

SAF-RC-022
100-BC Burial Grounds –
Other Solid
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (2) H9-02

mje 03/15/06
INITIAL/DATE

COMMENTS:

SDG J00047

SAF-RC-022

Sample Location/Waste Site: 100-B-24 Spillway

RECEIVED
MAR 21 2006
EDMC

Date: 10 March 2006
 To: Washington Closure Hanford Inc. (technical representative)
 From: TechLaw, Inc.
 Project: 100BC Burial Grounds – Other Solids – Waste Site 100-B-24 Spillway
 Subject: Wet Chemistry - Data Package No. J00047-ST

INTRODUCTION

This memo presents the results of data validation on Data Package No. J00047 prepared by Severn Trent (ST). 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	Date
J10V97	1/17/06	Solid	C	See note 1
J10V98	1/17/06	Solid	C	See note 1

1 – Chromium VI by 7196A.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, Rev. 4, February 2005). Appendices 1 through 6 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
- Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

• **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 30 days for chromium VI.

If holding times are exceeded, but not by greater 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 detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

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· Method Blanks

Method Blanks

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. All blank results must fall below the contract required detection limit (CRQL) to be acceptable.

All method blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

· Accuracy

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a 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 recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to matrix spike (38%) and matrix spike duplicate (58%) results outside QC limits, all chromium VI results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

· Precision

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample

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and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J10V97/J10V98) were submitted for analysis. Field duplicates are analyzed using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQLs) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

Completeness

Data package J00047 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to matrix spike (38%) and matrix spike duplicate (58%) results outside QC limits, all chromium VI results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

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REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

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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 minor 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 minor 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 major 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 major 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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WET CHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: 0000				REVIEWER: Project: 1002324				PAGE: 10			
COMMENTS:											
COMPOUND				QUALIFIER		SAMPLES AFFECTED				REASON	
Chromium				J		All				MS, MSD recovery	

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

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Project: WASHINGTON CLOSURE HANFORD						
Lab: LLI		SDG: J00047				
Sample Number		J10V97		J10V98		
Remarks		Duplicate				
Sample Date		1/17/06		1/17/06		
Wet Chemistry		RQL	Result	Q	Result	Q
Chromium VI		0.5	0.350	UJ	0.350	UJ

000010

Sample Results Summary

Date: 18-Jan-06

STL Richland STLRL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 31074

SDG No: J00047

Client Id	Batch	Work Order	Parameter	Result +/- Uncertainty (2s)	Qual	Units	Yield	MDC or MDA	CRDL	RPD	
6017474	7196	CR6									
J10V97											
			HVRQA1AA	HEXCHROME	3.50E-01	+ 0.0E+00	U J	mg/kg	N/A	3.50E-01	3.50E-01
			HVRQA1AE	HEXCHROME	3.50E-01	+ 0.0E+00	U	mg/kg	N/A	3.50E-01	3.50E-01
										0.0	
J10V98											
			HVRQE1AA	HEXCHROME	3.50E-01	+ 0.0E+00	U J	mg/kg	N/A	3.50E-01	3.50E-01
No. of Results: 3											

Handwritten signature 3/3/06

STL Richland
rptSTLRchS@Sum
mary2 V4.14.4 A97

RPD - Relative Percent Difference.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000012

Certificate of Analysis

Washington Closure Hanford
3190 George Washington Way
Richland, WA 99354

January 18, 2005

Attention: Joan Kessner

SAF Number	:	RC-022
Date SDG Closed	:	January 17, 2006
Number of Samples	:	Two (2)
Sample Type	:	Other Solids
SDG Number	:	J00047
Data Deliverable	:	1-Day / Summary

CASE NARRATIVE

I. Introduction

On January 17, 2006, one water sample was received at STL Richland (STLR) for chemistry analysis. Upon receipt, the sample was assigned the following laboratory ID number to correspond with the Washington Closure Hanford (WCH) specific ID:

<u>WCH ID#</u>	<u>STLR ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
J10V97	HVRQA	OTHER SOLID	01/17/06
J10V98	HVRQE	OTHER SOLID	01/17/06

II. Sample Receipt

The sample was received in good condition and no anomalies were noted during check-in.

III. 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 analyses were:

Chemical Analysis
Hexavalent Chromium by EPA method 7196A

000013

Washington Closure Hanford
January 18, 2006

IV. Quality Control

The analytical results for each analysis performed includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

V. Comments

Chemical Analysis

Hexavalent Chromium by EPA method 7196A:

The sample matrix spike, matrix duplicate and post digestion spike for this analysis were all below acceptance limits indicating a possible matrix interference. Other than as noted, the LCS, batch blank, sample, post digestion matrix spike (J10V97) and sample duplicate (J10V97) results are within contractual requirements.

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:



Hans Carman
Project Manager

000014



STL

**Richland Laboratory
Data Review Check List
Hexavalent Chromium**

Work Order Number(s): HVRQA, HVRQE				
Lab Sample Numbers or SDG: J00047				
Method/Test/Parameter: Cr+6 in Other/Solid / RICH-WC-5003, Rev 7				
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
A. Initial Calibration				
1. Performed at required frequency with required number of levels?	✓			✓
2. Correlation coefficient within QC limits?	✓			✓
3. Initial calibration verification (ICV) analyzed immediately after calibration and results within QC limits?	✓			✓
4. Initial calibration blank (ICB) analyzed immediately after ICV and concentrations of all parameters ≤ reporting limit?	✓			✓
B. Continuing Calibration				
1. CCV analyzed at required frequency and all parameters within QC limits?	✓			✓
2. CCB analyzed at required frequency and all results ≤ reporting limit?	✓			✓
C. Sample Analysis				
1. Were any samples with concentrations above the linear range for any parameter diluted and reanalyzed?	✓			✓
2. Were all sample holding times met?	✓			✓
D. QC Samples				
1. All results for the preparation blank below limits?	✓			✓
2. MS or MS/MSD recoveries within QC limits and %RPD (for MSD) acceptable?		✓		✓
3. LCS percent recovery within QC limits and %RPD (for LCSD) acceptable?	✓			✓
4. Analytical spikes within QC limits where applicable?			✓	✓
5. ICP only: One serial dilution performed per SDG?			✓	✓
6. ICP only: CRDL standard (CRI or CRA) analyzed at required frequency?			✓	✓
7. ICP only: Interference check samples (ICSA, ICSAB) and HICAL analyzed at the required frequencies and within QC limits?			✓	✓

Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
E. Other	✓			
1. Are all nonconformances included and noted?				✓
2. Is the correct date and time of analysis shown?	✓			✓
3. Did the analyst sign and date the front page of the analytical run?	✓			✓
4. Correct methodology used?	✓			✓
5. Transcriptions checked?	✓			✓
6. Calculations checked at minimum frequency?	✓			✓
7. Units checked?	✓			✓

Comments on any "No" response

MS & MSD below the acceptable limits.
 HMs analyzed.
 No other objects.

Analyst: D. Marcus

Date: 1/18/06

Second-Level Review: [Signature]

Date: 1-18-06

Clouseau Nonconformance Memo

**SEVERN
TRENT
SERVICES**

NCM #: 10-07350 NCM Initiated By: Debbie Manis Date Opened: 01/18/2006 Date Closed:	Classification: Anomaly Status: GLREVIEW Production Area: Classical Chemistry Tests: 7196A Lot #'s (Sample #'s): J6A170000 (474), J6A170245 (1,2) QC Batches: 6017474
Nonconformance: Other (describe in detail) Subcategory: Other (explanation required)	

Problem Description / Root Cause

<u>Name</u>	<u>Date</u>	<u>Description</u>
Debbie Manis	01/18/2006	MS & MSD out of limits.

Corrective Action

<u>Name</u>	<u>Date</u>	<u>Corrective Action</u>
Debbie Manis	01/18/2006	PDMS analyzed. Matrix effect.

Client Notification Summary

<u>Client</u>	<u>Project Manager</u>	<u>Notified</u>	<u>Response</u>	<u>How Notified</u>	<u>Note</u>
			<u>Response</u>		<u>Response Note</u>

Quality Assurance Verification

<u>Verified By</u>	<u>Due Date</u>	<u>Status</u>	<u>Notes</u>
			This section not yet completed by QA.

Approval History

<u>Date Approved</u>	<u>Approved By</u>	<u>Position</u>
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STL RICHLAND

0117 27038

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-022-012		Page 1 of 1	
Collector Doug Bowers/Charlene Martinez K. Singleton		Company Contact Doug Bowers		Telephone No. 531-0701		Project Coordinator KESSNER, JH		Price Code Data Turnaround	
Project Designation 100-BC Burial Grounds - Other Solid Quick Turn		Sampling Location 100-B-24 Spillway Waste Site		SAF No. RC-022		Air Quality <input type="checkbox"/> 24 hours			
Ice Chest No.		Field Logbook No. EFL1173		COA C11BX4A000		Method of Shipment Government vehicle			
Shipped To Severn Trent Incorporated, Richland		Offsite Property No.		Bill of Lading/Air Bill No.					
POSSIBLE SAMPLE HAZARDS/REMARKS none < dot limits J00047 Special Handling and/or Storage J6A170245 Cool 4 degrees Centigrade Dec 01 19 06			Preservation	Cool #C					
			Type of Container	G/P					
			No. of Container(s)	1					
			Volume	60mL					
SAMPLE ANALYSIS			Chromium Hex - 7196						
Sample No.	Matrix *	Sample Date	Sample Time						
J10V97	HVRQA	0117/06	1017	✓					
J10V98	HVRRE	0117/06	1020	✓					
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From Kevin Singleton		Date/Time 1-17-06		Received By/Stored In Jeff Jensen		Date/Time 011706 135		24 hour hold time 5.0°C	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		S- Soil SE- Sediment SO- Solid SF- Sludge W- Water O- Oil A- Air DS- Drum Solids DL- Drum Liquids T- Tissue WT- Wipe L- Liquid V- Vegetation X- Other	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time			
LABORATORY SECTION		Received By		Title				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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GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100-B-24 Spillway		DATA PACKAGE: J00047		
VALIDATOR:	TLI	LAB:	ST	DATE: 3/3/06	
			SDG: J00047		
ANALYSES PERFORMED					
Anions/IC	TOC	TOX	TPH-418.1	Oil and Grease	Alkalinity
Ammonia	BOD/COD	Chloride	Chromium-VI	pH	NO ₃ /NO ₂
Sulfate	TDS	TKN	Phosphate		
SAMPLES/MATRIX					
J10V97 J10V9Y					
Solid					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? Yes No **N/A**

Comments: _____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? Yes No **N/A**
 Initial calibrations acceptable? Yes No **N/A**
 ICV and CCV checks performed on all instruments? Yes No **N/A**
 ICV and CCV checks acceptable? Yes No **N/A**
 Standards traceable? Yes No **N/A**
 Standards expired? Yes No **N/A**
 Calculation check acceptable? Yes No **N/A**

Comments: _____

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) Yes No N/A
ICB and CCB results acceptable? (Levels D, E) Yes No N/A
Laboratory blanks analyzed? Yes No N/A
Laboratory blank results acceptable? Yes No N/A
Field blanks analyzed? (Levels C, D, E) Yes No N/A
Field blank results acceptable? (Levels C, D, E) Yes No N/A
Transcription/calculation errors? (Levels D, E) Yes No N/A
Comments: no FB

4. ACCURACY (Levels C, D, and E)

Spike samples analyzed? Yes No N/A
Spike recoveries acceptable? Yes No N/A
Spike standards NIST traceable? (Levels D, E) Yes No N/A
Spike standards expired? (Levels D, E) Yes No N/A
LCS/BSS samples analyzed? Yes No N/A
LCS/BSS results acceptable? Yes No N/A
Standards traceable? (Levels D, E) Yes No N/A
Standards expired? (Levels D, E) Yes No N/A
Transcription/calculation errors? (Levels D, E) Yes No N/A
Performance audit sample(s) analyzed? Yes No N/A
Performance audit sample results acceptable? Yes No N/A
Comments: MS 38% MSD 58% - July

no PDS

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

- Duplicate RPD values acceptable?..... Yes No N/A
- Duplicate results acceptable? Yes No N/A
- MS/MSD standards NIST traceable? (Levels D, E)..... Yes No N/A
- MS/MSD standards expired? (Levels D, E) Yes No N/A
- Field duplicate RPD values acceptable?..... Yes No N/A
- Field split RPD values acceptable? Yes No N/A
- Transcription/calculation errors? (Levels D, E) Yes No N/A

Comments: _____

6. HOLDING TIMES (all levels)

- Samples properly preserved?..... Yes No N/A
- Sample holding times acceptable? Yes No N/A

Comments: _____

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

- Results reported for all requested analyses?..... Yes No N/A
- Results supported in the raw data? (Levels D, E)..... Yes No N/A
- Samples properly prepared? (Levels D, E)..... Yes No N/A
- Detection limits meet RDL?..... Yes No N/A
- Transcription/calculation errors? (Levels D, E)..... Yes No N/A

Comments: _____

Appendix 6

Additional Documentation Requested by Client

000024

QC Results Summary
STL Richland STLRL
 Ordered by Method, Batch No, QC Type,.

Date: 18-Jan-06

Report No. : 31074

SDG No.: J00047

Batch	Work Order	Parameter	Result +/- Uncertainty (2s)	Qual	Units	Yield	Recovery	Bias	MDC/MDA
7196_CR6									
	6017474	MATRIX SPIKE							
	HVRQA1AC	HEXCHROME	1.84E+01 +/- 0.0E+00		mg/kg	N/A	38%	-0.6	3.50E-01
	HVRQA1AD	HEXCHROME	2.49E+01 +/- 0.0E+00		mg/kg	N/A	58%	-0.4	3.50E-01
	6017474	LCS							
	HVR491AC	HEXCHROME	4.05E+01 +/- 0.0E+00		mg/kg	N/A	101%	0.0	3.50E-01
	6017474	BLANK QC							
	HVR491AA	HEXCHROME	3.50E-01 +/- 0.0E+00	U	mg/kg	N/A			3.50E-01
	No. of Results: 4								

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.
 rptSTLRchQcSummary V4.14.4 A97 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

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