

0051495

Date: 25 September 1998
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 105-C Phase I & II - Soil Samples
Subject: Inorganics - Data Package No. H0140-RLN (SDG No. H0140)

INTRODUCTION

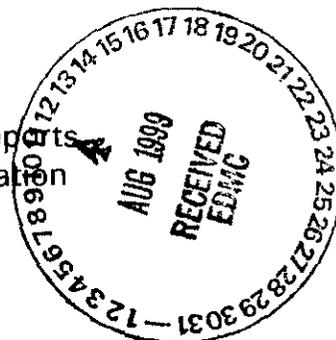
This memo presents the results of data validation on Data Package No. H0140-RLN prepared by Recla LabNet (RLN). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
BON838	3/5/98	Soil	C	See Note 1

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

Data validation was conducted in accordance with the BHI validation statement of work. 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 chromium mercury and ICP 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 ICP metals; 30 days for chrome 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 (in ug/L) 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 75% to 125%. 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 74% and a sample result less than the IDL are qualified "UJ". Samples with a spike recovery of greater than 125% or less than 75% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a spike recovery greater than 125% and a sample result less than the IDL, no qualification is required.

Due to matrix spike recoveries below QC limits, all lead results were rejected and flagged "R".

All other matrix spike recovery 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 35% 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 20% 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".

Due to laboratory duplicate outside QC limits, all lead results were qualified as estimates and flagged "J".

All other laboratory duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against CRDLs to ensure that laboratory detection levels meet the required criteria. All reported laboratory detection levels met the analyte specific CRDL.

- **Completeness**

Data package No. H0140-RLN (SDG No. H0140) was submitted for validation and verified for completeness. The completion percentage was 66.7%.

MAJOR DEFICIENCIES

Due to matrix spike recoveries below QC limits, all lead results were rejected and flagged "R". Rejected data is unusable and should not be reported.

MINOR DEFICIENCIES

Due to laboratory duplicate outside QC limits, all lead 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.

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: H0140	REVIEWER: TLI	DATE: 9/25/98	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Lead	R	All	MS/MSD recovery
Lead	J	All	RPD outside QC limits

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Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

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Recra LabNet - Glenville

INORGANIC DATA SUMMARY PRINT: 04/01/98

CLIENT: TRU-HANFORD

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

RECRA LOT #: 9801019

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	BON838	Mercury, Total	0.02	µg	0.02	1.0
		Lead, Total	492	µg	0.25	1.0

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9/21/98

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Petra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 04/28/98

CLIENT: TNU-HANFORD

RECRA LOT #: 9803L919

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	BON838	% Solids	94.3	%	0.01	1.0
		Chromium VI	0.85 u	MG/KG	0.85	1.0

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9/21/98
KLB

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

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**Recra LabNet Philadelphia
Analytical Report**

Client : TNU-HANFORD
RFW# : 9803L919

W.O.# : 10985-001-001-9999-00
Date Received: 03-13-98

METALS CASE NARRATIVE

1. This narrative covers the analyses of 1 soil sample.
2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. The cooler temperature has been recorded on the Chain of Custody.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within control limits.
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits.
7. All preparation/method blanks were within method criteria. 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. The matrix spike (MS) and matrix spike duplicate (MSD) recoveries for 1 analyte was outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.
11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration levels, due to high concentrations of the following analytes:

<u>Sample ID</u>	<u>Element</u>	<u>PDS Concentration (ppb)</u>	<u>PDS % Recovery</u>
BON838	Lead	2500	94.2

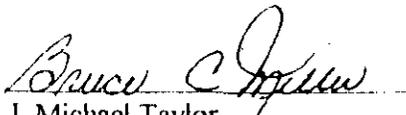
12. All MSs and MSDs were within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Matrix Spike Duplicate Report.

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13. The duplicate analyses for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
14. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

JM

J. Michael Taylor
Vice President and Laboratory Manager
Lionville Analytical Laboratory
pefm03-919

5-1-98
Date

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Virtual Laboratories Everywhere

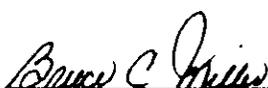
Recra LabNet Philadelphia Analytical Report

Client : TNU-HANFORD
RFW# : 9803L919
SDG# : H0140

W.O. # : 10985-001-001-9999-00
Date Received: 03-13-98

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 1 soil sample.
2. The sample was prepared and analyzed in accordance with the methods 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 blanks were within method criteria.
6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS was within the 20% Relative Percent Difference (RPD) control limit.
7. The matrix spike recoveries were within the 75-125% control limits. The matrix spike duplicate was within the 20% RPD control limit.
8. The replicate analysis was within the 20% RPD control limit.
9. Results for solid samples are reported on a dry weight basis.


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

5-4-98
Date

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njl:03-919

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.

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Collector Doug Bryant	Company Contact Steve Marske	Telephone No. 373-4316	Project Coordinator WEISS, RL	Data Turnaround 15 Days
Project Designation 105-C Phase I & Phase II - Soil Samples	Sampling Location 105-C	SAF No. B98-062		
Ice Chest No.	Field Logbook No.	Method of Shipment .Fed-X		
Shipped To TMA/WESTON	Offsite Property No.	Bill of Lading/Air Bill No.		

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	Cool 4C	None	None						
	Type of Container	a0	ag	ag	ag					
	No. of Container(s)	10	10	1						
	Special Handling and/or Storage Cool 4C	Volume	250g	250g	1500g 1000 ml					
SAMPLE ANALYSIS		PCBs - 8080 (Aroclor-1254)	See item (1) in Special Instructions.	See item (2) in Special Instructions.						
SDG H0140										

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Sample No.	Matrix *	Sample Date	Sample Time							
B0N838	Soil	3/5/98	0935	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By <i>R. F. Hillberg</i>	Date/Time 0930	Received By <i>Fed. Ex.</i>
Relinquished By <i>R. F. Hillberg</i>	Date/Time 3-11-98	Received By <i>[Signature]</i>
Relinquished By	Date/Time	Received By
Relinquished By	Date/Time	Received By
Relinquished By	Date/Time	Received By
LABORATORY SECTION	Received By	Title
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By

(1) ICP Metals - 6010A (Supertrace) (Lead); Mercury - 7471 - (CV); Chromium Hex - 7196
 (2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155);
 Isotopic Plutonium; Isotopic Uranium; Americium-241; Bismuth-210; Carbon-14; Nickel-63;
 Strontium-89,90 - Total Sr; Technetium-99; Activity Scan

Full sample volume in one 1L container. Lab to divide sample as needed.

See 3/12/98 file for matrix

- SE - Soil
- SO - Sediment
- SL - Solid
- SL - Sludge
- W - Water
- O - Oil
- A - Air
- DS - Drum Solids
- DL - Drum Liquids
- T - Tissue
- W1 - Wipe
- L - Liquid
- V - Vegetation
- X - Other

Appendix 5

Data Validation Supporting Documentation

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INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	105-c ph 1-2		DATA PACKAGE: H0140		
VALIDATOR:	HLI	LAB:	TUN	DATE: 9/13/98	
CASE:			SDG: H0140		
ANALYSES PERFORMED					
<input type="checkbox"/> CLP/ICP	<input type="checkbox"/> CLP/GFAA	<input checked="" type="checkbox"/> CLP/Hg	<input type="checkbox"/> CLP/Cyanide	<input checked="" type="checkbox"/> CR/II	<input type="checkbox"/>
<input checked="" type="checkbox"/> SW-846/ICP	<input type="checkbox"/> SW-846/GFAA	<input type="checkbox"/> SW-846/Hg	<input type="checkbox"/> SW-846 Cyanide	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SAMPLES/MATRIX					
BONETS Lead + mercury					
solid					

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: Lead detected in blank - No qual req

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: Lead B - all (-540)

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: leaf - J

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: _____

Recra LabNet Lionville

INORGANICS PRECISION REPORT 04/01/98

CLIENT: TNU-HANFORD

RECRA LOT #: 9803LR19

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

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION FACTOR (REP)
			RESULT	REPLICATE	RPD	
001REP	BON838	Mercury, Total	0.02u	0.02u	ND	1.0
		Lead, Total	442	146	100.0	1.0

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Recre LabNet - Lionville

INORGANIC ACCURACY REPORT 04/01/98

CLIENT: THU-HANFORD

RECRA LOT #: 98040919

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	RECORD	DILUTION FACTOR (SPK)
-001	BON838	Mercury, Total	0.18	0.02u	0.18	0.02	1.0
		Mercury, Total MSD	0.17	0.02u	0.18	0.02	1.0
		Lead, Total	530	442	530	442	1.0
		Lead, Total MSD	530	442	530	442	1.0

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007 *[Signature]*

<h1>Review Comment Record (RCR)</h1>	1. Date 9/28/98	2. Review No. BHI/QA98010
	3. Project 105-C Phase II	4. Page Page 1 of 1

5. Document Number(s)/Title(s) WO2414 – QES (SDG No. WO2414)	6. Program/Project/ Building Number 105-C Phase II Verification Sampling – Concrete	7. Reviewer Claude Stacey	8. Organization/Group BHI/QA	9. Location/Phone H0-16/372-9208
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17. Comment Submittal Approval: _____ 10. Agreement with indicated comment disposition(s) _____ 11. CLOSED

Organization Manager (Optional)

Date

Reviewer/Point of Contact

Date

Reviewer/Point of Contact

Author/Originator

Author/Originator

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	All: Pages need paginated.			
2				
3				

<h1>Review Comment Record (RCR)</h1>	1. Date 9/28/98	2. Review No. BHI/QA98011
	3. Project 105-C Phase I and II	4. Page Page 1 of 1

5. Document Number(s)/Title(s) H0140 - RLN (SDG No. H0140)	6. Program/Project/ Building Number 105-C Phase I and II Soil Samples	7. Reviewer Claude Stacey	8. Organization/Group BHI/QA	9. Location/Phone H0-16/372-9208
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17. Comment Submittal Approval: _____ 10. Agreement with indicated comment disposition(s) _____ 11. CLOSED

Organization Manager (Optional)

Date

Reviewer/Point of Contact

Date

Reviewer/Point of Contact

Author/Originator

Author/Originator

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	PCB: The table states the analysis method was 8080; whereas, the lab narrative states the method was 8081.			
2	All: Pages need paginated			
3				

<h1>Review Comment Record (RCR)</h1>	1. Date 9/28/98	2. Review No. BHI/QA98009
	3. Project 216-A-29 Ditch	4. Page Page 1 of 1

5. Document Number(s)/Title(s) H0165-RLN (SDG No. HO165)	6. Program/Project/ Building Number 216-A-29 Ditch - Water	7. Reviewer Claude Stacey	8. Organization/Group BHI/QA	9. Location/Phone H0-16/372-9208
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17. Comment Submittal Approval: 10. Agreement with indicated comment disposition(s) 11. CLOSED

_____ Organization Manager (Optional) _____ Reviewer/Point of Contact _____ Reviewer/Point of Contact
 _____ Date _____ Date

_____ Author/Originator _____ Author/Originator

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	PCB: The table in the Introduction under analysis states to see Note 1. There is no Note 1. In addition the Chain of Custody calls for the analysis to be by method 8080; whereas, the laboratory narrative states method 8081 was used.			
2	Radiochemistry: The laboratory narrative and the "Radiochemistry Data Validation Checklist" states the sample matrix to be soil; whereas, the matrix was water.			
3	All: Pages need paginated			

Date: 25 September1998
To: Bechtel Hanford, Inc. (technical representative)
From: TechLaw, Inc.
Project: 105-C Phase I & II - Soil Samples
Subject: Radiochemistry - Data Package No. H0140-TNU (SDG No. H0140)

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. H0140-TNU which was prepared by Thermo NUtec (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
BOP838	3/5/98	Soil	C	See note 1

1 - Gamma spectroscopy; carbon-14; nickel-63; technetium-99; isotopic uranium, americium and plutonium; and strontium-90.

Data validation was conducted in accordance with the BHI validation statement of work (BHI 1997). 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.

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- **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 elevated to the MDA and qualified as undetected and flagged "U"; sample results above the MDA and greater than five times the highest blank concentration are not qualified.

All 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 recovery range is 70% to 130%, while that for a matrix spike is 60% to 140%. 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 and nickel-63 sample 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 35 percent for soil samples and 20 percent for water samples, 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

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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 an RPD outside QC limits, all cesium-137 results were qualified as estimates and flagged "J".

All other duplicate results were acceptable.

- **Detection Levels**

Reported laboratory detection levels are reviewed to ensure that they are at or below the contract required MDA. All reported MDAs were at or below the analyte-specific CRDL.

- **Completeness**

Data Package No. H0140 (SDG No. H0140) was submitted for validation and verified for completeness. The completion rate was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to an RPD outside QC limits, all cesium-137 results were qualified as estimates and flagged "J". Due to the lack of a matrix spike analysis, all carbon-14 and nickel-63 sample 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.

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Appendix 1

Glossary of Data Reporting Qualifiers

000004

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.

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Appendix 2

Summary of Data Qualification

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Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

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Project: BECHTEL-HANFORD																			
Laboratory: TNU																			
Case		SDG: H0140																	
Sample Number		B0N838																	
Location		Location 3																	
Remarks																			
Sample Date		03/05/98																	
Radiochemistry	CRDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Technetium-99	15	0.58	U																
Uranium-233/234	1	0.47																	
Uranium-235	1	0.023																	
Uranium-238	1	0.45																	
Plutonium-238	1	0.024	U																
Plutonium-239/240	1	0.73																	
Americium 241	1	0.23																	
Total Strontium	1	5.7																	
Carbon 14	50	-0.27	UJ																
Nickel 63	30	9.2	J																
Potassium 40	N/A	11																	
Cobalt 60	0.05	1.1																	
Cesium 137	0.1	75	J																
Europium 152	0.1	U	U																
Europium 154	0.1	U	U																
Europium 155	0.1	U	U																
Radium 226	0.1	0.4																	
Radium 228	0.2	0.79																	
Thorium 228	N/A	0.74																	
Thorium 232	N/A	0.79																	
Americium 241 GEA	N/A	U	U																
Uranium 238 GEA	N/A	U	U																

000000

N/A = Not Applicable

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0140

N803036-01

B0N838

DATA SHEET

SDG 7474 Client/Case no Westinghouse Hanford SDG H0140
Contact N. Joseph Verville Case no TRB-SBB-207925

Lab sample id N803036-01 Client sample id B0N838
Dept sample id 7474-001 Location/Matrix 105-C SOLID
Received 03/12/98 Collected 03/05/98 09:35
Custody/SAF No B98-062

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Technetium 99	14133-76-7	0.58	0.24	<u>0.59</u>	0.50	U	TC
Uranium 233/234	U-233/234	0.47	0.059	0.017	0.30		U
Uranium 235	15117-96-1	0.023	0.015	0.015	0.30	J	U
Uranium 238	U-238	0.45	0.056	0.012	0.30		U
Plutonium 238	13981-16-3	0.024	0.032	0.049	0.050	U	PU
Plutonium 239/240	15117-48-3	0.73	0.11	0.025	0.050		PU
Americium 241	14596-10-2	0.23	0.062	<u>0.054</u>	0.050		AM
Total Strontium	SR-89/90	5.7	0.32	<u>0.18</u>	1.0		SR
Carbon 14	14762-75-5	-0.27	2.4	4.0	50	UJ	C
Nickel 63	13981-37-8	9.2	1.9	2.8	20	UJ	NI_L
GAMMA SCAN ANALYTES		U					
Potassium 40	13966-00-2	11	1.2				GAM
Cobalt 60	10198-40-0	1.1	0.13		0.050		GAM
Cesium 137	10045-97-3	75	0.62		0.050	J	GAM
Europium 152	14683-23-9	U		<u>0.66</u>	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.29</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.34</u>	0.10	U	GAM
Radium 226	13982-63-3	0.40	0.22		0.10		GAM
Radium 228	15262-20-1	0.79	0.41		0.20		GAM
Thorium 228	14274-82-9	0.74	0.23				GAM
Thorium 232	7440-29-1	0.79	0.41				GAM
Americium 241	14596-10-2	U		0.21		U	GAM
Uranium 238	U-238	U		12		U	GAM

000010

DATA SHEETS

Page 1

SUMMARY DATA SECTION

Page 15

Lab id TMANC
Protocol WHC-HASM-1
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 04/03/98

9/2/98

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000011

Case Narrative

1.0 GENERAL

Thermo Nutech Sample Delivery Group H0140 is comprised of the single solid sample designated as SAF No. B98-062 delivered under project designation 105-C Phase I & II - Soil Samples.

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

2.0 ANALYSIS NOTES

2.1 Carbon-14 Analyses

No problems were encountered with the analyses.

2.2 Nickel-63 Analyses

The RPD in the results of the duplicate and original were significantly different that reanalysis was necessary. The reanalysis results for the sample and its duplicate were acceptable.

2.3 Total Strontium Analyses

No problems were encountered with the analyses.

2.4 Technetium-99 Analyses

The sample aliquot was reduced to 1g from 2g for ease of handling the analysis in an expeditious manner. As a consequence of the reduced aliquot the sample MDA was slightly greater than RDL. Technetium activity at the sample MDA was detected.

2.5 Isotopic Uranium Analyses

No problems were encountered with the analyses.

2.6 Isotopic Plutonium Analyses

No problems were encountered with the analyses. The MDA of the sample and the method blank were slightly greater than the RDL.



000012

Case Narrative, cont.

2.7 Americium-241 Analyses

The yields from the initial analyses were less than the minimum 20% required by the method protocol. The sample and QC samples were reanalyzed with resulting acceptable yields. The sample aliquot was reduced to 0.5 g for ease of handling the reanalysis in an expeditious manner. As a consequence of the reduced aliquot the sample MDA was slightly greater than RDL. The sample contained ^{241}Am activity greater than the MDA or RDL.

2.8 Gamma Scan Analyses

There was insufficient sample received to analyze two 750g aliquots. Cobalt-60 and ^{137}Cs greater than their respective MDA's were detected in the sample.

000013

Collector Doug Bryant	Company Contact Steve Marske	Telephone No. 373-4316	Project Coordinator WEISS, RL	Data Turnaround 15 Days
Project Designation 105-C Phase I & Phase II - Soil Samples	Sampling Location 105-C	SAF No. B98-062		
Ice Chest No.	Field Logbook No.	Method of Shipment Fed-X		
Shipped To TMA/WESTON	Offsite Property No.	Bill of Lading/Air Bill No.		

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	Cool 4C	None	None
	Type of Container	20	20	20
	No. of Container(s)	1	1	1

Special Handling and/or Storage Cool 4C	Volume	250g	250g	1000 ml
--	--------	------	------	---------

000014

SAMPLE ANALYSIS

PCBs - 8080 (Aroclor-1254) See item (1) in Special Instructions. See item (2) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time			
B0N838	Soil	3/5/98	0935	X	X	X

CHAIN OF POSSESSION	Sign/Print Names		SPECIAL INSTRUCTIONS <i>ke 3/12/98 for matrix</i> (1) ICP Metals - 6010A (Supertrace) (Lead); Mercury - 7471 - (CV); Chromium Hex - 7196 (2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Isotopic Plutonium; Isotopic Uranium; Americium-241; Selenium-75; Carbon-14; Nickel-63; Strontium-89,90 - Total Sr; Technetium-99; Activity Scan	<ul style="list-style-type: none"> SE - Soil SO - Sediment SL - Sludge W - Water O - Oil A - Air DS - Drum Solids DL - Drum Liquids T - Tissue WI - Wipe L - Liquid V - Vegetation X - Other 		
	Relinquished By <i>R. Fellberg</i>	Date/Time 0930			Received By <i>Fed. Ex.</i>	Date/Time
	Relinquished By <i>R. Fellberg</i>	Date/Time 3-11-98			Received By <i>CSANKALAK</i>	Date/Time 3/12/98 1030
	Relinquished By	Date/Time			Received By	Date/Time

Full sample volume in one 1L container. Lab to divide sample as needed.

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

Appendix 5
Data Validation Supporting Documentation

000015

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	<u>C</u>	D	E
PROJECT:	105-c ph I II		DATA PACKAGE: H0140		
VALIDATOR:	LAB: TMU		DATE: 9/13/98		
CASE:	SDG: H0140				
ANALYSES PERFORMED					
<input type="checkbox"/> Gross Alpha/Beta	<input checked="" type="checkbox"/> Strontium-90	<input checked="" type="checkbox"/> Technetium-99	<input type="checkbox"/> Alpha Spectroscopy	<input checked="" type="checkbox"/> Gamma Spectroscopy	N1-63
<input checked="" type="checkbox"/> Total Uranium	<input type="checkbox"/> Radium-22	<input type="checkbox"/> Tritium	Alpha Spectroscopy	Gamma Spectroscopy	C-14
SAMPLES/MATRIX					
B0U838					
sided					

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: _____

- 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: C-14 → JUT ← N1-63

Handwritten signature

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: CS-137 4/29/20 ~~Thorium 232~~ (Yes)
 S/05 ~~OK~~ ~~S/05~~ ← PA 228 OK no qual

A-1

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: _____

AAK

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0140

N803036-04

B0N838

DUPLICATE

SDG 7474

Contact N. Joseph Verville

DUPLICATE

Client/Case no Westinghouse Hanford SDG H0140

Case no TRB-SBB-207925

ORIGINAL

Lab sample id N803036-04

Lab sample id N803036-01

Client sample id B0N838

Dept sample id 7474-004

Dept sample id 7474-001

Location/Matrix 105-C SOLID

Received 03/12/98

Collected 03/05/98 09:35

Custody/SAF No R98-062

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ PROT TOT LIMIT
Technetium 99	0.085	0.15	0.34	0.50	U	TC	0.58	0.24	0.59	U	-	
Uranium 233/234	0.48	0.059	0.018	0.30	U	U	0.47	0.059	0.017		2	28
Uranium 235	0.018	0.012	0.015	0.30	J	U	0.023	0.015	0.015	J	24	141
Uranium 238	0.45	0.058	0.016	0.30	U	U	0.45	0.056	0.012		0	29
Plutonium 238	0.014	0.029	0.052	0.050	U	PU	0.024	0.032	0.049	U	-	
Plutonium 239/240	0.85	0.14	0.040	0.050		PU	0.73	0.11	0.025		15	35
Americium 241	0.27	0.079	0.066	0.050		AM	0.23	0.062	0.054		16	61
Total Strontium	6.0	0.31	0.16	1.0		SR	5.7	0.32	0.18		5	24
Carbon 14	2.4	2.3	3.7	50	U	C	-0.27	2.4	4.0	U	-	
Nickel 63	9.8	1.9	2.8	20	J	NI_L	9.2	1.9	2.8	J	6	47
GAMMA SCAN ANALYTES							U					
Potassium 40	13	1.3				GAM	11	1.2			17	39
Cobalt 60	0.80	0.12		0.050		GAM	1.1	0.13			32	43
Cesium 137	49	0.50		0.050		GAM	75	0.62			42	33
Europium 152	0.85	0.37		0.10		GAM	U		0.66	U	25	154
Europium 154	U		0.26	0.10	U	GAM	U		0.29	U	-	
Europium 155	U		0.30	0.10	U	GAM	U		0.34	U	-	
Radium 226	0.49	0.20		0.10		GAM	0.40	0.22			20	105
Radium 228	0.50	0.35		0.20		GAM	0.79	0.41			45	130
Thorium 228	0.72	0.20				GAM	0.74	0.23			3	70
Thorium 232	0.50	0.35				GAM	0.79	0.41			45	130
Americium 241	U		0.27		U	GAM	U		0.21	U	-	
Uranium 238	U		11		U	GAM	U		12	U	-	

QC-DUP #1 28118

DUPLICATES

Page 1

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SUMMARY DATA SECTION

Page 14

Lab id TMAC

Protocol WHC-HASM-1

Version Ver 1.0

Form DVD-DUP

Version 3.06

Report date 04/03/98

Date: 25 September 1998
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 105-C Phase I & II - Soil Samples
Subject: PCB - Data Package No. H0140-RLN (SDG No. H0140)

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. H0140-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 Level	Analysis
B0N838	3/5/98	Water	C	PCBs (8080)

Data validation was conducted in accordance with the BHI validation statement of work (BHI 1997). 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 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".

000001

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 using six compounds and must be within the established laboratory quality control limits. 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 recovery 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.

000002

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 35%. 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 RPD results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against CRQLs to ensure that laboratory detection levels meet the required criteria. All reported detection limits were above the CRQL. Under WHC guidelines, no qualification is required.

- **Completeness**

Data Package No. H0140-RLN (SDG No. H0140) was submitted for validation and verified for completeness. The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

000003

REFERENCES

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

000004

Appendix 1

Glossary of Data Reporting Qualifiers

000005

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

000007

DATA QUALIFICATION SUMMARY

SDG: H0140	REVIEWER: TLI	DATE: 9/25/98	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON

000008

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

000009

RFW Batch Number: 9803L919

Client: TNU-HANFORD

Work Order: 10985001001 Page: 1

Sample Information	Just ID:	BON838	BON838	BON838	PBLKVC	PBLKVC BS
RFW#:	001	001 MS	001 MSD	98LE0429-MB1	98LE0429-MB1	
Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	
D.F.:	1.00	1.00	1.00	1.00	1.00	
Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	
Surrogate:	Tetrachloro-m-xylene	95 %	100 %	110 %	102 %	108 %
	Decachlorobiphenyl	93 %	95 %	110 %	108 %	131 * %
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====						
Aroclor-1254		35 U	31 %	93 %	33 U	103 %

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0000011

gn 04-01-98

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

Handwritten signature and date: 9/21/98

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

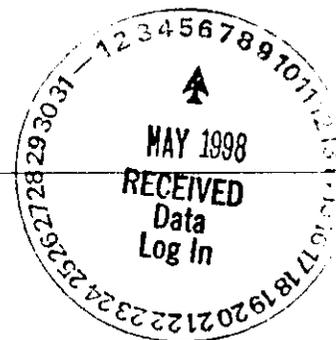
000012



RECRA
LabNet

a division of Recra Environmental, Inc.

Virtual Laboratories Everywhere



Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD
RFW# : 9803L919
SDG #: H0140

W.O.# : 10985-001-001-9999-00
Date Received : 03-13-98

PCB

1. One (1) soil sample was collected on 03-05-98.
2. The sample and its associated QC samples were extracted on 03-18-98 and analyzed based on SW846, 3rd Edition, procedures on 03-26-98. The extraction procedure used was based on Method 3540 and the extracts were analyzed based on Method 8081.
3. The cooler temperature upon receipt has been recorded on the chain-of-custody.
4. All required holding times for extraction and analysis were met.
5. The sample and its associated QC samples received a sulfuric acid cleanup.
6. The method blanks were below the reporting limits for all target compounds.
7. One (1) of ten (10) surrogate recoveries were outside QC limits; however, the surrogate recovery acceptance criteria were met (i.e., no more than one outlier per sample).
8. All blank spike recoveries were within acceptance criteria.
9. All matrix spike recoveries were within acceptance criteria.
10. All initial calibrations associated with this data set were within acceptance criteria.
11. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

Bruce C. Taylor **000013**
 J. Michael Taylor
 Vice President and Laboratory Manager
 Lionville Analytical Laboratory

4298
 Date

jeh:pcb/03-919.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 7 pages.

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Appendix 5

Data Validation Supporting Documentation

000015

PESTICIDE/PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	105-c ph I+II		DATA PACKAGE: H0140		
VALIDATOR:	TLT	LAB:	RECT	DATE: 9/13/98	
CASE:			SDG:	H0140	
ANALYSES PERFORMED					
<input type="checkbox"/> CLP3/90	<input type="checkbox"/> SW-846 8080	<input checked="" type="checkbox"/> SW-846 8081	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SAMPLES/MATRIX	BON 833 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: _____

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

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: _____

AK

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: _____

A-8

000019

Jeannette Duncan

From RB Christian

Fax # 509-373-6725

Info Request

- HO140-RAD C14 + U:63 No ms reported?
Is the data available?

- W02441 - Rad

- Do you want all 18 samples validated?

- Do you want it reported as 2414 or 2441

W02414 - PCB

Case Narrative states BOWUN7 was cancelled, but data is reported. Do you want it validated?

W02414 - PCB

initial ms/msd is way out of spec. Lab says it reran everything but the reported data is from the initial analysis date. Did they re-run it. If so, where is the data.

My Fax # is 281-987-9130 (RM302)
send also to 214-754-0819

Thanks

FROM THE DESK OF:

Stephen J. Trent
Sample Management
373-9186/L0-20

TO: R. Bruce Christian

DATE: September 17, 1998

cc: J. M. Duncan
R. L. Weiss

SUBJECT: Disposition of Validation Information Requests – Data Packages H0140 & W02414

We received your information request(s) late 9/16/98 and have the following responses:

1. **Info Request:** H0140 – Rad – C14 & Ni63 – No MS reported. Is the data available?

BHI Response: MS is not available. Validate with the data you have available.

2. **Info Request:** W02441 – Rad – Do you want all 18 samples validated? Do you want it reported as W02414 or W02441?

BHI Response: W02441 – Rad – Lab batched rad together for several SDGs (see SDR B98-063). Please validate rad for samples B0NVX8, B0NVX9 & B0NVN7 and report it under SDG W02414.

3. **Info Request:** W02414 – PCBs – Case narrative states B0NVN7 was cancelled, but data is reported. Do you want it validated?

BHI Response: Yes.

4. **Info Request:** W02414 – PCBs – Initial MS/MSD is way out of spec. Lab says it re-ran everything but the reported data is from the initial analysis date. Did they re-run it? If so, where is the data?

BHI Response: The data table that you are looking at represents the re-run data (see attached pages from data package). If you have any questions, please call me on the number listed above.

1D
PCB ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BONVX8

Lab Name: QUANTERRA, MO Contract: 550.260

Lab Code: ITMO Case No.: _____ SAS No.: _____ SDG No.: W02414

Matrix: (soil/water) SOIL Lab Sample ID: 18072-001

Sample wt/vol: 6.2 (g/ml) G Lab File ID: _____

Level: (low/med) LOW Date Sampled: 06-04-98

% Moisture: not dec. _____ dec. _____ Date Extracted: 06-16-98

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06-22-98

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
12674-11-2-----	Aroclor-1016	32	U
11104-28-2-----	Aroclor-1221	32	U
11141-16-5-----	Aroclor-1232	32	U
53469-21-9-----	Aroclor-1242	32	U
12672-29-6-----	Aroclor-1248	32	U
11097-69-1-----	Aroclor-1254	3800	U
11096-82-5-----	Aroclor-1260	160	U

U: Concentration of analyte is less than the value given.

*: Analyzed for AR1260 and AR1254 at a 5X dilution on GCA 07-01-98.

1D
PCB ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0NVX9

Lab Name: QUANTERRA, MO Contract: 550.260

Lab Code: ITMO Case No.: _____ SAS No.: _____ SDG No.: W02414

Matrix: (soil/water) SOIL Lab Sample ID: 18072-002

Sample wt/vol: 30.1 (g/ml) G Lab File ID: _____

Level: (low/med) LOW Date Sampled: 06-04-98

% Moisture: not dec. _____ dec. _____ Date Extracted: 06-16-98

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06-22-98

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
12674-11-2-----	Aroclor-1016	33	U
11104-28-2-----	Aroclor-1221	33	U
11141-16-5-----	Aroclor-1232	33	U
53469-21-9-----	Aroclor-1242	33	U
12672-29-6-----	Aroclor-1248	33	U
11097-69-1-----	Aroclor-1254	2600	U
11096-82-5-----	Aroclor-1260	160	U

U: Concentration of analyte is less than the value given.

*: Analyzed for AR1254 at a 5X dilution on GCA 07-02-98.

FORM I PEST

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<h1>Review Comment Record (RCR)</h1>	1. Date 9/28/98	2. Review No. BHI/QA98011
	3. Project 105-C Phase I and II	4. Page Page 1 of 1

5. Document Number(s)/Title(s) H0140 - RLN (SDG No. H0140)	6. Program/Project/ Building Number 105-C Phase I and II Soil Samples	7. Reviewer Claude Stacey	8. Organization/Group BHI/QA	9. Location/Phone H0-16/372-9208
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17. Comment Submittal Approval: _____	10. Agreement with indicated comment disposition(s) _____	11. CLOSED _____
Organization Manager (Optional)	Date	Reviewer/Point of Contact
		4/02/98 Date
		 Reviewer/Point of Contact
	Author/Originator	Author/Originator

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	PCB: The table states the analysis method was 8080; whereas, the lab narrative states the method was 8081.		corrected	
2	All: Pages need paginated		correct	
3			close 7/30/98	

<h1>Review Comment Record (RCR)</h1>	1. Date 9/28/98	2. Review No. BHI/QA98008
	3. Project 216-A-29 Ditch	4. Page Page 1 of 1

5. Document Number(s)/Title(s) H0164-RLN (SDG No. HO164)	6. Program/Project/ Building Number 216-A-29 Ditch - Soil	7. Reviewer Claude Stacey	8. Organization/Group BHI/QA	9. Location/Phone H0-16/372-9208
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17. Comment Submittal Approval: _____ 10. Agreement with indicated comment disposition(s) _____ 11. CLOSED

Organization Manager (Optional)

Date

Reviewer/Point of Contact

Date

Claude Stacey
Reviewer/Point of Contact

Author/Originator

Author/Originator

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	PCB: The table in the introduction states the analysis method was Pest/PCBs (8080); whereas, the laboratory narrative states the method was 8081.		<i>corrected</i>	
2	Inorganics: Note at bottom of the table in the Introduction the Note 1 states mercury was done by method 7470A which is for mercury in liquids; whereas, this sample is a solid and should be method 7471A.		<i>Correct</i>	
3	All: Pages need paginated.		<i>Correct</i>	
			<i>see 9/30/98</i>	

<h1>Review Comment Record (RCR)</h1>	1. Date 9/28/98	2. Review No. BHI/QA98009
	3. Project 216-A-29 Ditch	4. Page Page 1 of 1

5. Document Number(s)/Title(s) H0165-RLN (SDG No. H0165)	6. Program/Project/ Building Number 216-A-29 Ditch - Water	7. Reviewer Claude Stacey	8. Organization/Group BHI/QA	9. Location/Phone H0-16/372-9208
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17. Comment Submittal Approval: _____ 10. Agreement with indicated comment disposition(s) 11. CLOSED

Organization Manager (Optional) _____ Date _____ Reviewer/Point of Contact _____ Date 11/03/98 Reviewer/Point of Contact Claude Stacey

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	PCB: The table in the Introduction under analysis states to see Note 1. There is no Note 1. In addition the Chain of Custody calls for the analysis to be by method 8080; whereas, the laboratory narrative states method 8081 was used.		corrected	
2	Radiochemistry: The laboratory narrative and the "Radiochemistry Data Validation Checklist" states the sample matrix to be soil; whereas, the matrix was water.		corrected	
3	All: Pages need paginated		corrected	
			RISE 9/30/98	

Review Comment Record (RCR)

1. Date
9/28/98

2. Review No.
BHI/QA98010

3. Project
105-C Phase II

4. Page
Page 1 of 1

5. Document Number(s)/Title(s)
WO2414 – QES (SDG No. WO2414)

6. Program/Project/
Building Number
105-C Phase II
Verification Sampling –
Concrete

7. Reviewer
Claude Stacey

8. Organization/Group
BHI/QA

9. Location/Phone
H0-16/372-9208

17. Comment Submittal Approval:

10. Agreement with indicated comment disposition(s)

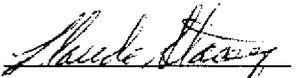
11. CLOSED

Organization Manager (Optional)

Date

Reviewer/Point of Contact

11/2/98
Date



Reviewer/Point of Contact

Author/Originator

Author/Originator

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	All: Pages need paginated.		correct	
2			per 9/30/98	
3				

Date: 25 September 1998
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 105-C Phase I & II - Soil Samples
Subject: PCB - Data Package No. H0140-RLN (SDG No. H0140)

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. H0140-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 Level	Analysis
BON838	3/5/98	Water	C	PCBs (8081)

Data validation was conducted in accordance with the BHI validation statement of work (BHI 1997). 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 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".

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