that introduced by rounding the result prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.
 2. The error of ADDED.
 3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- * The second limits are protocol defined upper and lower QC limits for the recovery.
- * The recovery is underlined if it is outside either of these ranges.

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0376

SDG 7712
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0376

DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTS divided by their average expressed as a percent.

If both RESULTS are less than their MDAs, no RPD is computed and a '-' is printed.

For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

- * The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTS prior to printing.

If this limit is labeled TOT, it includes the preparation error in the RESULTS. If labeled CNT, it does not.

This value reported for this limit is at most 999.

- * The second limit for the RPD is the larger of:

1. A fixed percentage specified in the protocol.

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0376

SDG 7712
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0376

DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

- * The RPD is underlined if it is greater than either limit.
- * If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

- * The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/26/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0376

SDG 7712
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0376

MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

- * The first, computed limits for the recovery reflect:

1. The errors of the two RESULTS, including those introduced by rounding them prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

2. The error of ADDED.

3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

- * The second limits are protocol defined upper and lower QC limits

REPORT GUIDES

Page 10

SUMMARY DATA SECTION

Page 28

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/26/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0376

SDG 7712
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0376

MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

- * The recovery is underlined (out of spec) if it is outside either of these ranges.

REPORT GUIDES

Page 11

SUMMARY DATA SECTION

Page 29

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/26/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0376

SDG 7712
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0376

METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

- * Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

- * The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

- * If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

The J and X flags are as on the data sheet.

- * Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.
- * Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

SDG 7712
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0376

METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

- * Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
- * If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

MDAs are underlined if greater than the printed RDL.

- * Aliquots are underlined if less than the nominal value specified for the method.
- * Preparation factors are underlined if greater than the nominal value specified for the method.
- * Dilution factors are underlined if greater than the nominal value specified for the method.
- * Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
- * Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
- * Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/26/99

SDG 7712
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0376

GUIDE, cont.

METHOD SUMMARY

- * Count times are underlined if less than the nominal value specified for the method.
- * Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- * Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- * Days Held are underlined if greater than the holding time specified in the protocol.
- * Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1+3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/26/99

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0376

SDG 7712
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0376

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/26/99

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-6A		SAF No. B99-001		Price Code Data Turnaround 7 days	
Ice Chest No. SML-463		Field Logbook No. EL 1327-02		Method of Shipment FedEx			
Shipped To TMA/RECRA R.F. 4-2-99		Offsite Property No. A990097		Bill of Lading/Air Bill No. 423579524364			
				COA			

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	Cool 4C	Cool 4C	Cool 4C	None					
	Type of Container	P	aG	aG	aG	aG					
Special Handling and/or Storage	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)	VDA - 8260A (TCL)	See item (2) in Special Instructions.					
Sample No.	Matrix *	Sample Date	Sample Time								
✓ B0V115	Soil	4-2-99	0910	X		X					tie to B0V1002
✓ B0V116	Soil	4-2-99	0917	X		X					B0V1003

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By IT. Fahlberg / R. Fahlberg 4-2-99		Received By REF. 1-C 4-2-99		(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 R. Fahlberg unavailable to relinquish samples.				Soil Water Vapor Other Solid Other Liquid	
Relinquished By REF. TC 4/6/99 1110		Received By D. Nelson / R. Nelson 4/6/99							
Relinquished By D. Nelson / R. Nelson 4/6/99 1300		Received By FedEx 4-6-99							
Relinquished By FedEx 4-7-99 12:30		Received By D. Corso / J. Corso 4-7-99							
LABORATORY SECTION		Received By		Date/Time				Date/Time	
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time	

Contractor BHI - Hanford	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT) A990097
-----------------------------	--------------------------------------	--

PART I - TO BE COMPLETED BY ORIGINATOR

Department	ERC Engineering support	Section	Field & Analytical support	Unit	Field Sampling
------------	-------------------------	---------	----------------------------	------	----------------

The following items are to be shipped from Contractor Vendor

Routing Prepaid Collect

Shipped to Company Address City Country	Thermo Retec 2030 Wright Ave Richmond, CA 94804-0040 (510)235-2633 State Zip Code Attn: Larry Johnson	Off-site Custodian	
		On-site Custodian	Payroll No.

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
1	38 lbs.	Sample #: BOVIW7, BOVIW8, BOVIW9, BOVIX0, BOVIIS, BOVIIB Cooler ID: SML-463 Polycooler with environmental samples packed in packing peanuts. BILL OF LADING # <u>4235 7952 4364</u>	N/A

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) _____

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.	N/A RN 4/6/99	Date
---------------------------------	---------------	----------------------	------

Location of and Contact for Property (Name/Phone No./Bldg./Area)
Renee Nielson/(509)372-9604/3728 Bldg/300 Area

Date Ready for Shipment 4/6/99	Cost Code to be Charged R16B6A2600	Approximate Date This Property will be Returned
--	---------------------------------------	---

Originated By Renee Nielson	Date 4/6/99	Authorized By Renee Nielson	Date 4/6/99
---------------------------------------	-----------------------	---------------------------------------	-----------------------

Property Representative Signature R. Christensen	Date 4/6/99	Property Management Approval R. Christensen	Date 4/6/99
--	-----------------------	---	-----------------------

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature C.R. Nelson	Date 4-6-99
---	-----------------------

DISTRIBUTION (AFTER FINAL SIGNATURES)

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

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT			
Client: <u>Beechtel Hanford</u>	Date/Time received <u>4-7-99 10:30</u>		
CoC No. <u>B99-DD1-133, B99-DD2-79</u>			
Container I.D. No. <u>SML-463</u>	Requested TAT (Days) <u>7-15</u>	P.O. Received Yes [] No []	
INSPECTION			
1. Custody seals on shipping container intact?	Yes [<input checked="" type="checkbox"/>]	No [<input type="checkbox"/>]	N/A [<input type="checkbox"/>]
2. Custody seals on shipping container dated & signed?	Yes [<input checked="" type="checkbox"/>]	No [<input type="checkbox"/>]	N/A [<input type="checkbox"/>]
3. Custody seals on sample containers intact?	Yes [<input checked="" type="checkbox"/>]	No [<input type="checkbox"/>]	N/A [<input type="checkbox"/>]
4. Custody seals on sample containers dated & signed?	Yes [<input checked="" type="checkbox"/>]	No [<input type="checkbox"/>]	N/A [<input type="checkbox"/>]
5. Cooler Temperature: _____	Packing material is:	Wet [<input type="checkbox"/>]	Dry [<input checked="" type="checkbox"/>]
6. Number of samples in shipping container:	<u>6</u>		
7. Number of containers per sample: _____	(Or see CoC <input checked="" type="checkbox"/>)		
8. Paperwork agrees with samples?	Yes [<input checked="" type="checkbox"/>]	No [<input type="checkbox"/>]	
9. Samples have: Tape [<input checked="" type="checkbox"/>]	Hazard labels [<input type="checkbox"/>]	Rad labels [<input checked="" type="checkbox"/>]	Appropriate sample labels [<input checked="" type="checkbox"/>]
10. Samples are: In good condition [<input checked="" type="checkbox"/>]	Leaking [<input type="checkbox"/>]	Broken Container [<input type="checkbox"/>]	Missing [<input type="checkbox"/>]
11. Describe any anomalies:	_____		

13. Was P.M. notified of any anomalies?	Yes [<input checked="" type="checkbox"/>]	No [<input type="checkbox"/>]	Date <u>4-7-99</u>
14. Received by <u>APL</u>	Date: <u>4-7-99</u>	Time: <u>10:30</u>	
LOGIN			
TNU W.O. No. _____	Group No. _____	Client W.O. No. _____	
PROGRAM MANAGER			
Sample holding times exceeded?	Yes [<input type="checkbox"/>]	No [<input type="checkbox"/>]	
Client Notified: Name _____	Date/time _____		