Date: 12 October 1999
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 105-DR FSB - Concrete
Subject: Inorganics - Data Package No. W02840-QES (SDG No. W02840)

0053008

INTRODUCTION

This memo presents the results of data validation on Data Package No. W02840-QES prepared by Quanterra Environmental Services (QES). 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
B0W0Y9	07/19/99	Solid	C	Chromium VI by EPA 7196
B0W100	07/19/99	Solid	C	Chromium VI by EPA 7196

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**

  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: Samples must be analyzed within 24 hours for Chromium VI.

  All holding times were acceptable.

RECEIVED
APR 25 2000
EDMC

- **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 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 recovery results were acceptable.

- **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%. 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 or the CRDL if no PQL was specified, to ensure that laboratory detection levels meet the required criteria. All reported laboratory detection levels met the analyte specific PQL or CRDL.

- **Completeness**

Data package No. W02840-QES (SDG No. W02840) was submitted for validation and verified for completeness. The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

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

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).

Appendix 2

Summary of Data Qualification

DATA QUALIFICATION SUMMARY

SDG: W02840	REVIEWER: TLI	DATE: 10/12/99	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

INORGANIC ANALYSIS, SOLID MATRIX, MG/KG

Project: BECHTEL-HANFORD																					
Laboratory: QES																					
Case	SDG: W02840																				
Sample Number		B0W0Y9		B0W100																	
Location		D		B																	
Remarks																					
Sample Date		7/19/99		7/19/99																	
Inorganics	CRDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chromium VI	0.1	1.05		1.81																	

000010

Quanterra

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02840 / 8402
LAB SAMPLE ID:	9D08JV10	MATRIX:	OTHER
CLIENT ID:	B0W100	DATE RECEIVED:	7/19/99 4:30:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
HEXCHROME	1.81E+00		N/A	N/A	8.00E-02	mg/kg	N/A	EPA7196

Number of Results: 1

10/12/95

Result = IDL When Not Detected

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result <

Quanterra Analytical Services, Inc
rptChemRadSample; v3.41

Quanterra

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02840 / 8402
LAB SAMPLE ID:	9D08JT10	MATRIX:	OTHER
CLIENT ID:	B0W0Y9	DATE RECEIVED:	7/19/99 4:30:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
HEXCHROME	1.05E+00		N/A	N/A	8.00E-02	mg/kg	N/A	EPA7196

Number of Results: 1

10/12/99

Result = IDL When Not Detected

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result <

Quanterra Analytical Services, Inc
rptChemRadSample; v3.41

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

Quanterra

CERTIFICATE OF ANALYSIS

AUG 1999
RECEIVED
Data
Log In

Bechtel Hanford, Inc.
3350 George Washington Way
Richland, WA 99352

August 16, 1999

Attention: Joan Kessner

SAF Number	:	B99-076
Date First Sample Received	:	July 19, 1999
Number of Samples	:	Two
Sample Type	:	Other Solid
SDG Number	:	W02840
Data Deliverable	:	15 Day Summary

I. Introduction

On July 19, 1999, two other solid samples were received by the Quanterra Environmental Services Richland Laboratory (QESRL) for chemical analysis. Upon receipt, the samples were assigned the following laboratory ID number to correspond with the Bechtel Hanford, Inc. (BHI) specific ID's as found on the first page of the attached report.

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information; analytical results and the appropriate associated statistical errors.

The requested analysis was: **Hexavalent Chromium**
Hexavalent Chromium by EPA7196

III. Quality Control

The analytical results for the analysis include a minimum of one Laboratory Control Sample (LCS), one matrix spike (MS), one matrix spike duplicate (MSD), and one method (reagent) blank. Any exceptions have been noted in the "Comments" section.

Quality control sample results are reported in the same units as sample results.

IV. Comments

Hexavalent Chromium

Hexavalent Chromium by EPA7196

The LCS, MS, MSD, batch blank, and sample results are within the requirements of the contract.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Reviewed and approved:

Doug Swenson
Project Manager

27030

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-076-03 | Page 1 of

Collector: F ahlberg/Porter	Company Contact: J Adler	Telephone No.: 373-4316	Project Coordinator: TRENT, SJ
Project Designation: 105-DR FSB - Concrete	Sampling Location: 105 DR		SAF No.: B99-076
Ice Chest No.	Field Logbook No.: EL 1281		Method of Shipment
Shipped To: Quanterra Incorporated	Offsite Property No.		Bill of Lading/Air Bill No.

Price Code 9K | Data Turnar 15 Da

COA R105D4 2870

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C										
Type of Container	aG										
No. of Container(s)	1										
Volume	60mL										
	Chromium Hex - 7196										

SAMPLE ANALYSIS Due 8-5

SDG W02840 JAG-200106

Sample No.	Matrix *	Sample Date	Sample Time									
B0W0Y9 D08JT	Other Solid	7.19.99	1015	X								
B0W100 D08JV	Other Solid	7.19.99	1045	X								
~~B0W101~~ ~~RE~~ 7.19.99	~~Other Solid~~											
~~B0W102~~ 7.19.99 RE	~~Other Solid~~											
~~B0W103~~ 7.19.99 RE	~~Other Solid~~											

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Fahlberg / R. Fahlberg	Date/Time: 7.19.99 1630	Received By: Cindy Black	Date/Time: 7.19.99 16:30
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

Matrix *: Soil, Water, Vapor, Other Solid, Other Liquid

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

000016

2018

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	(C)	D	E
PROJECT: 105 DR FSB - Cancrete			DATA PACKAGE: W02840		
VALIDATOR: TLI		LAB: QES		DATE: 10/6/97	
CASE:			SDG: W02840		

ANALYSES PERFORMED

☐ CLP/ICP	☐ CLP/GFAA	☐ CLP/Hg	☐ CLP/Cyanide	☐	☐
☐ SW-846/ICP	☐ SW-846/GFAA	☐ SW-846/Hg	☐ SW-846 Cyanide	☒ CRDI	☐

SAMPLES/MATRIX BOW049 BOW100

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:

IR on blank

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:

BHI Sample Management
Phone: (509) 372-9346
FAX: (509) 372-9487

facsimile transmittal

To: Bruce Christian Fax: 375-5151

From: Rich Weiss Date: 10-20-99

Re: Count data Pages: 3

CC:

☐ Quick Turn / Priority Data ☐ Final Data Package

Bruce

Look this over for places in the procedure that I've missed and for areas that make validation either "blow up" or would apply more restrictive qualifiers than currently

Rich

Inconsistencies and inadequately defined criteria have been identified in "Data Validation Procedures for Radiochemical Analysis", WHC-SD-EN-SPP-001, Rev.1. The following identifies the affected sections, provides a consistent replacement, and clarifies interpretation for these issues.

Laboratory Blanks

Current Wording (by section):

4.3.1 - Prepared at the same time and analyzed with the samples using the same procedure.

5.3.1 - Prepared at the same time and analyzed with the samples using the same procedure.

6.3.1 - Prepared at the same time and analyzed with the samples using the same procedure, aliquot size, and counting time.

5.3.1 – Analyzed using a similar aliquot size, counted in the same geometry and count time as the samples.

7.3.1 - Prepared at the same time and analyzed with the samples using the same procedure.

8.3.1 – Laboratory blanks have been prepared, distilled and analyzed using the same procedure and aliquot size as the samples.

9.3.1 - Prepared at the same time and analyzed in the same batch, using the same procedure, as the associated samples.

Laboratory Control or Blank Spike Samples

Current Wording (by section):

4.4.1 - Prepared at the same time and analyzed in the same batch, using the same procedure, as the associated samples.

5.4.1 - Prepared at the same time and analyzed in the same batch, using the same procedure, as the associated samples.

6.4.1 - Prepared at the same time and analyzed in the same batch, using the same procedure, as the associated samples.

7.4.1 – LCS of BSS was analyzed in the same geometry, count duration, and aliquot size as the samples.

8.4.1 - Prepared at the same time and analyzed in the same batch, using the same procedure, as the associated samples.

9.4.1 - Prepared at the same time and analyzed in the same batch, using the same procedure, as the associated samples.

Matrix Spike Samples

Current Wording (by section):

Section 4 - no matrix spike requirements

5.4.3 - Prepared at the same time and analyzed in the same batch, using the same procedure, as the associated samples.

6.4.3 - Prepared at the same time and analyzed in the same batch, using the same procedure, as the associated samples.

Section 7 – no matrix spike requirements.

8.4.3 - Prepared at the same time and analyzed in the same batch, using the same procedure, as the associated samples.

Section 9 – no matrix spike requirements.

Laboratory Duplicates

Current Wording (by section):

4.5.1 – The duplicate analysis was prepared and analyzed in the same batch, using the same procedure as the associated samples.

5.5.1 – The duplicate analysis was prepared and analyzed in the same batch, using the same procedure as the associated samples.

6.5.1 – The duplicate analysis was prepared and analyzed in the same batch, using the same procedure as the associated samples.

7.5.1 – The duplicate analysis was prepared and analyzed at the same time, using the same geometry, aliquot size and count duration as the samples.

8.5.1 – Prepared and analyzed using the same aliquot size as the samples.

9.5.1 – The duplicate analysis was prepared and analyzed in the same batch, using the same procedure as the associated samples.

Replacement Wording (all sections above):

Preparation performed as part of an analytical batch, at the same time, using the same procedures and aliquot sizes as the associated samples. All components of the analytical batch (QC and sample) counted using the same or comparable geometry and count duration within a two week time period.

Laboratory failure to meet the criteria (in any section) – qualify all associated sample results as estimated (J for detects, UJ for non-detects).

TRANSMISSION RESULT REPORT (OCT 20 '99 11:32AM)

BHI S&D MANAGEMENT 509 372 9487

(AUTO)

THE FOLLOWING FILE(S) ERASED

FILE	FILE TYPE	OPTION	TEL NO.	PAGE	RESULT
057	MEMORY TX		3755151	03/03	OK

ERRORS

1) HANG UP OR LINE FAIL 2) BUSY 3) NO ANSWER 4) NO FACSIMILE CONNECTION

BHI Sample Management
Phone: (509) 372-9346
FAX: (509) 372-9487

[redacted]

To: Bruce Christian Fax: 375-5151

From: Rich Weiss Date: 10-20-99

Re: Count dates Pages: 3

CC:

☐ Quick Turn / Priority Data ☐ Final Data Package

Bruce

I [illegible] this over for places in the

Duncan, Jeanette M

From: Weiss, Richard L
Sent: Monday, October 18, 1999 2:45 PM
To: Duncan, Jeanette M
Subject: Validation PKGs. for W02840 & W02839

Jeanette,

I've looked over packages W02839 & W02840 (inorganics) and find no problems with them.

Rich

Review Comment Record (RCR)

1. Date	2. Review No.
10/20/1999	BHI/QA99021
3. Project	**4. Page**
105-DR-FSB	Page 1 of 1

5. Document Number(s)/Title(s)	6. Program/Project/ Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
W02840-QES (SDG No. W02840)	105-DR FSB -- Concrete	Claude Stacey	BHI/QA	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 _____ Date _____

Author/Originator _____

Reviewer/Point of Contact _____

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	OK -No Comments.			
2				
3				

FAX

TECHLAW, INC.

451 Hills, Suite 23
Richland, WA 99352
509-375-5667
509-375-5151 (fax)

To: Jeanette Duncan

From: Bruce Christian

Pages: 1

Date: 7 October 1999

Information Request

W02840 - inorganics

The sample sumary for W02840 states that sample B0W100 is an equipment blank for sample B0W107 - however, the sample summary for W02834 states that sample B0W107 is the equipment blank. Which one is it.