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Date: 19 January 2000
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 105-DR FSB - Soil
Subject: Inorganics - Data Package No. H0544-RLN (SDG No. H0544)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H0544-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
BOWCJ6	9/23/99	Soil	C	See note 1
BOWCJ7	9/23/99	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) months for lead, 30 days for chromium VI and 28 days for mercury.

All holding times were acceptable.

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- **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 reported results for chromium VI exceeded the PQL for all samples. Under the BHI statement of work, no qualification is required. All other reported laboratory detection levels met the analyte specific PQL.

- **Completeness**

Data package No. H0544-RLN (SDG No. H0544) was submitted for validation and verified for completeness. The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

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

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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

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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: H0544	REVIEWER: TLI	DATE: 1/19/00	PAGE <u>1</u> OF <u>1</u>
COMMENTS: No qualifiers assigned.			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON

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Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

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Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 10/08/99

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

RECRA LOT #: 9909L190

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WCJ6	Mercury, Total	0.02	u MG/KG	0.02	1.0
		Lead, Total	3.0	u MG/KG	3.0	1.0
-002	B0WCJ7	Mercury, Total	0.01	u MG/KG	0.01	1.0
		Lead, Total	3.3	u MG/KG	3.3	1.0

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1/19/00

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Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 10/08/99

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

RECRA LOT #: 9909L190

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WCJ6	% Solids	95.7	%	0.01	1.0
		Chromium VI	0.42 u	MG/KG	0.42	1.0
-002	B0WCJ7	% Solids	94.6	%	0.01	1.0
		Chromium VI	0.42 u	MG/KG	0.42	1.0

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

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Virtual Laboratories Everywhere



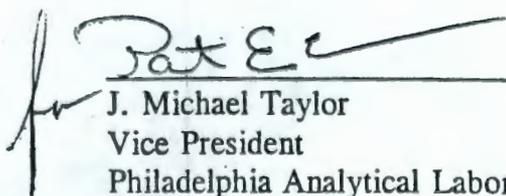
Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-075
RFW# : 9909L190
SDG# : H0544
SAF# : B99-075

W.O. # : 10985-001-001-9999-00
Date Received: 09-25-99

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

njpl09-190

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 11 pages.



Recra LabNet Philadelphia
Analytical Report
REVISION

Client : TNU-HANFORD B99-075
RFW# : 9909L190
SDG/SAF# : H0544/B99-075

W.O.# : 10985-001-001-9999-00
Date Received: 09-25-99

METALS CASE NARRATIVE

This narrative has been revised to correct the number of samples.

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 (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.
11. All duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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.

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

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1-6-00
Date



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CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-075-18

Page 1 of 1

Collector Fahlberg/Behnke	Company Contact Jason Adler	Telephone No. 373-4316	Project Coordinator TRENT, SJ	Price Code 8L	Data Turnaround 21 Days
Project Designation 105-DR FSD - Soil	Sampling Location 105 DR	SAF No. B99-075			
Ice Chest No. SML-465	Field Logbook No. EL-1281	Method of Shipment Fed Ex			
Shipped To EPA/RECRA 9-23-99	Offsite Property No. A990271	Bill of Lading/Air Bill No. 4235 7952 9790			
COA: R105D4 2800					

POSSIBLE SAMPLE HAZARDS/REMARKS

COPY

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	500mL				

Special Handling and/or Storage

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						
B0WCJ6	Soil	9-23-99	0852	X	X	X							B0WCJ6
B0WCJ7	Soil	9-23-99	0852	X	X	X							B0WCJ7
B0WCJ8	Soil	9-23-99											
B0WCJ9	Soil	9-23-99											

CHAIN OF POSSESSION

Sign/Print Names

SPECIAL INSTRUCTIONS

Matrix *

Relinquished By <i>[Signature]</i>	Date/Time 1400 9-23-99	Received By <i>[Signature]</i>	Date/Time 1400 9-23-99
Relinquished By Prof I-C	Date/Time 9-24-99 0755	Received By Cherie	Date/Time 9-24-99 0755
Relinquished By Cherie	Date/Time 9-24-99 1400	Received By FEDEX	Date/Time 9-24-99 1400
Relinquished By FedEx	Date/Time 9-25-99 1000	Received By TJ Murray	Date/Time 9-25-99 1000

(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 COC

- Soil
- Water
- Vapor
- Other Solid
- Other Liquid

LABORATORY SECTION	Received By <i>[Signature]</i>	Title TJ Murray	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

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Appendix 5

Data Validation Supporting Documentation

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INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	105 DR F3B		DATA PACKAGE: H0544		
VALIDATOR:	TLI	LAB: Recpt	DATE: 12/13/99		
CASE:			SDG: H0544		
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"/> CKVI	<input type="checkbox"/>
SAMPLES/MATRIX	Bowc76		Bowc77		
	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: _____

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: CRDL _____

Date: 19 January 2000
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 105-DR FSB - Soil
Subject: PCB - Data Package No. H0544-RLN (SDG No. H0544)

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. H0544-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
BOWCJ6	9/23/99	Soil	C	EPA 8082*
BOWCJ7	9/23/99	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

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"

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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".

Holding times were met for all samples.

- **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 100% 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.

Due to the lack of a matrix spike/matrix spike duplicate analysis, all PCB results were qualified as estimates and flagged "J".

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.

All 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.

Due to the lack of a matrix spike/matrix spike duplicate analysis, all PCB results were qualified as estimates and flagged "J".

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 105DR PQLs to ensure that laboratory detection levels meet the required criteria. All requested analytes met the analyte specific PQL.

- **Completeness**

Data Package No. H0544-RLN (SDG No. H0544) was submitted for validation and verified for completeness. The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

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MINOR DEFICIENCIES

Due to the lack of a matrix spike/matrix spike duplicate analysis, all PCB 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

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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).

Appendix 2
Summary of Data Qualification

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DATA QUALIFICATION SUMMARY

SDG: H0544	REVIEWER: TLI	DATE: 1/19/00	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
All	J	All	No MS/MSD analysis

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Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

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Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 10/16/99 13:26

RFW Batch Number: 9909L190

Client: TNU-HANFORD B99-075

Work Order: 10985001001 Page: 1

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Sample Information	Cust ID:	B0WCJ6	B0WCJ7	PBLKWH	PBLKWH BS
RFW#:	001	002	99LE1208-MB1	99LE1208-MB1	
Matrix:	SOIL	SOIL	SOIL	SOIL	
D.F.:	1.00	1.00	1.00	1.00	
Units:	UG/KG	UG/KG	UG/KG	UG/KG	
Surrogate:	Tetrachloro-m-xylene	110 %	102 %	112 %	115 %
	Decachlorobiphenyl	90 %	82 %	103 %	106 %
		fl	fl	fl	fl
Aroclor-1016	35 U J	35 U J	33 U	33 U	
Aroclor-1221	69 U	70 U	67 U	67 U	
Aroclor-1232	35 U	35 U	33 U	33 U	
Aroclor-1242	35 U	35 U	33 U	33 U	
Aroclor-1248	35 U	35 U	33 U	33 U	
Aroclor-1254	35 U	35 U	33 U	83 %	
Aroclor-1260	35 U	35 U	33 U	33 U	

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W-18-99

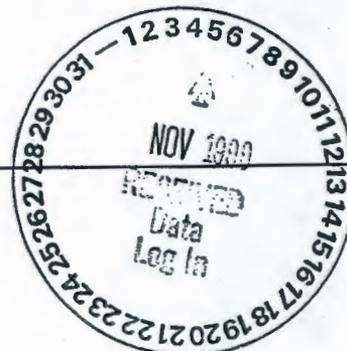
12/15/99

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

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

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**Recra LabNet Philadelphia
Analytical Report**

Client: TNU-HANFORD B99-075
RFW#: 9909L190
SDG/SAF#: H0544/B99-075

W.O.#: 10985-001-001-9999-00
Date Received: 09-25-99

PCB

The set of samples consisted of two (2) soil samples collected on 09-23-99.

The samples and their associated QC samples were extracted on 10-06-99 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 10-11,12-99. 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 extraction and analysis have been met.
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. Due to insufficient sample volume, matrix spike QC could not be performed on any samples in this data set. However, blank spike QC were performed with these samples to demonstrate that systems were in control. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
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
J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-20-99
Date

pefr:\group\data\pest\09L-190.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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Recra LabNet Philadelphia Sample Discrepancy Report (SDR) SDR #:

99EX087

Initiator: Bernard Foley RFW Batch: 9909190
 Date: 10/6/99 Samples: 1,2
 Client: TW Method: SW846/MCAWW/CLP/
H0544

Parameter: PCB
 Matrix: S
 Prep Batch: 99LE1208

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)

No ms, mtd performed

2. Known or Probable Causes(s)

insufficient sample volume

3. Discussion and Proposed Action Other Description: _____

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

[Signature]

4. Project Manager Instructions...signature/date: [Signature] 10/6/99

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] 10/6/99 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 type="checkbox"/>	<input checked="" type="checkbox"/> Initiator	<input type="checkbox"/>	<input type="checkbox"/> Metals: Doughty
<input type="checkbox"/>	<input checked="" type="checkbox"/> Lab Manager: M. Taylor	<input type="checkbox"/>	<input type="checkbox"/> Inorganic: Perrone
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Project Mgr. Stone/Carey/Schrenkel/Johnson	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> GC/LC: Schnell
<input type="checkbox"/>	<input checked="" type="checkbox"/> Section Mgr. Wesson/Daniels	<input type="checkbox"/>	<input type="checkbox"/> MS: LeMin/Taylor
<input type="checkbox"/>	<input checked="" type="checkbox"/> QA (file): Racioppi	<input type="checkbox"/>	<input type="checkbox"/> Log-in: Toder
<input type="checkbox"/>	<input type="checkbox"/> Data Management: Feldman	<input type="checkbox"/>	<input type="checkbox"/> Admin: Soos
<input type="checkbox"/>	<input type="checkbox"/> Sample Prep: Schnell/Doughty/Kauffman	<input type="checkbox"/>	<input type="checkbox"/> Other: _____

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-075-18

Page 1 of 1

Collector Fahlberg/Behnke	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. SML-465	Offsite Property No. A990271	Method of Shipment FedEx			
Shipped To EPA/RECRA 9-23-99	Bill of Lading/Air Bill No. 4235 7952 9790		COA R105D4 2800		

POSSIBLE SAMPLE HAZARDS/REMARKS

copy

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

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 (I) in Special Instructions				
B0WCJ6	Soil	9-23-99	0852	X	X	X					B0WCJ6
B0WCJ7	Soil	9-23-99	0852	X	X	X					B0WCJ7
B0WCJ8	Soil	9-23-99									
B0WCJ9	Soil	9-23-99									

CHAIN OF POSSESSION

Sign/Print Names

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

Relinquished By Fahlberg	Date/Time 9-23-99 1400	Received By REC 1-C	Date/Time 9-23-99 1400
Relinquished By REC 1-C	Date/Time 9-24-99 0755	Received By Chiu	Date/Time 9-24-99 0755
Relinquished By Chiu	Date/Time 9-24-99 1400	Received By FEDEX	Date/Time 9-24-99 1400
Relinquished By FedEx	Date/Time 9-25-99 1000	Received By TJ Murray	Date/Time 9-25-99 1000

COLLECTOR UNAVAILABLE TO SIGN COC

LABORATORY SECTION

Received By _____ Title _____ Date/Time _____

FINAL SAMPLE

Disposal Method _____ Disposed By _____ Date/Time _____

000075

Appendix 5
Data Validation Supporting Documentation

000016

PESTICIDE/PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	105 DR PSB		DATA PACKAGE: H0544		
VALIDATOR:	LAB: RECRA		DATE: 12/13/99		
CASE:	SDG: H0544				
ANALYSES PERFORMED					
<input type="checkbox"/> CLP3/90	<input type="checkbox"/> SW-846 8080	<input type="checkbox"/> SW-846 8081	<input checked="" type="checkbox"/> 8082	<input type="checkbox"/>	<input type="checkbox"/>
SAMPLES/MATRIX	BowcJ6		BowcJ7		
So.1					

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: _____

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**

A-5

000017

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**

ABC

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

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: I all No MS

AKC

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: No MS/MSD J - all

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: _____

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Date: 19 January 2000
To: Bechtel Hanford, Inc. (technical representative)
From: TechLaw, Inc.
Project: 105-DR FSB - Soil
Subject: Radiochemistry - Data Package No. H0544-TNU (SDG No. H0544)

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. H0544-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
BOWCJ6	9/23/99	Soil	C	See note 1
BOWCJ7	9/23/99	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.

Due to the sample not being analyzed with the SDG, the americium-241 (aspec) results in sample BOWCJ7 was qualified as an estimate and flagged "J".

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All other 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 result in sample B0WCJ6 was qualified as an estimate and flagged "J".

All other laboratory blank results were acceptable.

- **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

000002

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.

Due to RPDs of 44%, the radium-228 and thorium-232 results were qualified as estimates and flagged "J".

All duplicate results were acceptable.

- **Detection Levels**

Reported analytical detection levels are compared against the 105DR PQLs to ensure that laboratory detection levels meet the required criteria. All reported laboratory MDAs were at or below the analyte-specific PQL.

- **Completeness**

Data Package No. H0544 (SDG No. H0544) was submitted for validation and verified for completeness. The completion rate was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to the lack of a matrix spike analysis, all carbon-14 results were qualified as estimates and flagged "J". Due to the sample not being analyzed with the SDG, the americium-241 (aspec) results in sample BOWCJ7 was qualified as an estimate and flagged "J". Due to laboratory blank contamination, the carbon-14 result in sample BOWCJ6 was qualified as an estimate and flagged "J". Due to RPDs of 44%, the radium-228 and thorium-232 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

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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: H0544	REVIEWER: TLI	DATE: 1/19/00	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Americium-241	J	B0WCJ7	Not analyzed with the SDG
Carbon-14	J	B0WCJ6	Blank contamination
Radium-228, radium-232	J	All	RPD
Carbon-14	J	All	No MS analysis

000008

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

000009

Project: BECHTEL-HANFORD																					
Laboratory: TNU																					
Case		SDG: H0544																			
Sample Number		B0WCJ6		B0WCJ7																	
Location		A		A																	
Remarks																					
Sample Date		09/23/99		09/23/99																	
Radiochemistry	CRDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Carbon-14	50	12.2	J	3.77	UJ																
Technetium-99	15	1.01		-0.043	U																
Uranium-233/234	1	0.362		0.315																	
Uranium-235	1	0.044	U	0.010	U																
Uranium-238	1	0.338		0.354																	
Plutonium-238	1	0	U	0.006	U																
Plutonium-239/40	1	0.130		0.019	U																
Nickel-63	30	0.634		0.493	U																
Americium-241	1	0.010	U	0.027	UJ																
Potassium-40		7.61		11.0																	
Barium-133			U U		U U																
Cobalt 60	0.1		U U		U U																
Cesium 137	0.1	1.23		3.03																	
Europium 152	0.2		U U	0.214																	
Europium 154	0.2		U U		U U																
Europium 155	0.1		U U		U U																
Radium-226		0.318			U U																
Radium-228		0.388	J		U UJ																
Thorium-228		0.366			U U																
Thorium-232		0.388	J		U UJ																
Americium-241 (GEA)			U U		U U																
Uranium-238 (GEA)			U U		U U																
Uranium-235 (GEA)			U U		U U																

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TMA / RICHMOND
SAMPLE DELIVERY GROUP H0544

N909210-01

BOWCJ6

DATA SHEET

SDG <u>7224</u>	Client/Case no <u>Hanford</u>	SDG <u>H0544</u>
Contact <u>Kevin C. Johnson</u>	Contract <u>TRB-SBB-207925</u>	
Lab sample id <u>N909210-01</u>	Client sample id <u>BOWCJ6</u>	
Dept sample id <u>7224-001</u>	Location/Matrix <u>105 DR:</u>	<u>SOLID</u>
Received <u>09/29/99</u>	Collected <u>09/23/99 08:52</u>	
% solids <u>95.6</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	12.2	2.8	4.2	50	J	C
Technetium 99	14133-76-7	1.01	0.30	0.50	15	J	TC
Uranium 233/234	U-233/234	0.362	0.13	0.092	1.0	J	U
Uranium 235	15117-96-1	0.044	0.059	0.11	1.0	U	U
Uranium 238	U-238	0.338	0.13	0.092	1.0	A	U
Plutonium 238	13981-16-3	0	0.024	0.056	1.0	U	PU
Plutonium 239/240	PU-239/240	0.130	0.060	0.056	1.0	A	PU
Nickel 63	13981-37-8	0.634	1.7	2.8	30	U	NI_L
Americium 241	14596-10-2	0.010	0.031	0.049	1.0	U	AM
Potassium 40	13966-00-2	7.61	0.46	0.24			GAM
Barium 133	13981-41-4	U		0.024		UX	GAM
Cobalt 60	10198-40-0	U		0.026	0.050	U	GAM
Cesium 137	10045-97-3	1.23	0.045	0.028	0.10		GAM
Europium 152	14683-23-9	U		0.071	0.10	U	GAM
Europium 154	15585-10-1	U		0.072	0.10	U	GAM
Europium 155	14391-16-3	U		0.054	0.10	U	GAM
Radium 226	13982-63-3	0.318	0.052	0.048	0.10		GAM
Radium 228	15262-20-1	0.388	0.099	0.10	0.20	J	GAM
Thorium 228	14274-82-9	0.366	0.029	0.030			GAM
Thorium 232	TH-232	0.388	0.099	0.10		J	GAM
Americium 241	14596-10-2	U		0.058		U	GAM
Uranium 238	U-238	U		2.9		U	GAM
Uranium 235	15117-96-1	U		0.081		U	GAM

105-DR FSB-Soil

Handwritten signature
11/19/00

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>10/28/99</u>

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TMA / RICHMOND
SAMPLE DELIVERY GROUP H0544

N909210-02

B0WCJ7

DATA SHEET

SDG <u>7224</u>	Client/Case no <u>Hanford</u>	SDG <u>H0544</u>
Contact <u>Kevin C. Johnson</u>	Contract <u>TRB-SBB-207925</u>	
Lab sample id <u>N909210-02</u>	Client sample id <u>B0WCJ7</u>	
Dept sample id <u>7224-002</u>	Location/Matrix <u>105 DR.</u>	<u>SOLID</u>
Received <u>09/29/99</u>	Collected <u>09/23/99 08:52</u>	
% solids <u>95.6</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	3.77	2.8	4.5	50	U J	C
Technetium 99	14133-76-7	-0.043	0.34	0.98	15	U	TC
Uranium 233/234	U-233/234	0.315	0.11	0.075	1.0	U	U
Uranium 235	15117-96-1	0.010	0.038	0.073	1.0	U	U
Uranium 238	U-238	0.354	0.11	0.060	1.0	U	U
Plutonium 238	13981-16-3	0.006	0.025	0.048	1.0	U	PU
Plutonium 239/240	PU-239/240	0.019	0.025	0.047	1.0	U	PU
Nickel 63	13981-37-8	0.493	1.3	2.2	30	U	NI_L
Americium 241	14596-10-2	0.027	0.037	0.051	1.0	U J	AM
Potassium 40	13966-00-2	11.0	6.6	0.43			GAM
Barium 133	13981-41-4	U		0.042		UX	GAM
Cobalt 60	10198-40-0	U		0.044	0.050	U	GAM
Cesium 137	10045-97-3	3.03	0.083	0.052	0.10		GAM
Europium 152	14683-23-9	0.214	0.079	0.11	0.10		GAM
Europium 154	15585-10-1	U		0.12	0.10	U	GAM
Europium 155	14391-16-3	U		0.084	0.10	U	GAM
Radium 226	13982-63-3	U		0.096	0.10	U	GAM
Radium 228	15262-20-1	U		0.21	0.20	U J	GAM
Thorium 228	14274-82-9	U		0.075		U J	GAM
Thorium 232	TH-232	U		0.21		U J	GAM
Americium 241	14596-10-2	U		0.039		U	GAM
Uranium 238	U-238	U		4.7		U	GAM
Uranium 235	15117-96-1	U		0.14		U	GAM

105-DR FSB-Soil

pc
1/19/00

DATA SHEETS

Page 2

SUMMARY DATA SECTION

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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>10/28/99</u>

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000013

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0544 is composed of two solid (soil) samples designated under SAF No. B99-075 with a Project Designation of: 105-DR FSB-Soil.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the TNU Sample Receipt Checklist. The finalized results were reported to BHI via fax on October 21, 1999 with the exception of Americium-241 and Carbon-14 data, which was forwarded on October 28, 1999.

2.0 ANALYSIS NOTES

2.1 Gamma Scan Analyses

No problems were encountered during the course of the analyses.

2.2 Americium-241 Analyses

No problems were encountered during the course of the analyses. A recount was performed for sample B0WCJ7.

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.

2.6 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.7 Carbon-14 Analyses

The results of the original and duplicate analyses were not a good match however both sample results were less than the required detection limit.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-075-18

Page 1 of 1

Collector Fahlberg/Behnke	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. ERC-99-011	Offsite Property No. A990272	Method of Shipment FedEx			
Shipped To TMA/RECRA 9-23-99	Bill of Lading/Air Bill No. 4235 7952 9789		COA R05 9-23-99 D4 2800		

POSSIBLE SAMPLE HAZARDS/REMARKS 9/20/99 SDG # SDBTE HRS44 Special Handling and/or Storage	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	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							
BOWCJ6	Soil	9-23-99	0852				X		POW CDO	
BOWCJ7	Soil	9-23-99	0852				X		POW CDO	
BOWCJ8	Soil	9-23-99	0852							
BOWCJ9	Soil	9-23-99	0852							

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By <i>[Signature]</i>	Date/Time 1400 9-23-99	Received By Ref 1-C	Date/Time 1400 9-23-99
Relinquished By Ref 1-C	Date/Time 9-24-99 0755	Received By C. Mue	Date/Time 9-24-99 0755
Relinquished By C. Mue	Date/Time 9-24-99 1400	Received By FEDEX	Date/Time 9-24-99 1400
Relinquished By FedEx	Date/Time 9-25-99 1000	Received By J. Murray	Date/Time 9-25-99 1000
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 FOR
 10:00
 RECEIVED: TNV M. Goldenberg 9-29-99

00679

Appendix 5

Data Validation Supporting Documentation

000016

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 10SDR FSB			DATA PACKAGE: H0544		
VALIDATOR: TLI		LAB: ReCRA		DATE: 12/13/99	
CASE:			SDG: H0544		
ANALYSES PERFORMED					
<input type="checkbox"/> Gross Alpha/Beta	<input type="checkbox"/> Strontium-90	<input checked="" 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 type="checkbox"/> Tritium	<input checked="" type="checkbox"/> RCI4	<input checked="" type="checkbox"/> NI-63	
SAMPLES/MATRIX BowcJ6 BowcJ7					
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: C14 - J C16

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 J C14

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: PA 228 4470 thorium 232 J (4470 RPD)

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: _____

Bowc 7 AM 241 - not run w/SDG

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: EU 155 - J6 ~~U 235 - J7~~

~~U 235 - J6~~ ~~U 235 - J7~~

~~U 235 - J6~~ EU 155 - J7

EU 154/152 / 1

CS 137