

0054730

W03447
SEVERN
TRENT
SERVICES

Bechtel Hanford

Analysis By

STL Richland

2800 G.W. Way, Richland, Wa 99352, (509) 375-3131

Data Package Contains 17 Pages

Report Nbr: 12776

SDG No.	SAF No.	CLIENT ID No.	STL ID No.
W03447	B00-073	B11CP0	9DV5JL10

RECEIVED
APR 02 2001
EDMC



Comments:

00001

CERTIFICATE OF ANALYSIS

Bechtel Hanford, Inc.
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Richland, WA 99352

STL Richland
2800 George Washington Way
Richland, WA 99352-1613

Tel: 509 375 3131
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February 23, 2001

Attention: Joan Kessner

SAF Number	:	B00-073
Date SDG Closed	:	February 14, 2001
Number of Samples	:	One (1)
Sample Type	:	Other
SDG Number	:	W03447
Data Deliverable	:	21-Day / Summary

I. Introduction

On February 14, 2001, one other (solid) sample was received at STL Richland (STLR) for chemical analysis. Upon receipt, the sample was assigned the following laboratory ID number to correspond with the Bechtel Hanford, Inc. (BHI) specific ID:

<u>STLR ID#</u>	<u>BHI ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
9DV5JL10	B11CP0	OTHER	2/14/01

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: **Chemical Analysis**
Chromium Hex by EPA method 7196

Bechtel Hanford, Inc.
February 23, 2001
Page 2

III. Quality Control

The analytical results for each analysis performed under SDG W03447 include 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.

Quality control sample results are reported in mg/L.

IV. Comments

Chemical Analyses

Chromium Hex by EPA method 7196:

The LCS, batch blank, sample, sample duplicate (B11CP0) and sample matrix spike (B11CP0) 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:



Jackie Waddell
Project Manager

Drinking Water Method Cross References

DRINKING WATER ASTM METHOD CROSS REFERENCES		
Referenced Method	Isotope(s)	STL Richland's SOP number
EPA 901.1	Cs-134, I-131	RICH-RC-5017
EPA 900.0	Alpha & Beta	RICH-RC-5014
EPA 903.1	Ra-226	RICH-RC-5005
EPA 904.0	Ra-228	RICH-RC-5005
EPA 905.0	Sr89/90	RICH-RC-5006
ASTM D2460	Total Radium	RICH-RC-5027
Standard Method 7500-U-C & ASTM D57174	Uranium	RICH-RC-5058
EPA 906.0	Tritium	RICH-RC-5007
NOTE:		
The Gross Alpha LCS is prepared with Am-241 (unless otherwise specified in the case narrative)		
The Gross Beta LCS is prepared with Sr/Y-90 (unless otherwise specified in the case narrative)		

Uncertainty Estimation

STL Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, $R = \text{constants} * f(x,y,z,\dots)$. The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/\sqrt{n}), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

SAMPLE RESULTS

LAB NAME: STL Richland SDG: /RPT GRP: W03447 / 12776
LOT,RPT DB ID: J1B140250- 9DV5JL10 MATRIX: SOIL
CLIENT ID: B11CP0 DATE RECEIVED: 2/14/01 3:09:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	RPT UNIT	YIELD	METHOD NUMBER	WORK ORDE	BAT- CH
HEXCHROME	2.53E+01		N/A	N/A	8.00E-02	mg/kg	N/A	EPA7196	DV5JL1	1046240

Number of Results:

DUPLICATE RESULTS

LAB NAME: STL Richland SDG: /RPT GRP: W03447 / 12776
 LOT,RPT DB ID: J1B140250- DV5JL1ER MATRIX: SOIL
 CLIENT ID: B11CP0 DATE RECEIVED: 2/14/01 3:09:00 PM
 ORIG LAB ID: 9DV5JL10

ANALYTE	DUP RESULT	COUNTING Q ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
HEXCHROME	2.56E+01	N/A	N/A	8.00E-02	mg/kg	N/A	EPA7196	2.53E+01	1.26%

Number of Results:



Richland Laboratory
Data Review Check List
METALS

Work Order Number(s): DV5 JL BATCH # 1046240				
Lab Sample Numbers or SDG: WD 3447 LOT # J1B140250				
Method/Test/Parameter: CR+6 IN SOLID RICHWC 5005 R.4				
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 (S)	No (S)	N/A (S)	2 nd Level Review (S)
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:

CI) PbCrO_4 SPIKE OF DV5JL1AA REQUIRED X20 DILUTION.
 MS SPIKE OF DV5JL1AA REQUIRED X 2 DILUTION.

Analyst: Marika Labri
 Second-Level Review: Roxie Ross

Date: 2/15/01
 Date: 2/16/01

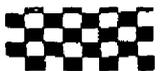
CHAIN OF CUSTODY

00013

Q-27038

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B00-073-020		Page 1 of 1			
Collector Doug Bowers		Company Contact Jason Addler		Telephone No. 531-0703		Project Coordinator TRENT, SJ		Price Code 9L Data Turnaround 21 Days			
Project Designation 100-D & 100-H Rx Waste Sampling - Other Solids		Sampling Location 100 H reactor		SAF No. B00-073		Air Quality <input type="checkbox"/>					
Ice Chest No. ERC 96-082		Field Logbook No. EFL 1133-9		COAB 2-8-01 R105DG280E R105H5280C		Method of Shipment Gov vehicle					
Shipped To Sewern Trent Incorporated		Offsite Property No. N/A		Bill of Lading/Air Bill No. N/A							
POSSIBLE SAMPLE HAZARDS/REMARKS			Preservation	Cool 4C							
			Type of Container	SG							
			No. of Container(s)	1							
			Special Handling and/or Storage	Volume	60mL						
SDK W03447			SAMPLE ANALYSIS Date 3-7 J1B140250		Chromium Hex - 7196						
Sample No.	Matrix *	Sample Date	Sample Time								
B11CP0 DV5JK	OTHER SOLID	2-14-01	1300	X	w-st water tunnel	B11CP2					
CHAIN OF POSSESSION				Sign/Print Names		SPECIAL INSTRUCTIONS					
Relinquished By Doug Bowers		Date/Time 2-14-01/1509		Received By M. Heighan		Date/Time 2/14/01 15:00					
Relinquished By		Date/Time		Received By L100CPM		Date/Time					
Relinquished By		Date/Time		Received By		Date/Time					
Relinquished By		Date/Time		Received By		Date/Time					
Relinquished By		Date/Time		Received By		Date/Time					
Relinquished By		Date/Time		Received By		Date/Time					
LABORATORY SECTION		Received By		Title		Date/Time					
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time					

710014



ERC Radiological Counting Facility Analysis Report

RCF Number RCF8992

Sample Date & Time 2/13/01 0810

Project ID: 100-R

SAF Number: B00-073

Date Analyzed 2/13/01 3:48:2

Sample ID: B11CP2

Gamma Energy Analysis

Nuclide	Activity (pCi/g)	Error (pCi/g)	MDC (pCi/g)
K-40	1.7E+01	+/- 1.1E+01	6.4E+00
Co-60	2.0E+00	+/- 8.1E-01	8.8E-01
Cs-137	2.3E+01	+/- 2.4E+00	7.0E-01
Ba-152	<	2.4E+00	2.4E+00
Ba-154	<	2.7E+00	2.7E+00
Ba-155	<	1.8E+00	1.8E+00
Tl-208	<	1.9E+00	1.9E+00
Pb-212	<	1.3E+00	1.3E+00
Bi-214	<	6.6E+00	6.6E+00
Pb-214	5.1E+00	+/- 1.7E+00	2.0E+00
Ra-226	<	1.6E+01	1.6E+01
Ac-228	<	3.3E+00	3.3E+00
Pa-234	<	1.3E+00	1.3E+00
Tb-234	<	7.7E+00	7.7E+00
U-235	<	3.8E+00	3.8E+00
Am-241	<	1.1E+00	1.1E+00

Total GEA (pCi/g)	4.7E+01	+/-	1.6E+01	Alpha MDC (pCi/g)	Beta MDC (pCi/g)
Gross Alpha**	2.1E+00	+/-	6.6E-01	19.2E-01	1.7E+01
Gross Beta	3.2E+01	+/-	2.0E+00		

Details:

All errors reported in 2 standard deviations.

N/B = no result or analysis not requested. <MDC = Less than detection limit.

All GEA results reported as "<" but the Minimum Detectable Concentration (MDC) value for that radionuclide.

Rounding error may result in the reported total GEA activity differing from the sum of the > MDC GEA values in the second significant digit.

For soils and natural samples, the following applies:

The analysis of U-238 is based on the activity of Th-234m.

The analysis of Th-232 is based on the activity of Pb-212.

U-238dec is the activity of Th-214 and Bi-214, short lived daughter products of U-238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.

Th-232dec is the activity of Ac-228, Th-212, and Tl-208, short lived daughter products of Th-232. Equilibrium between parent and daughter products may not exist in disturbed materials.

Other samples, not containing natural materials, may have negligible results for the Th, U, transuramics and daughter products. The results must then be balanced for the gross alpha analysis.

**The gross alpha results are not corrected for mass absorption

No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Analyst

E. V. Reynolds
2/13/01

Report Printed: Tuesday, February 13, 2001

Report To	For
ICG ADM RB	372-2185
Jean Kasper	372-9487
Doug Bowen	372-7710

Figure 1. Sample Check-in List

Date/Time Received: 2/14/01 15:09 SDG#: W03447
 Work Order Number: J1B140250 SAF#: B00-073
 Shipping Container ID: ERC 96-082 Chain of Custody #: B00-073-020

1. Outermost shipping container damaged? Yes No
2. Custody Seals on shipping container intact? Yes No
3. Custody Seals dated and signed? Yes No
4. Chain-of-Custody record present? Yes No
5. Chain-of-Custody includes the following information:
 - Client name Yes No
 - Project name or number Yes No
 - Sample date/time for each sample Yes No
 - Container types, sizes and number of containers Yes No
 - Short description of sample, i.e., matrix Yes No
 - Analyses requested Yes No
 - Preservation used or "none" or N/A if not applicable Yes No
 - Date and time of relinquish and receipt Yes No
 - Signatures of those persons relinquishing and receiving Yes No
6. Sample numbers on chain of custody match those on sample containers? Yes No
7. Collection date and date of laboratory receipt are within project specific holding time requirements? Yes No
8. Cooler temperature: 40
9. Vermiculite/packing materials is: Wet Dry

10. Samples have: <input checked="" type="checkbox"/> tape <input checked="" type="checkbox"/> custody seals	<input checked="" type="checkbox"/> hazard labels <input checked="" type="checkbox"/> appropriate sample labels
11. Samples are: <input checked="" type="checkbox"/> in good condition <input type="checkbox"/> broken	<input type="checkbox"/> leaking <input type="checkbox"/> have air bubbles

12. Were any anomalies identified in sample receipt? Yes No

13. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: [Signature] Date: 2/14/01 15:09
 Telephone/Fax/E-mailed to: _____ On _____ By _____

RQC050

Severn Trent Laboratories, Inc.
WET CHEM BATCHSHEET

Run Date: 2/15/01
Time: 10:28:29

STL Richland

PRODUCTION FIGURES - WET CHEM

TOTAL NUMBER	SAMPLE NUMBER	QC	RE-RUN MATRIX	RE-RUN OTHER	MISC NUMBER	TOTAL HOURS	EXPANDED DELIVERABLE
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METHOD: EA Chromium, Hexavalent (7196A)
 QC BATCH #: 1046240 INITIALS: _____ DATA ENTRY: _____
 PREP DATE: 2/14/01 PREP _____ INITIALS _____
 COMP DATE: 2/14/01 ANAL _____ DATE _____
 USER: ROSSR

Work Order	Lab Number	Structured Analysis	Exp. Del.	Analysis Date	Sample ID:
DV5JL-1-AA	J-1B140250-001	XX A DW EA 5I	E	_____	B11CP0
DV5JL-1-AD	J-1B140250-001-S	XX A DW EA 5I	E	_____	B11CP0
DV5JL-1-AF	J-1B140250-001-S	XX A DW EA 5I	E	_____	B11CP0
DV5JL-1-AE	J-1B140250-001-X	XX A DW EA 5I	E	_____	B11CP0 DUP
DV6EG-1-AA	J-1B150000-240-B	XX A DW EA 5I		_____	INTRA-LAB BLANK
DV6EG-1-AC	J-1B150000-240-C	XX A DW EA 5I		_____	INTRA-LAB CHECK

Control Limits

(75-125)

(75-125)

(80-120)

09017