

0052721

Date: 6 January 2000
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 105-DR FSB - Soil
Subject: Inorganics - Data Package No. H0551-RLN (SDG No. H0551)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H0551-RLN prepared by RECRA LabNet (RLN). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
BOWCJ0	9/27/99	Soil	C	See note 1
BOWCJ8	9/27/99	Soil	C	See note 1
BOWCK0	9/28/99	Soil	C	See note 1
BOWCK1	9/29/99	Soil	C	See note 1
BOWCK3	9/29/99	Soil	C	See note 1
BOWCK4	9/29/99	Soil	C	See note 1

1 - ICP metals by 6010B (lead); mercury by 7471A; chromium VI by 7196A

Data validation was conducted in accordance with the BHI validation statement of work and "Sample and Analysis Plan for 105F and 105DR Phase III Below Grade Structures and Underlying Soils" (DOE/RL-99-35). Appendices 1 through 5 provide the following information as indicated below:

- Appendix 1. Glossary of Data Reporting Qualifiers
- Appendix 2. Summary of Data Qualification
- Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
- Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
- Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

- Holding Times

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within six (6)

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months for lead, 30 days for chromium VI and 28 days for mercury.

All holding times were acceptable.

- **Blanks**

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "U". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the Contract Required Detection Limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the IDL and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

All preparation blank results were acceptable.

- **Accuracy**

Matrix Spike

Matrix spike analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike recoveries must fall within the range of 70% to 130%. Samples with a spike recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a spike recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a spike recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a spike recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All matrix spike results were acceptable.

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- **Precision**

Laboratory Duplicate Samples

Laboratory duplicate sample analyses are used to measure laboratory precision and sample homogeneity. Results must be within RPD limits of plus or minus 30% for solid samples. If RPD values are out of specification and the sample concentration is greater than five times the CRDL, all associated sample results are qualified as estimated and flagged "J". If RPD values are plus or minus two times the CRDL and the sample concentration is less than five times the CRDL, all associated sample results are qualified as estimated and flagged "J/UJ". The performance criteria for aqueous laboratory duplicates are an RPD less than 30% for positive sample results greater than five times the CRDL or plus or minus the CRDL for positive sample results less than five times the CRDL. Sample results outside the criteria are qualified as estimates and flagged "J/UJ".

All laboratory duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 105DR PQLs to ensure that laboratory detection levels meet the required criteria. The PQL was exceeded for chromium VI in all samples. Under the BHI statement of work, no qualification is required. All other reported laboratory detection levels for requested analytes met the analyte specific PQL.

- **Completeness**

Data package No. H0551-RLN (SDG No. H0551) was submitted for validation and verified for completeness. The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The PQL was exceeded for chromium VI in all samples. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

DOE/RL-99-35, *Sample and Analysis Plan for 105F and 105DR Phase III Below Grade Structures and Underlying Soils*.

Interoffice Memorandum 056910, Joan Kessner to Distribution, *Hexavalent Chromium Analytical Holding Time*, 4 March 1998.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

- U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- J - Indicates the compound or analyte was analyzed for and detected. Due to a QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.
- R - Indicates the compound or analyte was analyzed for, detected, and due to an identified QC deficiency, the data are unusable.
- UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified QC deficiency.
- NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

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Appendix 2

Summary of Data Qualification

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DATA QUALIFICATION SUMMARY

SDG: H0551	REVIEWER: TLI	DATE: 1/6/00	PAGE <u>1</u> OF <u>1</u>
COMMENTS: No qualifiers assigned			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

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Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 10/18/99

CLIENT: TNU-HANFORD B99-075
 WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 9910L275

SAMPLE	SITE ID	ANALYTE	REPORTING		DILUTION
			RESULT	LIMIT	
-----	-----	-----	-----	-----	-----
-001	B0WCJ0	Mercury, Total	0.02 u	0.02	1.0
		Lead, Total	2.4 u	2.4	1.0
-002	B0WCJ8	Mercury, Total	0.02 u	0.02	1.0
		Lead, Total	3.5	2.7	1.0
-003	B0WCK1	Mercury, Total	0.02 u	0.02	1.0
		Lead, Total	2.9 u	2.9	1.0
-004	B0WCK3	Mercury, Total	0.01 u	0.01	1.0
		Lead, Total	2.6 u	2.6	1.0

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Recre LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 10/20/99

CLIENT: TNU-HANFORD B99-075

RECRA LOT #: 9910L264

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	BOWCK0	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	2.7 u	MG/KG	2.7	1.0
-002	BOWCK4	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	3.0 u	MG/KG	3.0	1.0

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Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 10/15/99

CLIENT: TNU-HANFORD B99-075

RECRA LOT #: 9910L275

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	BOWCJO-	‡ Solids	98.3	‡	0.01	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0
-002	BOWCJA	‡ Solids	96.7	‡	0.01	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0
-003	BOWCK1	‡ Solids	97.8	‡	0.01	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0
-004	BOWCK3	‡ Solids	97.7	‡	0.01	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0

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1/2/00

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 10/15/99

CLIENT: TNU-HANFORD B99-075

RECRA LOT #: 9910L264

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	BOWCK0	% Solids	93.2	%	0.01	1.0
		Chromium VI	0.43 u	MG/KG	0.43	1.0
-002	BOWCK4	% Solids	92.7	%	0.01	1.0
		Chromium VI	0.43 u	MG/KG	0.43	1.0

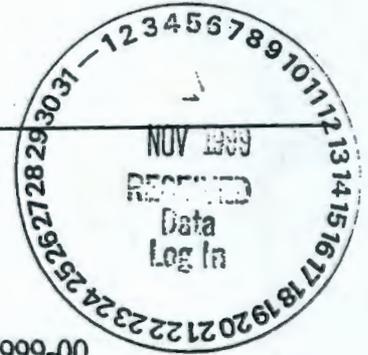
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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation



**Recra LabNet Philadelphia
Analytical Report**

Client : TNU-HANFORD B99-075
RFW# : 9910L264
SDG/SAF# : H0551/B99-075

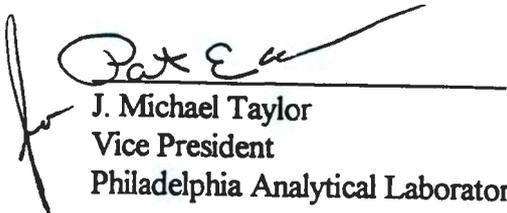
W.O.# : 10985-001-001-9999-00
Date Received: 10-01-99

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.
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 (80-120% for Mercury).
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 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.

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

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

mjd/m10-264

10-20-99
Date





**Recra LabNet Philadelphia
Analytical Report**

Client : TNU-HANFORD B99-075
RFW# : 9910L275
SDG/SAF# : H0551/B99-075

W.O.# : 10985-001-001-9999-00
Date Received: 10-02-99

METALS CASE NARRATIVE

1. This narrative covers the analyses of 4 soil samples.
2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. The cooler temperature has been recorded on the Chain of Custody.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
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 recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.
11. The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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

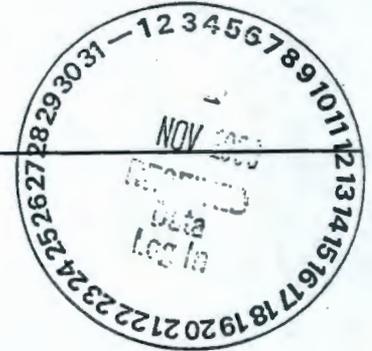
12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.



J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory
mld/m10-275

10-13-99
Date





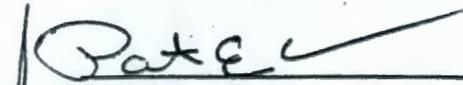
**Recra LabNet Philadelphia
Analytical Report**

Client : TNU-HANFORD B99-075
RFW# : 9910L264
SDG# : H0551
SAF# : B99-075

W.O. # : 10985-001-001-9999-00
Date Received: 10-01-99

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 checked on the attached glossary.
3. Sample holding times as required by the method and/or contract were met.
4. The cooler temperature was recorded on the chain-of-custody.
5. The method blank for Chromium VI was within method criteria.
6. The Laboratory Control Samples (LCS) for Chromium VI were within the laboratory control limits.
7. The matrix spike recoveries for Chromium VI were within the 75-125% control limits.
8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.
9. Results for solid samples are reported on a dry weight basis.



J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-28-99
Date

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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 18 pages.



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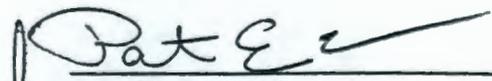
Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-075
RFW# : 9910L275
SDG# : H0551
SAF# : B99-075

W.O. # : 10985-001-001-9999-00
Date Received: 10-02-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 4 soil samples.
2. The samples were prepared and analyzed in accordance with the methods checked on the attached glossary.
3. Sample holding times as required by the method and/or contract were met.
4. The cooler temperature was recorded on the chain-of-custody.
5. The method blank for Chromium VI was within method criteria.
6. The Laboratory Control Samples (LCS) for Chromium VI were within the laboratory control limits.
7. The matrix spike recoveries for Chromium VI were within the 75-125% control limits.
8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.
9. Results for solid samples are reported on a dry weight basis.



J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-28-99
Date

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



Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-075-18	Page 1 of 1
Collector Fahlberg/Behrke <i>Bowlers</i> <i>RF 9.27.99</i>		Company Contact Jason Adler		Telephone No. 373-4316		Project Coordinator TRENT, SJ	
Project Designation 105-DR FSB - Soil		Sampling Location 105 DR		SAF No. B99-075		Price Code 8L Data Turnaround 21 Days	
Ice Chest No. <i>SML 429-A</i> <i>RF 9.30.99</i> <i>SML 510</i>		Field Logbook No. EL-1281		Method of Shipment FEDEX			
Shipped To <i>FAL/RECRA</i> <i>RF 9.27.99</i>		Offsite Property No. <i>A99 0276</i> <i>H 99.0282</i> <i>RF 9.30.99</i>		Bill of Lading/Air Bill No. <i>4235 7952</i> <i>9907</i> <i>RF 9.30.99</i>			
				COA: <i>R105D42800</i>			

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	Cool 4C	Cool 4C	None	None				
	Type of Container	aG	aG	aG	aG				
	No. of Container(s)	1	1	1	1				
Special Handling and/or Storage	Volume	60mL	60mL	60mL	500mL				

SAMPLE ANALYSIS	Chromium Hex - 7196	PCBs - 8080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions.					

Sample No.	Matrix *	Sample Date	Sample Time	Chromium Hex - 7196	PCBs - 8080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions.				
BOWCJ0	Soil	9.27.99	1405	X	X	X					<i>BowCJ0</i>
BOWCJ8	Soil	9.27.99	0950	X	X	X					<i>BowCJ8</i>
BOWCJ9 <i>RF 9.30.99</i>	Soil	9.27.99	1310	X	X	X					<i>BowCJ9</i>

CHAIN OF POSSESSION	Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix * Soil Water Vapor Other Solid Other Liquid
	Relinquished By <i>R.F. Adler</i> <i>RF 9.27.99</i> Date/Time: <i>1610</i>	Received By <i>R.F. Adler</i> <i>RF 9.27.99</i> Date/Time: <i>1610</i>	<i>60ml bottles are empty upon arrival to TMA, they will be filled from the 500ml poly liner & shipped to RECRA</i>				
	Relinquished By <i>R.F. Adler</i> <i>RF 9.30.99</i> Date/Time: <i>1000</i>	Received By <i>R.F. Adler</i> <i>RF 9.30.99</i> Date/Time: <i>1000</i>					
	Relinquished By <i>R.F. Adler</i> <i>RF 9.30.99</i> Date/Time: <i>17:30</i>	Received By <i>FedEx</i> <i>9-30-99</i> Date/Time: <i>9-30-99</i>					
Relinquished By <i>FedEx</i> <i>9-30-99</i> Date/Time: <i>9:30</i>	Received By <i>TNU M. Goldberger</i> <i>10-1-99</i> Date/Time: <i>9:30</i>						
LABORATORY SECTION	Received By <i>FedEx</i> <i>10-2-99</i> Date/Time: <i>0930</i>	Received By <i>U.S. EPA</i> <i>10-1-99</i> Date/Time: <i>0930</i>					
FINAL SAMPLE	Disposal Method	Disposed By				Date/Time	

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CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

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Page 1 of 1

Collector Fahlberg/Behmke Bowers FW 9-28-99	Company Contact Jason Adler	Telephone No. 373-4316	Project Coordinator TRENT, SJ
Project Designation 105-DR FSB - Soil	Sampling Location 105 DR	SAF No. B99-075	Price Code 8L Data Turnaround 21 Days
Ice Chest No. SML 429A	Field Logbook No. EL-1281	Method of Shipment Fed Ex	
Shipped To RECRA 9-28-99	Offsite Property No. A 99-0282	Bill of Lading/Air Bill No. 4235 7953 0028	
COA R105D42800			

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	Cool 4C	Cool 4C	None	None				
	Type of Container	aG	aG	aG	aG				
	No. of Container(s)	1	1	1	1				
	Special Handling and/or Storage	Volume	60mL	60mL	60mL	500mL			

SAMPLE ANALYSIS	Chromium Hex - 7196	PCBs - 8080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions.					
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Sample No.	Matrix *	Sample Date	Sample Time							
BOWCK0	Soil	9-29-99	0910	X						
BOWCK1	Soil	9-29-99	1220	X	X	X				Bow CDI
BOWCK2	Soil	9-29-99	1306	X	X	X				Bow CDI
BOWCK3	Soil	9-29-99	1320	X	X	X				Bow CDI

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By <i>[Signature]</i>	Date/Time 9-28-99 1940	(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Barium-133); Isotopic Plutonium; Isotopic Uranium; Americium-241; Carbon-14; Nickel-63; Technetium-99 60 ml bottles in sample. They will be filled from liner material and sent to RECRA	Soil
Received By <i>[Signature]</i>	Date/Time 9-28-99 1940		Water
Relinquished By <i>[Signature]</i>	Date/Time 9-30-99 1000		Vapor
Received By <i>[Signature]</i>	Date/Time 9-30-99 1000		Other Solid
Relinquished By <i>[Signature]</i>	Date/Time 9-30-99 1430	Other Liquid	
Received By <i>[Signature]</i>	Date/Time 9-30-99 1430		
Relinquished By <i>[Signature]</i>	Date/Time 10-1-99 9:30		
Received By <i>[Signature]</i>	Date/Time 10-1-99 9:30		
LABORATORY SECTION	Received By <i>[Signature]</i>	Date/Time 10-29-99 0930	Title
FINAL SAMPLE DISPOSITION	Disposed Method	Disposed By	Date/Time

RECRA
 1000023

Collector Fahlberg/Beimke Bowers 9-28-99	Company Contact Jason Adler	Telephone No. 373-4316	Project Coordinator TRENT, SJ	Price Code 8L	Data Turnaround 21 Days
Project Designation 105-DR FSB - Soil	Sampling Location 105 DR	SAF No. B99-075			
Ice Chest No. ERC-196-014	Field Logbook No. EL-1281	Method of Shipment Fed Ex			
Shipped To RECRA 9-28-99	Offsite Property No. A99 0283	Bill of Lading/Air Bill No. 4235 7953 0040			
			COA R/05 D4 2800		

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	Cool 4C	Cool 4C	None	None
	Type of Container	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	500mL

SAMPLE ANALYSIS	Chromium Hex - 7196	PCBs - 8080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions.
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Sample No.	Matrix *	Sample Date	Sample Time								
BOWCK0	Soil	9-28-99	0910	X	X	X					
BOWCK1	Soil	9-28-99									
BOWCK2	Soil	9-28-99									
BOWCK3	Soil										

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By <i>R. Fahlberg</i> 9-28-99 1530	Received By <i>Ref I-C</i> 9-28-99 1540	(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Barium-133); Isotopic Plutonium; Isotopic Uranium; Americium-241; Carbon-14; Nickel-63; Technetium-99	Soil Water Vapor Other Solid Other Liquid
Relinquished By <i>Ref I-C</i> 9-30-99 1100	Received By <i>R. Fahlberg</i> 9-30-99 1100		
Relinquished By <i>R. Fahlberg</i> 9-30-99 1430	Received By <i>Fed Ex</i>		
Relinquished By <i>Fed Ex</i> 10-1-99 0930	Received By <i>Impurity</i> 10-1-99 0930		
LABORATORY SECTION	Received By	Disposed By	Date Time
FINAL SAMPLE DISPOSITION	Disposal Method		Date Time

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CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-075-20

Page 1 of 1

Collector Fahlgberg/Behrke Bowers 9-29-99	Company Contact Jason Adler	Telephone No. 373-4316	Project Coordinator TRENT, SJ	Price Code 8L	Data Turnaround 21 Days
Project Designation 105-DR FSB - Soil	Sampling Location 105 DR	SAF No. B99-075			
Ice Chest No. ERC 96-014	Field Logbook No. EL-1281	Method of Shipment Fed Ex			
Shipped To TMA/RECREA Bowers 9-29-99	Offsite Property No. A99 0283	Bill of Lading/Air Bill No. 4235-7953 0040			
COA R105D4 2800					

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	Cool 4C	Cool 4C	None	None				
	Type of Container	aG	aG	aG	aG				
	No. of Container(s)	1	1	1	1				
	Special Handling and/or Storage	Volume	60mL	60mL	60mL	300mL			

SAMPLE ANALYSIS	Chromium Hex - 7196	PCBs - 8080 (Arochlor-1254)	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions.				
-----------------	---------------------	-----------------------------	---	---------------------------------------	--	--	--	--

Sample No.	Matrix *	Sample Date	Sample Time							
BOWCK4	Soil	9-29-99	0930	X	X	X				Bowers
BOWCK5 RING 29 99	Soil									
BOWCK6 RING 29 99	Soil									
BOWCK7 RING 29 99	Soil									

000025

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By	Date/Time	Received By	Date/Time
<i>[Signature]</i>	1430 9-29-99	<i>[Signature]</i>	1430 9-29-99
Relinquished By	Date/Time	Received By	Date/Time
<i>[Signature]</i>	1100 9-30-99	<i>[Signature]</i>	1100 9-30-99
Relinquished By	Date/Time	Received By	Date/Time
<i>[Signature]</i>	1430 9-30-99	<i>[Signature]</i>	1430 9-30-99
Relinquished By	Date/Time	Received By	Date/Time
<i>[Signature]</i>	0930 10-1-99	<i>[Signature]</i>	0930 10-1-99
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Barium-133); Isotopic Plutonium; Isotopic Uranium; Americium-241; Carbon-14; Nickel-63; Technetium-99

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

COLLECTOR UNAVAILABLE TO SIGN COA

013

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	105-DR FSB		DATA PACKAGE: H0551		
VALIDATOR:	TLI	LAB: RECRA	DATE: 13 Dec 99		
CASE:			SDG: H0551		
ANALYSES PERFORMED					
<input type="checkbox"/> CLP/ICP	<input type="checkbox"/> CLP/GFAA	<input type="checkbox"/> CLP/Hg	<input type="checkbox"/> CLP/Cyanide	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> SW-846/ICP	<input type="checkbox"/> SW-846/GFAA	<input checked="" type="checkbox"/> SW-846/Hg	<input type="checkbox"/> SW-846 Cyanide	<input checked="" type="checkbox"/> CRIT	<input type="checkbox"/>
SAMPLES/MATRIX	Bowc10	Bowc18	Bowc11	Bowc13	
	Bowc10	Bowc14			
					soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? Yes No **N/A**

Is a case narrative present? **Yes** No N/A

Comments: _____

2. HOLDING TIMES

Are sample holding times acceptable? **Yes** No N/A

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

Were initial calibrations performed on all instruments? Yes No N/A
Are initial calibrations acceptable? Yes No N/A
Are ICP interference checks acceptable? Yes No N/A
Were ICV and CCV checks performed on all instruments? Yes No N/A
Are ICV and CCV checks acceptable? Yes No N/A

Comments: _____

4. BLANKS

Were ICB and CCB checks performed for all applicable analyses? Yes No N/A
Are ICB and CCB results acceptable? Yes No N/A
Were preparation blanks analyzed? Yes No N/A
Are preparation blank results acceptable? Yes No N/A
Were field/trip blanks analyzed? Yes No N/A
Are field/trip blank results acceptable? Yes No N/A

Comments: _____

5. ACCURACY

Were spike samples analyzed? Yes No N/A
Are spike sample recoveries acceptable? Yes No N/A
Were laboratory control samples (LCS) analyzed? Yes No N/A
Are LCS recoveries acceptable? Yes No N/A

Comments: _____

A-20

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

6. PRECISION

- Were laboratory duplicates analyzed? Yes No N/A
- Are laboratory duplicate samples RPD values acceptable? Yes No N/A
- Were ICP serial dilution samples analyzed? Yes No N/A
- Are ICP serial dilution %D values acceptable? Yes No N/A
- Are field duplicate RPD values acceptable? Yes No N/A
- Are field split RPD values acceptable? Yes No N/A

Comments: _____

7. FURNACE AA QUALITY CONTROL

- Were duplicate injections performed as required? Yes No N/A
- Are duplicate injection %RSD values acceptable? Yes No N/A
- Were analytical spikes performed as required? Yes No N/A
- Are analytical spike recoveries acceptable? Yes No N/A
- Was MSA performed as required? Yes No N/A
- Are MSA results acceptable? Yes No N/A

Comments: _____

8. REPORTED RESULTS AND DETECTION LIMITS

- Are results reported for all requested analyses? Yes No N/A
- Are all results supported in the raw data? Yes No N/A
- Are results calculated properly? Yes No N/A
- Do results meet the CRDLs? Yes No N/A

Comments: CR UT _____

Date: 6 January 2000
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 105-DR FSB - Soil
Subject: PCB - Data Package No. H0551-RLN (SDG No. H0551)

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. H0551-RLN prepared by Recra LabNet (RLN). A list of the samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
B0WCJ0	9/27/99	Soil	C	EPA 8082*
B0WCJ8	9/27/99	Soil	C	EPA 8082*
B0WCK0	9/28/99	Soil	C	EPA 8082*
B0WCK1	9/29/99	Soil	C	EPA 8082*
B0WCK3	9/29/99	Soil	C	EPA 8082*
B0WCK4	9/29/99	Soil	C	EPA 8082*

*Equivalent to the requested method (EPA 8080).

Data validation was conducted in accordance with the BHI validation statement of work and the "Sample and Analysis Plan for 105F and 105DR Phase III Below Grade Structures and Underlying Soils" (DOE/RL-99-35). Appendices 1 through 5 provide the following information as indicated below:

- Appendix 1. Glossary of Data Reporting Qualifiers
- Appendix 2. Summary of Data Qualification
- Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
- Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
- Appendix 5. Data Validation Supporting Documentation

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DATA QUALITY OBJECTIVES

- **Holding Times**

Sample data were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded by less than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detected sample results are qualified as estimates and flagged "J" and all nondetects are rejected and flagged "UR".

Due to the holding time being exceeded by less than twice the limit, all PCB results in samples BOWCK0 and BOWCK4 were qualified as estimates and flagged "J".

All other holding times were acceptable.

- **Blanks**

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation or analysis. At least one method blank analysis must be conducted for every 20 samples. Method blanks should not contain target compounds at a concentration greater than CRQL. If target compounds are present, sample results less than five times the blank concentration are qualified as undetected and flagged "U". If the sample result is less than five times the blank concentration and less than CRQL, the result is qualified as undetected and elevated to the CRQL.

All method blank target compound results were acceptable.

- **Accuracy**

Matrix Spike

Matrix spike analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike analyses are performed in duplicate and must be within either control limits established by the laboratory or 70% to 130% if no laboratory limits are established. If spike recoveries are outside control limits,

detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Nondetected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

All matrix spike results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates and flagged "J". Nondetected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Nondetected compounds with surrogate recoveries above the upper control limit require no qualification.

Due to surrogate recoveries above QC limits, all PCB results in samples BOWCJO and BOWCJ8 were qualified as estimates and flagged "J".

All other surrogate recovery results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the RPD between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All matrix spike/matrix spike duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 105DR PQLs to ensure that laboratory detection levels meet the required criteria. The aroclor-1254 result in sample BOWCK0 was reported above the PQL. Under the BHI statement of work, no qualification is required. All other reported laboratory detection levels for requested analytes met the analyte specific PQL.

- **Completeness**

Data Package No. H0551-RLN (SDG No. H0551) was submitted for validation and verified for completeness. The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to surrogate recoveries above QC limits, all PCB results in samples BOWCJ0 and BOWCJ8 were qualified as estimates and flagged "J". Due to the holding time being exceeded by less than twice the limit, all PCB results in samples BOWCK0 and BOWCK4 were qualified as estimates and flagged "J". Data flagged "J" is an estimate, but under the BHI validation SOW, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

The aroclor-1254 result in sample BOWCK0 was reported above the PQL. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

DOE/RL-99-35, *Sample and Analysis Plan for 105F and 105DR Phase III Below Grade Structures and Underlying Soils*.

000004

Appendix 1
Glossary of Data Reporting Qualifiers

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Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows:

- U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- J - Indicates the compound or analyte was analyzed for and detected. The associated concentration is an estimate, but the data are usable for decision-making purposes.
- R - Indicates the compound or analyte was analyzed for, detected, and due to an identified QC deficiency, the data are unusable.
- UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified QC deficiency.
- NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

000006

Appendix 2
Summary of Data Qualification

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DATA QUALIFICATION SUMMARY

SDG: H0551	REVIEWER: TLI	DATE: 1/6/00	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
All	J	BOWCK0, BOWCK4	Holding time exceeded
All	J	BOWCJ0, BOWCJ8	Surrogate recovery

000008

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 10/23/99 11:58

RFW Batch Number: 9910L275

Client: TNU-HANFORD B99-075

Work Order: 10985001001 Page: 1

500

Sample Information	Cust ID:	BOWCJ0	BOWCJ0	BOWCJ0	BOWCJ8	BOWCK1	BOWCK3
	RFW#:	001	001 MS	001 MSD	002	003	004
	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
Surrogate:	Tetrachloro-m-xylene	120 * %	118 %	120 * %	125 * %	112 %	112 %
	Decachlorobiphenyl	108 %	113 %	113 %	112 %	108 %	110 %
		-----fl-----	-----fl-----	-----fl-----	-----fl-----	-----fl-----	-----fl-----
Aroclor-1016		34 U J	51 U	51 U	34 U J	34 U	34 U
Aroclor-1221		68 U	100 U	100 U	69 U	68 U	68 U
Aroclor-1232		34 U	51 U	51 U	34 U	34 U	34 U
Aroclor-1242		34 U	51 U	51 U	34 U	34 U	34 U
Aroclor-1248		34 U	51 U	51 U	34 U	34 U	34 U
Aroclor-1254		34 U	102 %	103 %	34 U	34 U	34 U
Aroclor-1260		34 U	51 U	51 U	34 U	34 U	34 U

Cust ID: PBLKXA PBLKXA BS

Sample Information	RFW#:	99LE1234-MB1	99LE1234-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	UG/KG	UG/KG

Surrogate:	Tetrachloro-m-xylene	118 %	118 %
	Decachlorobiphenyl	115 %	111 %
		-----fl-----	-----fl-----
Aroclor-1016		33 U	33 U
Aroclor-1221		67 U	67 U
Aroclor-1232		33 U	33 U
Aroclor-1242		33 U	33 U
Aroclor-1248		33 U	33 U
Aroclor-1254		33 U	93 %
Aroclor-1260		33 U	33 U

-AW
10-25-99

[Signature]
1/1/00

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. % = Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

000011

Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 11/02/99 13:24

RFW Batch Number: 9910L264

Client: TNU-HANFORD B99-075

Work Order: 10985001001 Page: 1

Sample Information	Cust ID:	BOWCK0	BOWCK4	BOWCK4	BOWCK4	PBLKYC	PBLKYC BS
	RFW#:	001	002	002 MS	002 MSD	99LE1304-MB1	99LE1304-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
		REPREP	REPREP				
Surrogate: Tetrachloro-m-xylene		105 %	105 %	108 %	100 %	112 %	110 %
Decachlorobiphenyl		107 %	109 %	112 %	107 %	116 %	114 %
-----fl-----		fl	fl	fl	fl	fl	fl
Aroclor-1254		180 U J	36 U J	94 %	91 %	33 U	95 %

W
11-02-99

ps *1/6/00*

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
 %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

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**Recra LabNet Philadelphia
Analytical Report**

Client: TNU-HANFORD B99-075
RFW#: 9910L275
SDG/SAF#: H0551/B99-075

W.O.#: 10985-001-001-9999-00
Date Received: 10-02-99

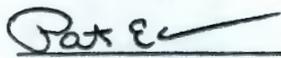
PCB

The set of samples consisted of four (4) soil samples collected on 09-27,29-99.

The samples and their associated QC samples were extracted on 10-11-99 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 10-20-99. The extraction procedure was based on method 3520 and the extracts were analyzed based on method 8082 for Aroclors only.

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

1. The cooler temperature has been recorded on the chain-of-custody.
2. All required holding times for extraction and analysis have been met.
3. The samples and their associated QC samples received a sulfuric acid cleanup.
4. The method blank was below the reporting limits for all target compounds.
5. Three (3) of sixteen (16) surrogate recoveries were outside QC limits; however, the surrogate recovery acceptance criteria were met (i.e., no more than one outlier per sample).
6. The blank spike recovery was within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.



 J. Michael Taylor
 Vice President
 Philadelphia Analytical Laboratory

10-26-99
Date

pefr:\group\data\pest\09L-275.pcb

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

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**Recra LabNet Philadelphia
Analytical Report**

Client: TNU-HANFORD B99-075
RFW#: 9910L264
SDG/SAF#: H0551/B99-075

W.O.#: 10985-001-001-9999-00
Date Received: 10-01-99

PCB

The set of samples consisted of two (2) soil samples collected on 09-28,29-99.

The samples and their associated QC samples were extracted on 10-26-99 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 11-01-99. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors only.

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

1. The cooler temperature has been recorded on the chain-of-custody.
2. All required holding times for analysis have been met. These samples were originally extracted within their required holding time. Due to Aroclor 1254 contamination the samples were re-extracted outside of hold time. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
3. The samples and their associated QC samples received a sulfuric acid and sulfur cleanup.
4. The method blank was below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
6. The blank spike recovery was within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

J. Michael Taylor
7 J. Michael Taylor

11-02-99
Date

Vice President
Philadelphia Analytical Laboratory

pefr:\group\data\pest\10L-264.pcb

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.

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001

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			B99-075-18	Page 1 of 1
Collector Fahlberg/Behacke <i>Bowers</i> ^{RF} 9.27.99	Company Contact Jason Adler	Telephone No. 373-4316	Project Coordinator IRENT, SJ	Price Code 8L	Data Turnaround 21 Days	
Project Designation 105-DR FSB - Soil	Sampling Location 105 DR	Field Logbook No. EL-1281	SAF No. B99-075	Method of Shipment FEDEX		
Ice Chest No. <i>SML 429-A</i> ^{RF 9.30.99} <i>SML 510</i>	Offsite Property No. A99 0276 <i>A99.0282</i> ^{RF 9.30.99}	Bill of Lading/Air Bill No. <i>4235 7952</i> ^{RF 9/30/99} <i>9907</i> ^{RF}				
Shipped To <i>TMA/RECRA</i> ^{RF 9.27.99}	COA <i>R105D42800</i>					

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	Cool 4C	Cool 4C	None	None
	Type of Container	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1
	Special Handling and/or Storage	Volume	60mL	60mL	60mL

SAMPLE ANALYSIS				Chromium Hex - 7196	PCBs - 8080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (I) in Special Instructions.
-----------------	--	--	--	---------------------	----------------------------	---	---------------------------------------

Sample No.	Matrix *	Sample Date	Sample Time	Chromium	PCBs	ICP Metals	Special
BOWCJ0	Soil	9.27.99	1405	X	X	X	BowCDO
BOWCJ8	Soil	9.27.99	0950	X	X	X	BowCDO
BOWCJ9 ^{RF 9.30.99}	Soil	9.27.99	1310	X	X	X	BowCDO

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By <i>R. Fahlberg</i> ^{RF} 9.27.99	Received By <i>R. Fahlberg</i> 9.27.99	(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Barium-133); Isotopic Plutonium; Isotopic Uranium, Americium-241; Carbon-14; Nickel-63; Technetium-99 60ml bottles are empty upon arrival to TMA, they will be filled from the 500ml poly liner & shipped to RECRA	Soil Water Vapor Other Solid Other Liquid
Relinquished By <i>R. Fahlberg</i> 9.30.99	Received By <i>R. Fahlberg</i> 9.30.99		
Relinquished By <i>R. Fahlberg</i> 9.30.99	Received By <i>FedEx</i> 9.30.99		
Relinquished By <i>FedEx</i> 10-1-99	Received By <i>TMA M. Goldberger</i> 10-1-99		

LABORATORY SECTION	Received By <i>FedEx</i> 10-2-99 0930	Date/Time 10-1-99 0930	FINAL SAMPLE	Disposal Method	Disposed By	Date/Time
--------------------	--	---------------------------	--------------	-----------------	-------------	-----------

000026

1000

Collector Fahlberg/Behmke Bowers 9-28-99	Company Contact Jason Adler	Telephone No. 373-4316	Project Coordinator TRENT, SJ	Price Code 8L	Data Turnaround 21 Days
Project Designation 105-DR FSB - Soil	Sampling Location 105 DR	SAF No. B99-075			
Ice Chest No. ERC-196-014	Field Logbook No. EL-1281	Method of Shipment Fed Ex			
Shipped To FM/RECRA RS 9-28-99	Offsite Property No. A99 0283	Bill of Lading/Air Bill No. 4235 7953 0040			
COA R105 D4 2800					

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	Cool 4C	Cool 4C	None	None					
	Type of Container	aG	aG	aG	aG					
	No. of Container(s)	1	1	1	1					
	Volume	60mL	60mL	60mL	300mL					
Special Handling and/or Storage										
SAMPLE ANALYSIS		Chromium Hex - 7196	PCBs - 0080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions.					
Sample No.	Matrix *	Sample Date	Sample Time							
BOWCK0	Soil	9-28-99	0910	X	X	X				
BOWCK1	Soil	RS								
BOWCK2	Soil	9-28-99								
BOWCK3	Soil									

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By <i>[Signature]</i>	Date/Time 1530 9-28-99	Received By <i>[Signature]</i>	Date/Time 1540 9-28-99
Relinquished By <i>[Signature]</i>	Date/Time 1100 9-30-99	Received By <i>[Signature]</i>	Date/Time 1100 9-30-99
Relinquished By <i>[Signature]</i>	Date/Time 1430 9-30-99	Received By <i>[Signature]</i>	Date/Time 9-30-99
Relinquished By <i>[Signature]</i>	Date/Time 10:199 0930	Received By <i>[Signature]</i>	Date/Time 10:199 0930
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Barium-133); Isotopic Plutonium; Isotopic Uranium; Americium-241; Carbon-14; Nickel-63; Technetium-99

COLLECTOR UNAVAILABLE TO SIGN COL

000048

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-075-20

Page 1 of 1

Collector Fahlberg/Behrke Bowlers 9-29-99	Company Contact Jason Adler	Telephone No. 373-4316	Project Coordinator TRENT, SJ	Price Code 8L	Data Turnaround 21 Days
Project Designation 105-DR FSB - Soil	Sampling Location 105 DR	Field Logbook No. EL-1281	Method of Shipment Fed Ex	Bill of Lading/Air Bill No. 4235 7953 0040	
Ice Chest No. ERC 96-014	Offsite Property No. A99 0283	COA R105D4 2800			
Shipped To IMA/RECRA B297-22-99					

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation				Special Handling and/or Storage
	Cool 4C	Cool 4C	None	None	
	Type of Container	aG	aG	aG	
	No. of Container(s)	1	1	1	
	Volume	60mL	60mL	60mL	500mL

SAMPLE ANALYSIS	Chromium Hex - 7196	PCBs - 8080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions.
-----------------	---------------------	----------------------------	---	---------------------------------------

Sample No.	Matrix *	Sample Date	Sample Time	Cool 4C	Cool 4C	None	None
BOWCK4	Soil	9-29-99	0930	X	X	X	
BOWCK6 RWA 29 99	Soil						
BOWCK6 RWA 29 99	Soil						
BOWCK7 RWA 29 99	Soil						

000079

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By R. Fahlberg	Date/Time 1430 9-29-99	(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Barium-133); Isotopic Plutonium; Isotopic Uranium; Americium-241; Carbon-14; Nickel-63; Technetium-99 COLLECTOR UNAVAILABLE TO SIGN COA	Soil Water Vapor Other Solid Other Liquid
Received By I.C.	Date/Time 1430 9-29-99		
Relinquished By R.F. I.C.	Date/Time 1100 9-30-99		
Received By R. Fahlberg	Date/Time 9-30-99		
Relinquished By R.F. I.C.	Date/Time 1430 9-30-99		
Received By Fed Ex	Date/Time 10-1-99 0930		
Relinquished By Fed Ex	Date/Time 10-1-99 0930		
LABORATORY SECTION	Received By TTM	Title TTM	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

946C197

Initiator: B/Pato
 Date: 10/25/99
 Client: TNU

RFW Batch: 99106264
 Samples: 111
 Method: SW846/MICAWW/CLP1

Parameter: OPCB
 Matrix: Soil
 Prep Batch: 99LE1237

1. Reason for SDR

a. COC Discrepancy Tech Profile Error Client Request Sampler Error on C-O-C
 Transcription Error Wrong Test Code Other _____

b. General Discrepancy
 Missing Sample/Extract Container Broken Wrong Sample Pulled Label ID's Illegible
 Hold Time Exceeded Insufficient Sample Preservation Wrong Received Past Hold
 Improper Bottle Type Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. QC Problem (Include all relevant specific results; attach data if necessary)
 Another sample in the batch contained large amounts of AR125. This was also found throughout the batch & in the blank.

2. Known or Probable Causes(s) Cross-contamination

3. Discussion and Proposed Action Other Description: Re-extract

Re-log
 Entire Batch
 Following Samples: _____
 Re-leach
 Re-extract
 Re-digest
 Revise EDD
 Change Test Code to _____
 Place On/Take Off Hold (circle)

4. Project Manager Instructions...signature/date: [Signature] 10/25/99

Concur with Proposed Action
 Disagree with Proposed Action; See Instruction
 Include in Case Narrative
 Client Contacted:
 Date/Person _____
 Add
 Cancel

5. Final Action...signature/date: [Signature] 10/29/99 Other Explanation:

Verified re-[log][leach]extract[digest][analysis] (circle)
 Included in Case Narrative
 Hard Copy COC Revised
 Electronic COC Revised
 EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
<input checked="" type="checkbox"/>	Initiator	<input type="checkbox"/>	Metals: Doughty
<input checked="" type="checkbox"/>	Lab Manager: M. Taylor	<input type="checkbox"/>	Inorganic: Perrone
<input checked="" type="checkbox"/>	Project Mgr: Stone/Carey/Schrenkel/Johnson	<input type="checkbox"/>	GC/LC: Schnell
<input checked="" type="checkbox"/>	Section Mgr: Wesson/Daniels	<input type="checkbox"/>	MS: LeMin/Taylor
<input checked="" type="checkbox"/>	QA (file): Racioppi	<input type="checkbox"/>	Log-in: Toder
<input type="checkbox"/>	Data Management: Feldman	<input type="checkbox"/>	Admin: Soos
<input type="checkbox"/>	Sample Prep: Schnell/Doughty/Kauffman	<input type="checkbox"/>	Other: _____

Appendix 5
Data Validation Supporting Documentation

PESTICIDE/PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	10SDR FSB		DATA PACKAGE: HOSSI		
VALIDATOR:	TLI	LAB: QFS <i>peru</i>	DATE: 12/13/99		
CASE:	SDG: HOSSI				
ANALYSES PERFORMED					
<input type="checkbox"/> CLP3/90	<input type="checkbox"/> SW-846 8080	<input type="checkbox"/> SW-846 8081	<input checked="" type="checkbox"/> SW846 8082	<input type="checkbox"/>	<input type="checkbox"/>
SAMPLES/MATRIX					
BowcJO BowcJ8 BowcK1 BowcK3 BowcK0					
BowcK4					
soil					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? Yes No **N/A**
 Is a case narrative present? **Yes** No N/A
 Comments: _____

2. HOLDING TIMES

Are sample holding times acceptable? Yes **No** N/A
 Comments: 14 days $2 + 26 = 28$ I all } KO-KY
 $1 + 26 = 27$
 rest, ok

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

3.1 INSTRUMENT PERFORMANCE (METHOD 8080 AND 8081)

Are DDT retention times acceptable Yes No **N/A**
 Are calibration standard retention times acceptable? Yes No **N/A**
 Are DDT and endrin breakdowns acceptable? Yes No **N/A**

PESTICIDE/PCB DATA VALIDATION CHECKLIST

Are DBC retention times acceptable? Yes No **N/A**
Is the GC/MS tuning/performance check acceptable? Yes No **N/A**

Comments: _____

3.2 CALIBRATIONS (METHOD 8080 AND 8081)

Are EVAL standard calibration factors and %RSD values acceptable? Yes No **N/A**
Are quantitation column calibration factor %RSD values acceptable? Yes No **N/A**
Were the analytical sequence requirements met? Yes No **N/A**
Are continuing calibration %D values acceptable? Yes No **N/A**

Comments: _____

3.3 INSTRUMENT PERFORMANCE AND INITIAL CALIBRATION (3/90 SOW)

Was the initial calibration sequence performed? Yes No **N/A**
Was the resolution acceptable in the resolution check mix? Yes No **N/A**
Is resolution acceptable in the PEM, INDA and INDB? Yes No **N/A**
Are DDT and Endrin breakdowns acceptable? Yes No **N/A**
Are retention times in PEMs and calibration mixes acceptable? Yes No **N/A**
Are RPD values in the PEMs acceptable? Yes No **N/A**
Are %RSD values acceptable? Yes No **N/A**

Comments: _____

3.4 CALIBRATION VERIFICATION (3/90 SOW)

Were the analytical sequence requirements met? Yes No **N/A**
Is resolution acceptable in the PEMs? Yes No **N/A**
Are initial calibrations acceptable? Yes No **N/A**

PESTICIDE/PCB DATA VALIDATION CHECKLIST

- Are retention times acceptable in the PEMS, INDA and INDB mixes? Yes No **N/A**
- Are RPD values in the PEMS acceptable? Yes No **N/A**
- Are the DDT and endrin breakdowns acceptable? Yes No **N/A**
- Was GPC cleanup performed? Yes No **N/A**
- Is the GPC calibration check acceptable? Yes No **N/A**
- Was Florisil cleanup performed? Yes No **N/A**
- Is the Florisil performance check acceptable? Yes No **N/A**

N/A
N/A
N/A
N/A
N/A
N/A

Comments: _____

4. BLANKS

- Were laboratory blanks analyzed? **Yes** No N/A
- Are laboratory blank results acceptable? **Yes** No N/A
- Were field/trip blanks analyzed? Yes **No** N/A
- Are field/trip blank results acceptable? Yes No **N/A**

Comments: _____

5. ACCURACY

- Were surrogates analyzed? **Yes** No N/A
- Are surrogate recoveries acceptable? Yes **No** N/A
- Were MS/MSD samples analyzed? **Yes** No N/A
- Are MS/MSD results acceptable? **Yes** No N/A
- Were LCS samples analyzed? Yes No **N/A**
- Are LCS results acceptable? Yes No **N/A**

Comments: Bowcjo, Bowc58 - J/US surrogate recovery

PESTICIDE/PCB DATA VALIDATION CHECKLIST

6. PRECISION

- Are MS/MSD RPD values acceptable? Yes No N/A
- Are laboratory duplicate results acceptable? Yes No N/A
- Are field duplicate RPD values acceptable? Yes No N/A
- Are field split RPD values acceptable? Yes No N/A

Comments: _____

7. SYSTEM PERFORMANCE

- Is chromatographic performance acceptable? Yes No N/A
- Are positive results resolved acceptably? Yes No N/A

Comments: _____

8. COMPOUND IDENTIFICATION AND QUANTITATION

- Is compound identification acceptable? Yes No N/A
- Is compound quantitation acceptable? Yes No N/A

Comments: _____

9. REPORTED RESULTS AND QUANTITATION LIMITS

- Are results reported for all requested analyses? Yes No N/A
- Are all results supported in the raw data? Yes No N/A
- Do results meet the CRQLs? Yes No N/A

Comments: KC 1254 OVR

Date: 6 January 2000
To: Bechtel Hanford, Inc. (technical representative)
From: TechLaw, Inc.
Project: 105-DR FSB - Soil
Subject: Radiochemistry - Data Package No. H0551-TNU (SDG No. H0551)

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. H0551-TNU which was prepared by Thermo NUtech (TNU). A list of samples validated along with the analyses reported and the requested analytes is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
BOWCJO	9/27/99	Soil	C	See note 1
BOWCJ8	9/27/99	Soil	C	See note 1
BOWCK0	9/28/99	Soil	C	See note 1
BOWCK1	9/29/99	Soil	C	See note 1
BOWCK3	9/29/99	Soil	C	See note 1
BOWCK4	9/29/99	Soil	C	See note 1

1 - Gamma spectroscopy; alpha spectroscopy (isotopic uranium, isotopic plutonium and americium-241); nickel-63; carbon-14; technetium-99.

Data validation was conducted in accordance with the BHI validation statement of work and the "Sample and Analysis Plan for 105F and 105DR Phase III Below Grade Structures and Underlying Soils" (DOE/RL-99-35). Appendices 1 through 5 provide the following information as indicated below:

- Appendix 1. Glossary of Data Reporting Qualifiers
- Appendix 2. Summary of Data Qualification
- Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
- Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
- Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

- **Holding Times**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analysis is 6 months with liquid scintillation requiring analysis within 7 days of distillation.

All holding times were acceptable.

- **Blanks**

Laboratory Blanks

Blank samples are analyzed to determine if positive results are due to laboratory reagent, sample container, or detector contamination. If blank analysis results indicate the presence of an analyte above the MDA, the following qualifiers are applied: All positive sample results less than five times the highest blank concentration are qualified as estimates and flagged "J"; sample results below the MDA are qualified as undetected and flagged "U"; sample results above the MDA and greater than five times the highest blank concentration are not qualified.

Due to laboratory blank contamination, the carbon-14 results in samples BOWCK1 and BOWCK3 were qualified as estimates and flagged "J".

All other laboratory blank results were acceptable although the PQL was exceeded for europium-154, cobalt-60 and uranium-238(gea).

- **Accuracy**

Accuracy is evaluated by analyzing distilled water or field samples spiked with known amounts of radionuclides. The sample activity as determined by analysis is compared to the known activity to assess accuracy. The acceptable laboratory control sample and matrix spike recovery range is either 70-130% or 80-120% depending on the analyte. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, rejected, or not qualified, depending on the activity of the individual sample.

Due to the lack of a matrix spike analysis, all carbon-14 results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

- **Precision**

Analytical precision is expressed by the RPD between the recoveries of duplicate matrix spike analyses performed on a sample. Precision may also be assessed using unspiked duplicate sample analyses. If both sample and replicate activities are greater than five times the CRDL and the RPD is less than 30 percent, the results are acceptable. If either activities are less than five times the CRDL, a control limit of less than or equal to two times the CRDL is used for soil samples and less than or equal to the CRDL for water samples. If either the original or replicate value is below the CRDL, the applicable control limits are less than or equal to the CRDL for water samples and less than or equal to two times the CRDL for soil samples. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All duplicate results were acceptable.

- **Detection Levels**

Reported analytical detection levels are compared against the 105DR PQLs or the CRDL if no PQL was specified, to ensure that laboratory detection levels meet the required criteria. All reported laboratory MDAs were at or below the analyte-specific PQL or contract specified MDA.

- **Completeness**

Data Package No. H0551 (SDG No. H0551) was submitted for validation and verified for completeness. The completion rate was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to laboratory blank contamination, the carbon-14 results in samples BOWCK1 and BOWCK3 were qualified as estimates and flagged "J". Due to the lack of a matrix spike analysis, all carbon-14 results were qualified as estimates and flagged "J". Data flagged "J" is an estimate, but under the BHI validation SOW, the data

may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

DOE/RL-99-35, *Sample and Analysis Plan for 105F and 105DR Phase III Below Grade Structures and Underlying Soils*.

Appendix 1

Glossary of Data Reporting Qualifiers

000005

Qualifiers which may be applied by data validators in compliance with the BHI statement of work are as follows:

- U - Indicates the compound or analyte was analyzed for and not detected above the minimum detectable activity (MDA) in the sample. The value reported is the sample result corrected for sample dilution and moisture content by the laboratory. The data is usable for decision making purposes.
- UJ - Indicates the compound or analyte was analyzed for and not detected at concentrations above the minimum detectable activity (MDA) in the sample. Due to a QC deficiency identified during the data validation, the associated quantitation limit is an estimate, but is usable for decision making purposes.
- J - Indicates the compound or analyte was analyzed for and detected. Due to a QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- R - Indicates the compound or analyte was analyzed for, detected, and due to an identified QC deficiency, the data are unusable.
- UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified QC deficiency.

Appendix 2

Summary of Data Qualification

000007

DATA QUALIFICATION SUMMARY

SDG: H0551	REVIEWER: TLI	DATE: 1/6/00	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Carbon-14	J	BOWCK1, BOWCK3	Blank contamination
Carbon-14	J	All	No matrix spike

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

000009

Project: BECHTEL-HANFORD																	
Laboratory: TNU																	
Case SDG: H0551																	
Sample Number		BOWCJ0		BOWCJ8		BOWCK0		BOWCK1		BOWCK3		BOWCK4					
Location		A		A		B		B		B		D					
Remarks																	
Sample Date		09/29/99		09/29/99		09/28/99		09/29/99		09/29/99		09/29/99					
Radiochemistry	CRDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Carbon-14	50	1.97	UJ	1.63	UJ	3.19	UJ	5.16	J	5.77	J	3.54	UJ				
Technetium-99	15	1.12		0.710	U	0.490	U	0.165	U	0.087	U	0.049	U				
Uranium-233/234	1	0.415		0.500		0.441		0.336		0.480		0.440					
Uranium-235	1	0.031	U	0.018	U	0.050	U	0.079		0.015	U	0.038	U				
Uranium-238	1	0.364		0.403		0.458		0.262		0.406		0.293					
Plutonium-238	1	0.012	U	0.005	U	-0.005	U	-0.004	U	0.011	U	0	U				
Plutonium-239/40	1	0.008	U	-0.039	U	0.022	U	-0.004	U	0.019	U	0.210					
Nickel-63	30	-0.219	U	0.045	U	0.696	U	1.11	U	-0.366	U	20.3					
Americium-241	1	-0.006	U	0.055		0	U	0.024	U	0.006	U	0.053					
Potassium-40		8.87		9.39		8.81		7.92		7.49		8.63					
Barium-133			U U		U U		U U		U U		U		U U				
Cobalt 60	0.1		U U		U U		U U		U U		U		0.503				
Cesium 137	0.1		U U		0.530		0.312		0.018		0.214		2.95				
Europium 152	0.2		U U		U U		U U		U U		U		1.61				
Europium 154	0.2		U U		U U		U U		U U		U		0.314				
Europium 155	0.1		U U		U U		U U		U U		U		U U				
Radium-226		0.340		0.461		0.300		0.263		0.258		0.325					
Radium-228		0.370		0.461		0.480		0.389		0.397		0.427					
Thorium-228		0.386		0.470		0.390		0.360		0.352		0.400					
Thorium-232		0.370		0.461		0.480		0.389		0.397		0.427					
Americium-241 (GEA)			U U		U U		U U		U U		U U		U U				
Uranium-238 (GEA)			U U		U U		U U		U U		U U		U U				
Uranium-235 (GEA)			U U		U U		U U		U U		U U		U U				

000000

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0551

N910005-01

BOWCJO

DATA SHEET

SDG <u>7225</u>	Client/Case no <u>Hanford</u>	SDG <u>H0551</u>
Contact <u>Kevin C. Johnson</u>	Contract <u>TRB-SBB-207925</u>	
Lab sample id <u>N910005-01</u>	Client sample id <u>BOWCJO</u>	
Dept sample id <u>7225-001</u>	Location/Matrix <u>105 DR</u>	<u>SOLID</u>
Received <u>10/01/99</u>	Collected <u>09/27/99 14:05</u>	
% solids <u>98.4</u>	Custody/SAF No <u>B99-075-18</u>	<u>B99-075</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Carbon 14	14762-75-5	1.97	2.6	4.2	50	U J	C
Technetium 99	14133-76-7	1.12	0.56	1.0	15	U	TC
Uranium 233/234	U-233/234	0.415	0.12	0.065	1.0	U	U
Uranium 235	15117-96-1	0.031	0.041	0.078	1.0	U	U
Uranium 238	U-238	0.364	0.12	0.065	1.0	U	U
Plutonium 238	13981-16-3	0.012	0.024	0.038	1.0	U	PU
Plutonium 239/240	PU-239/240	0.008	0.016	0.030	1.0	U	PU
Nickel 63	13981-37-8	-0.219	1.5	2.6	30	U	NI_L
Americium 241	14596-10-2	-0.006	0.023	0.063	1.0	U	AM
Potassium 40	13966-00-2	8.87	0.74	0.41			GAM
Barium 133	13981-41-4	U		0.047		UX	GAM
Cobalt 60	10198-40-0	U		<u>0.053</u>	0.050	U	GAM
Cesium 137	10045-97-3	U		0.047	0.10	U	GAM
Europium 152	14683-23-9	U		0.10	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.14</u>	0.10	U	GAM
Europium 155	14391-16-3	U		0.066	0.10	U	GAM
Radium 226	13982-63-3	0.340	0.083	0.084	0.10		GAM
Radium 228	15262-20-1	0.370	0.20	0.20	0.20		GAM
Thorium 228	14274-82-9	0.386	0.041	0.042			GAM
Thorium 232	TH-232	0.370	0.20	0.20			GAM
Americium 241	14596-10-2	U		0.047		U	GAM
Uranium 238	U-238	U		6.1		U	GAM
Uranium 235	15117-96-1	U		0.12		U	GAM

105-DR FSB-Soil

Per
11/6/00

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>11/01/99</u>

000011

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0551

N910005-02

B0WCJ8

DATA SHEET

SDG <u>7225</u>	Client/Case no <u>Hanford</u>	SDG <u>H0551</u>
Contact <u>Kevin C. Johnson</u>	Contract <u>TRB-SBB-207925</u>	
Lab sample id <u>N910005-02</u>	Client sample id <u>B0WCJ8</u>	
Dept sample id <u>7225-002</u>	Location/Matrix <u>105 DR</u>	<u>SOLID</u>
Received <u>10/01/99</u>	Collected <u>09/27/99 09:50</u>	
% solids <u>97.0</u>	Custody/SAF No <u>B99-075-18</u>	<u>B99-075</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Carbon 14	14762-75-5	1.63	2.4	3.9	50	U	C
Technetium 99	14133-76-7	0.710	0.46	0.79	15	U	TC
Uranium 233/234	U-233/234	0.500	0.13	0.057	1.0	U	U
Uranium 235	15117-96-1	0.018	0.018	0.069	1.0	U	U
Uranium 238	U-238	0.403	0.11	0.057	1.0	U	U
Plutonium 238	13981-16-3	0.005	0.019	0.037	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.039	0.029	0.086	1.0	U	PU
Nickel 63	13981-37-8	0.045	2.5	4.3	30	U	NI_L
Americium 241	14596-10-2	0.055	0.034	0.041	1.0	U	AM
Potassium 40	13966-00-2	9.39	0.84	0.52			GAM
Barium 133	13981-41-4	U		0.050		UX	GAM
Cobalt 60	10198-40-0	U		0.057	0.050	U	GAM
Cesium 137	10045-97-3	0.530	0.061	0.055	0.10		GAM
Europium 152	14683-23-9	U		0.11	0.10	U	GAM
Europium 154	15585-10-1	U		0.16	0.10	U	GAM
Europium 155	14391-16-3	U		0.069	0.10	U	GAM
Radium 226	13982-63-3	0.461	0.10	0.10	0.10		GAM
Radium 228	15262-20-1	0.461	0.19	0.21	0.20		GAM
Thorium 228	14274-82-9	0.470	0.049	0.049			GAM
Thorium 232	TH-232	0.461	0.19	0.21			GAM
Americium 241	14596-10-2	U		0.048		U	GAM
Uranium 238	U-238	U		6.8		U	GAM
Uranium 235	15117-96-1	U		0.12		U	GAM

105-DR FSB-Soil

per
1/6/00

DATA SHEETS

Page 2

SUMMARY DATA SECTION

Page 15

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>11/01/99</u>

000012

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0551

N910005-03

BOWCKO

DATA SHEET

SDG <u>7225</u>	Client/Case no <u>Hanford</u>	SDG <u>H0551</u>
Contact <u>Kevin C. Johnson</u>	Contract <u>TRB-SBB-207925</u>	
Lab sample id <u>N910005-03</u>	Client sample id <u>BOWCKO</u>	
Dept sample id <u>7225-003</u>	Location/Matrix <u>105 DR</u>	<u>SOLID</u>
Received <u>10/01/99</u>	Collected <u>09/28/99 09:10</u>	
% solids <u>92.6</u>	Custody/SAF No <u>B99-075-19</u>	<u>B99-075</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Carbon 14	14762-75-5	3.19	2.5	4.1	50	U J	C
Technetium 99	14133-76-7	0.490	0.31	0.55	15	U	TC
Uranium 233/234	U-233/234	0.441	0.14	0.080	1.0	U	U
Uranium 235	15117-96-1	0.050	0.041	0.077	1.0	U	U
Uranium 238	U-238	0.458	0.14	0.080	1.0	U	U
Plutonium 238	13981-16-3	-0.005	0.015	0.033	1.0	U	PU
Plutonium 239/240	PU-239/240	0.022	0.020	0.027	1.0	U	PU
Nickel 63	13981-37-8	0.696	3.0	5.1	30	U	NI_L
Americium 241	14596-10-2	0	0.026	0.058	1.0	U	AM
Potassium 40	13966-00-2	8.81	0.67	0.31			GAM
Barium 133	13981-41-4	U		0.040		UX	GAM
Cobalt 60	10198-40-0	U		0.040	0.050	U	GAM
Cesium 137	10045-97-3	3.12	0.084	0.047	0.10		GAM
Europium 152	14683-23-9	U		0.11	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.090	0.10	U	GAM
Radium 226	13982-63-3	0.300	0.068	0.078	0.10		GAM
Radium 228	15262-20-1	0.480	0.14	0.14	0.20		GAM
Thorium 228	14274-82-9	0.390	0.047	0.048			GAM
Thorium 232	TH-232	0.480	0.14	0.14			GAM
Americium 241	14596-10-2	U		0.096		U	GAM
Uranium 238	U-238	U		3.6		U	GAM
Uranium 235	15117-96-1	U		0.14		U	GAM

105-DR FSB-Soil

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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>11/01/99</u>

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0551

N910005-04

BOWCK1

DATA SHEET

SDG <u>7225</u>	Client/Case no <u>Hanford</u>	SDG <u>H0551</u>
Contact <u>Kevin C. Johnson</u>	Contract <u>TRB-SBB-207925</u>	
Lab sample id <u>N910005-04</u>	Client sample id <u>BOWCK1</u>	
Dept sample id <u>7225-004</u>	Location/Matrix <u>105 DR</u>	<u>SOLID</u>
Received <u>10/01/99</u>	Collected <u>09/28/99 12:20</u>	
‡ solids <u>97.8</u>	Custody/SAF No <u>B99-075-19</u>	<u>B99-075</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Carbon 14	14762-75-5	5.16	2.7	4.3	50	J	C
Technetium 99	14133-76-7	0.165	0.18	0.47	15	U	TC
Uranium 233/234	U-233/234	0.336	0.12	0.079	1.0	J	U
Uranium 235	15117-96-1	0.079	0.060	0.076	1.0	J	U
Uranium 238	U-238	0.262	0.10	0.063	1.0	J	U
Plutonium 238	13981-16-3	-0.004	0.015	0.035	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.004	0.015	0.035	1.0	U	PU
Nickel 63	13981-37-8	1.11	2.6	4.4	30	U	NI_L
Americium 241	14596-10-2	0.024	0.032	0.044	1.0	U	AM
Potassium 40	13966-00-2	7.92	0.34	0.14			GAM
Barium 133	13981-41-4	U		0.014		UX	GAM
Cobalt 60	10198-40-0	U		0.017	0.050	U	GAM
Cesium 137	10045-97-3	0.018	0.016	0.018	0.10	J	GAM
Europium 152	14683-23-9	U		0.038	0.10	U	GAM
Europium 154	15585-10-1	U		0.049	0.10	U	GAM
Europium 155	14391-16-3	U		0.034	0.10	U	GAM
Radium 226	13982-63-3	0.263	0.034	0.031	0.10		GAM
Radium 228	15262-20-1	0.389	0.069	0.063	0.20		GAM
Thorium 228	14274-82-9	0.360	0.020	0.019			GAM
Thorium 232	TH-232	0.389	0.069	0.063			GAM
Americium 241	14596-10-2	U		0.036		U	GAM
Uranium 238	U-238	U		2.0		U	GAM
Uranium 235	15117-96-1	U		0.063		U	GAM

105-DR FSB-Soil

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Lab id <u>TMANC</u>
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Report date <u>11/01/99</u>

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TMA / RICHMOND
SAMPLE DELIVERY GROUP H0551

N910005-05

BOWCK3

DATA SHEET

SDG <u>7225</u>	Client/Case no <u>Hanford</u>	SDG <u>H0551</u>
Contact <u>Kevin C. Johnson</u>	Contract <u>TRB-SBB-207925</u>	
Lab sample id <u>N910005-05</u>	Client sample id <u>BOWCK3</u>	
Dept sample id <u>7225-005</u>	Location/Matrix <u>105 DR</u>	<u>SOLID</u>
Received <u>10/01/99</u>	Collected <u>09/28/99 13:20</u>	
% solids <u>97.5</u>	Custody/SAF No <u>B99-075-19</u>	<u>B99-075</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Carbon 14	14762-75-5	5.77	2.7	4.2	50	J	C
Technetium 99	14133-76-7	0.087	0.31	0.89	15	U	TC
Uranium 233/234	U-233/234	0.480	0.085	0.030	1.0	U	U
Uranium 235	15117-96-1	0.015	0.015	0.029	1.0	U	U
Uranium 238	U-238	0.406	0.072	0.024	1.0	U	U
Plutonium 238	13981-16-3	0.011	0.028	0.047	1.0	U	PU
Plutonium 239/240	PU-239/240	0.019	0.022	0.034	1.0	U	PU
Nickel 63	13981-37-8	-0.366	1.5	2.5	30	U	NI_L
Americium 241	14596-10-2	0.006	0.022	0.042	1.0	U	AM
Potassium 40	13966-00-2	7.49	0.76	0.45			GAM
Barium 133	13981-41-4	U		0.035		UX	GAM
Cobalt 60	10198-40-0	U		<u>0.054</u>	0.050	U	GAM
Cesium 137	10045-97-3	0.214	0.043	0.046	0.10		GAM
Europium 152	14683-23-9	U		0.099	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.13</u>	0.10	U	GAM
Europium 155	14391-16-3	U		0.088	0.10	U	GAM
Radium 226	13982-63-3	0.258	0.080	0.087	0.10		GAM
Radium 228	15262-20-1	0.397	0.20	0.20	0.20		GAM
Thorium 228	14274-82-9	0.352	0.045	0.047			GAM
Thorium 232	TH-232	0.397	0.20	0.20			GAM
Americium 241	14596-10-2	U		0.096		U	GAM
Uranium 238	U-238	U		4.5		U	GAM
Uranium 235	15117-96-1	U		0.13		U	GAM

105-DR FSB-Soil

see
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TMA / RICHMOND
SAMPLE DELIVERY GROUP H0551

N910005-06

BOWCK4

DATA SHEET

SDG <u>7225</u>	Client/Case no <u>Hanford</u>	SDG <u>H0551</u>
Contact <u>Kevin C. Johnson</u>	Contract <u>TRB-SBB-207925</u>	
Lab sample id <u>N910005-06</u>	Client sample id <u>BOWCK4</u>	
Dept sample id <u>7225-006</u>	Location/Matrix <u>105 DR</u>	<u>SOLID</u>
Received <u>10/01/99</u>	Collected <u>09/29/99 09:30</u>	
% solids <u>92.9</u>	Custody/SAF No <u>B99-075-20</u>	<u>B99-075</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Carbon 14	14762-75-5	3.54	2.5	4.1	50	U	C
Technetium 99	14133-76-7	0.049	0.19	0.56	15	U	TC
Uranium 233/234	U-233/234	0.440	0.15	0.080	1.0	U	U
Uranium 235	15117-96-1	0.038	0.051	0.097	1.0	U	U
Uranium 238	U-238	0.293	0.11	0.080	1.0	U	U
Plutonium 238	13981-16-3	0	0.022	0.043	1.0	U	PU
Plutonium 239/240	PU-239/240	0.210	0.057	0.048	1.0	U	PU
Nickel 63	13981-37-8	20.3	2.9	3.8	30	U	NI_L
Americium 241	14596-10-2	0.053	0.037	0.048	1.0	U	AM
Potassium 40	13966-00-2	8.63	0.56	0.30			GAM
Barium 133	13981-41-4	U		0.046		UX	GAM
Cobalt 60	10198-40-0	0.503	0.049	0.036	0.050		GAM
Cesium 137	10045-97-3	2.95	0.080	0.049	0.10		GAM
Europium 152	14683-23-9	1.61	0.10	<u>0.11</u>	0.10		GAM
Europium 154	15585-10-1	0.314	0.11	<u>0.11</u>	0.10		GAM
Europium 155	14391-16-3	U		0.094	0.10	U	GAM
Radium 226	13982-63-3	0.325	0.065	0.071	0.10		GAM
Radium 228	15262-20-1	0.427	0.18	0.19	0.20		GAM
Thorium 228	14274-82-9	0.400	0.041	0.050			GAM
Thorium 232	TH-232	0.427	0.18	0.19			GAM
Americium 241	14596-10-2	U		0.089		U	GAM
Uranium 238	U-238	U		5.5		U	GAM
Uranium 235	15117-96-1	U		0.14		U	GAM

105-DR FSB-Soil

see
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DATA SHEETS

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SUMMARY DATA SECTION

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0551 is composed of six solid (soil) samples designated under SAF No. B99-041 with a Project Designation of: 100 H Area-Quick Turn.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the TNU Sample Receipt Checklists. The results were originally reported to BHI via facsimile on November 1, 1999.

2.0 ANALYSIS NOTES

2.1 Gamma Scan Analyses

No problems were encountered during the course of the analyses.

2.2 Technetium-99 Analyses

No problems were encountered during the course of the analyses though a recount was performed on sample BLWCK0. The results of the original and duplicate analyses were not a good match however both sample results were less than the RDL, also the result for the original analysis was less than the samples' MDA.

2.3 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.4 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.5 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses. Recounts were performed on samples B0WCJ0 and B0WCK3.

2.6 Americium-241 Analyses

No problems were encountered during the course of the analyses. A recount was performed on the duplicate.

2.7 Carbon-14 Analyses

No problems were encountered during the course of the analyses. All sample results were less than the RDL.



CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-075-19

Page 1 of 1

Collector Fahlberg/Behnke <i>Bowers</i> ^{RF} 9-28-99	Company Contact Jason Adler	Telephone No. 373-4316	Project Coordinator TRENT, SJ	Price Code 8L	Data Turnaround 21 Days
Project Designation 105-DR FSB - Soil	Sampling Location 105 DR	SAF No. B99-075			
Ice Chest No. SML 429A	Field Logbook No. EL-1281	Method of Shipment Fed Ex			
Shipped To TMA/RECRA <i>RF</i> 9-28-99	Offsite Property No. A 99-0282	Bill of Lading/Air Bill No. 4235 7953 0028			
COA R105D42800					

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	Cool 4C	Cool 4C	None	None					
	Type of Container	aG	aG	aG	aG					
	No. of Container(s)	1	1	1	1					
Special Handling and/or Storage	Volume	60mL	60mL	60mL	500mL					

SAMPLE ANALYSIS				Chromium Hex - 7196	PCBs - 8080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions.				
Sample No.	Matrix *	Sample Date	Sample Time								
BOWCK0	Soil	9-28-99	0910				X				Bow CDI
BOWCK1	Soil	9-28-99	1220				X				Bow CDI
BOWCK2	Soil	9-28-99 9-30-99	1306 1306				X				Bow CDI
BOWCK3	Soil	9-28-99	1320				X				Bow CDI

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *		
Relinquished By	Date/Time	Received By	Date/Time	(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Barium-133); Isotopic Plutonium; Isotopic Uranium; Americium-241; Carbon-14; Nickel-63; Technetium-99 BOWCK1, BOWCK2, BOWCK3 All volume in poly liner, to be put in 60ml bottles and shipped to RECRA	Soil Water Vapor Other Solid Other Liquid
<i>K. Felle</i>	1540	<i>R. Fahlberg</i>	1540		
<i>R. Fahlberg</i>	9-28-99	<i>R. Felle</i>	9-28-99		
<i>R. Felle</i>	1000	<i>R. Fahlberg</i>	1000		
Relinquished By	Date/Time	Received By	Date/Time		
<i>R. Felle</i>	9-30-99	<i>R. Fahlberg</i>	9-30-99		
Relinquished By	Date/Time	Received By	Date/Time		
<i>R. Felle</i>	1430	<i>R. Fahlberg</i>	1430		
Relinquished By	Date/Time	Received By	Date/Time		
<i>R. Felle</i>	9-30-99	<i>R. Fahlberg</i>	9-30-99		
Relinquished By	Date/Time	Received By	Date/Time		
<i>Fed Ex</i>	10-1-99 9:30	<i>TNU M. Goldenberg</i>	10-1-99 9:30		

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

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-075-20

Page 1 of 1

Collector Fahlberg/Bohnke <i>Bowers 9-29-99</i>	Company Contact Jason Adler	Telephone No. 373-4316	Project Coordinator TRENT, SJ
Project Designation 105-DR FSB - Soil	Sampling Location 105 DR	SAF No. B99-075	Price Code 8L Data Turnaround <h2 style="text-align: center;">21 Days</h2>
Ice Chest No. ERC 96-065	Field Logbook No. EL-1281	Method of Shipment Fed Ex	
Shipped To TMA/RECKA 9-29-99 1578	Offsite Property No. A99 0284	Bill of Lading/Air Bill No. 4235 7953 0039 COA R105D4 2800	

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	Cool 4C	Cool 4C	None	None				
	Type of Container	aG	aG	aG	aG				
	No. of Container(s)	1	1	1	1				
	Special Handling and/or Storage	Volume	60mL	60mL	60mL	500mL			

SAMPLE ANALYSIS	Chromium Hex - 7196	PCBs - 8080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions.				
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Sample No.	Matrix *	Sample Date	Sample Time						
BOWCK4	Soil	9-29-99	0930						y
BOWCK6 R1N9/29/99	Soil								
BOWCK6 R1N9/29/99	Soil								
BOWCK7 R1N9/29/99	Soil								

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By: <i>[Signature]</i> Date/Time: 1730 Received By: <i>[Signature]</i> Date/Time: 1730	Relinquished By: <i>[Signature]</i> Date/Time: 5:25:35 Received By: <i>[Signature]</i> Date/Time: 9-29-99	(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Barium-133); Isotopic Plutonium; Isotopic Uranium; Americium-241; Carbon-14; Nickel-63; Technetium-99 COLLECTOR UNAVAILABLE TO SIGN CWC	Soil Water Vapor Other Solid Other Liquid
Relinquished By: <i>[Signature]</i> Date/Time: 1100 Received By: <i>[Signature]</i> Date/Time: 9:30:49	Relinquished By: <i>[Signature]</i> Date/Time: 9:30-99 Received By: <i>[Signature]</i> Date/Time: 1100		
Relinquished By: <i>[Signature]</i> Date/Time: 1450 Received By: <i>[Signature]</i> Date/Time: 9:30-99	Relinquished By: <i>[Signature]</i> Date/Time: 9:30-99 Received By: <i>[Signature]</i> Date/Time: 9:30-99		
Relinquished By: <i>[Signature]</i> Date/Time: 9:30 Received By: <i>[Signature]</i> Date/Time: 9:30	Relinquished By: <i>[Signature]</i> Date/Time: 10-1-99 Received By: <i>[Signature]</i> Date/Time: 10-1-99		

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

1578
 9-29-99
 10:20

Collector Fahlberg/Behnke BOWS RG 9.28.99	Company Contact Jason Adler	Telephone No. 373-4316	Project Coordinator TRENT, SJ	Price Code 8L	Data Turnaround 21 Days
Project Designation 105-DR FSB - Soil	Sampling Location 105 DR	Field Logbook No. EL-1281	SAF No. B99-075		
Ice Chest No. FRC-96.065	Offsite Property No. A99-0284	Method of Shipment Fed Ex			
Shipped To TMA/RECRA RG 9.28.99	Bill of Lading/Air Bill No. 4235 7953 0039		COA R105 D4 2800		

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	Cool 4C	Cool 4C	None	None
	Type of Container	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	500mL
SAMPLE ANALYSIS		Chromium Hex - 7196	PCBs - 8080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions.
Sample No.	Matrix *	Sample Date	Sample Time		
BOWCK0	Soil	9-28-99	0910		X
BOWCK1	Soil				
BOWCK2	Soil				
BOWCK3	Soil				

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By RG 9.28.99 1540	Received By Ref 1-C 9.28.99 1540	(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Barium-133); Isotopic Plutonium; Isotopic Uranium; Americium-241; Carbon-14; Nickel-63; Technetium-99	Soil Water Vapor Other Solid Other Liquid
Relinquished By Ref 1-C 9.28.99 1100	Received By RG 9.30.99 1100		
Relinquished By RG 9.30.99 1430	Received By Fed Ex 9-30-99 1430		
Relinquished By Fed Ex 10-1-99 9:30	Received By TNU M. Golden 10-1-99 9:30		
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

✓
 BOWCK0
 BOWCK1
 BOWCK2
 BOWCK3

Collector Fahlberg/Bchake Bowers <i>R 9.29.99</i>	Company Contact Jason Adler	Telephone No. 373-4316	Project Coordinator TRENT, SJ	Price Code 8L	Data Turnaround 21 Days
Project Designation 105-DR FSB - Soil	Sampling Location 105 DR	SAF No. B99-075			
Ice Chest No. <i>SML 429-A R 9.30.99 SML 510</i>	Field Logbook No. EL-1281	Method of Shipment <i>FEDEX</i>			
Shipped To TMA/RECRA <i>R 9.27.99</i>	Offsite Property No. <i>R 9.30.99 A990276 A99.0282</i>	Bill of Lading/Air Bill No. <i>4235 7952 9907 CT 0028</i>			
COA <i>R105D42800</i>					

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	Cool 4C	Cool 4C	None	None
	Type of Container	aG	aG	aG	<i>poly</i>
	No. of Container(s)	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	500mL <i>tube liner</i>

SAMPLE ANALYSIS				Chromium Hex - 7196	PCBs - 8080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions.
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Sample No.	Matrix *	Sample Date	Sample Time							
BOWCJ0	Soil	9.27.99	1405				X			Bowcjo
BOWCJ8	Soil	9.27.99	0950				X			Bowcjo
BOWCJ9 <i>R 9.30.99</i>	Soil	9.27.99	1310				X			Bowcjo

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By <i>R. Fahlberg</i>	Date/Time <i>1610 9-27-99</i>	Received By <i>Ref 1-B</i>	Date/Time <i>1610 9-27-99</i>
Relinquished By <i>Ref 1-B</i>	Date/Time <i>9-30-99 1000</i>	Received By <i>R. Fahlberg</i>	Date/Time <i>9-30-99</i>
Relinquished By <i>R. Fahlberg</i>	Date/Time <i>1430 9-30-99</i>	Received By <i>Fed Ex</i>	Date/Time <i>9-30-99</i>
Relinquished By <i>FedEx</i>	Date/Time <i>10-1-99 9:30</i>	Received By <i>TRU McGoldenberg</i>	Date/Time <i>10-1-99</i>
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Barium-133) | Isotopic Plutonium | Isotopic Uranium | Americium-241 | Carbon-14 | Nickel-63 | Technetium-99 |

All volume in poly liner, to be put in 60ml bottles & shipped to RECRA

2001022

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Beehnel Hayford Inc Date/Time received 10-1-99 9:30

CoC No. B99-075-19, 18,

Container I.D. No. SML-429A Requested TAT (Days) 21 P.O. Received Yes [] No []

INSPECTION

1. Custody seals on shipping container intact? Yes [] No [] N/A []
2. Custody seals on shipping container dated & signed? Yes [] No [] N/A []
3. Custody seals on sample containers intact? Yes [] No [] N/A []
4. Custody seals on sample containers dated & signed? Yes [] No [] N/A []
5. Cooler Temperature: _____ Packing material is: Wet [] Dry []
6. Number of samples in shipping container: 6
7. Number of containers per sample: _____ (Or see CoC)
8. Paperwork agrees with samples? Yes [] No []
9. Samples have: Tape [] Hazard labels [] Rad labels [] Appropriate sample labels []
10. Samples are: In good condition [] Leaking [] Broken Container [] Missing []
11. Describe any anomalies: _____

13. Was P.M. notified of any anomalies? Yes [] No [] Date _____
14. Received by M. Goldenberg Date: 10-1-99 Time: 9:30

LOGIN

TNU W.O. No. _____ Group No. _____ Client W.O. No. _____

PROGRAM MANAGER

Sample holding times exceeded? Yes [] No []

Client Notified: Name _____ Date/time _____

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Beecham Hazard Inc Date/Time received 10-1-99 9:30

CoC No. B99-075-20, 19

Container I.D. No. ERC 96-065 Requested TAT (Days) 21 P.O. Received Yes [] No []

INSPECTION

- 1. Custody seals on shipping container intact? Yes [] No [] N/A []
- 2. Custody seals on shipping container dated & signed? Yes [] No [] N/A []
- 3. Custody seals on sample containers intact? Yes [] No [] N/A []
- 4. Custody seals on sample containers dated & signed? Yes [] No [] N/A []
- 5. Cooler Temperature: _____ Packing material is: Wet [] Dry []
- 6. Number of samples in shipping container: 2
- 7. Number of containers per sample: 1 (Or see CoC _____)
- 8. Paperwork agrees with samples? Yes [] No []
- 9. Samples have: Tape [] Hazard labels [] Rad labels [] Appropriate sample labels []
- 10. Samples are: In good condition [] Leaking [] Broken Container [] Missing []
- 11. Describe any anomalies: _____

- 13. Was P.M. notified of any anomalies? Yes [] No [] Date _____
- 14. Received by M. Goldschberg Date: 10-1-99 Time: 9:30

LOGIN

TNU W.O. No. _____ Group No. _____ Client W.O. No. _____

PROGRAM MANAGER

Sample holding times exceeded? Yes [] No []

Client Notified: Name _____ Date/time _____

Appendix 5

Data Validation Supporting Documentation

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	105 DR FSB		DATA PACKAGE: HOSSI		
VALIDATOR:	TLI	LAB: TUV	DATE: 12/13/99		
CASE:	SDG: HOSSI				
ANALYSES PERFORMED					
<input type="checkbox"/> Gross Alpha/Beta	<input type="checkbox"/> Strontium-80	<input type="checkbox"/> Technetium-99	<input checked="" type="checkbox"/> Alpha Spectroscopy	<input checked="" type="checkbox"/> Gamma Spectroscopy	
<input type="checkbox"/> Total Uranium	<input type="checkbox"/> Radium-22	<input checked="" type="checkbox"/> Tritium	<input checked="" type="checkbox"/> U-235	<input checked="" type="checkbox"/> C-14	
SAMPLES/MATRIX	Bowc10	Bowc18	Bowc11	Bowc13	Bowc10
	Bowc14				
					Soil

1. Completeness N/A
 Technical verification forms present? Yes No N/A

Comments: _____

2. Initial Calibration N/A

Instruments/detectors calibrated within one year of sample analysis? Yes No N/A
 Initial calibration acceptable? Yes No N/A
 Standards NIST traceable? Yes No N/A
 Standards Expired? Yes No N/A

Comments: _____

3. Continuing Calibration N/A

Calibration checked within one week of sample analysis? . . . Yes No N/A

Calibration check acceptable? Yes No N/A

Calibration check standards NIST traceable? Yes No N/A

Calibration check standards expired? Yes No N/A

Comments: _____

4. Blanks N/A

Method blank analyzed? Yes No N/A

Method blank results acceptable? Yes No N/A

Analytes detected in method blank? Yes No N/A

Field blank(s) analyzed? Yes No N/A

Field blank results acceptable? Yes No N/A

Analytes detected in field blank(s)? Yes No N/A

Transcription/Calculation Errors? Yes No N/A

Comments: EU-154 & CO-60 MB over MDA (1235/gm)

C14- Bowckl CK3 - J

5. Matrix Spikes N/A

Matrix spike analyzed? Yes No N/A

Spike recoveries acceptable? Yes No N/A

Spike source traceable? Yes No N/A

Spike source expired? Yes No N/A

Transcription/Calculation Errors? Yes No N/A

Comments: IR C14- no MS J all

A-24

6. Laboratory Control Samples N/A

LCS analyzed? Yes No N/A

LCS recoveries acceptable? Yes No N/A

LCS traceable? Yes No N/A

Transcription/Calculation Errors? Yes No N/A

Comments: _____

7. Chemical Recovery N/A

Chemical carrier added? Yes No N/A

Chemical recovery acceptable? Yes No N/A

Chemical carrier traceable? Yes No N/A

Chemical carrier expired? Yes No N/A

Transcription/Calculation errors? Yes No N/A

Comments: _____

8. Duplicates N/A

Duplicates Analyzed? Yes No N/A

RPD Values Acceptable? Yes No N/A

Transcription/Calculation Errors? Yes No N/A

Comments: U 233/234 (2990 RPD) = J OK

9. Field QC Samples N/A

Field duplicate sample(s) analyzed? Yes No N/A

Field duplicate RPD values acceptable? Yes No N/A

Field split sample(s) analyzed? Yes No N/A

Field split RPD values acceptable? Yes No N/A

Performance audit sample(s) analyzed? Yes No N/A

Performance audit sample results acceptable? Yes No N/A

Comments: _____

10. Holding Times

Are sample holding times acceptable? Yes No N/A

Comments: _____

11. Results and Detection Limits (Levels D & E) N/A

Results reported for all required sample analyses? Yes No N/A

Results supported in raw data? Yes No N/A

Results Acceptable? Yes No N/A

Transcription/Calculation errors? Yes No N/A

MDA's meet required detection limits? Yes No N/A

Transcription/calculation errors? Yes No N/A

Comments: ~~J0 - CO-60, EU-154, EU-155, U238 (g), U235 (g) 155~~

~~J8 - CO-60, ~~EU-152~~, EU-152, EU-154, U238 (g), U235 (g) 155~~

~~K0 - EU-152, 154, U238 (g), U235 (g) 155~~

~~K1 - U238 (g) 155~~

K3 - CO-60, EU-154, U238, U235, 155

K4 - EU-152, EU-154, EU-155, ~~U238, 235~~

A-BL