W03216

0053941

SEVERN TRENT SERVICES

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

Tel: 509 375 3131
Fax: 509 375 5590
www.stl-inc.com

CERTIFICATE OF ANALYSIS

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

RECEIVED NOV 28 2000 EDMC

August 2, 2000

Attention: Joan Kessner

RECEIVED AUG 2000

SAF Number	:	B00-037
Date SDG Closed	:	July 6, 2000
Number of Samples	:	One (1)
Sample Type	:	Soil
SDG Number	:	W03216
Data Deliverable	:	21-Day / Summary

I. Introduction

On July 6, 2000, one soil sample was received at STL Richland (STLR) for radiochemical. Upon receipt, the sample was assigned the following laboratory ID number to correspond with the Bechtel Hanford, Inc. (BHI) specific ID:

STLR ID#	BHI ID#	MATRIX	DATE OF RECEIPT
9DFREA10	B0Y6L7	SOIL	7/6/00

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 analyses were:

Alpha Spectroscopy
Uranium-234, -235, -238 by method RICH-RC-5079
Gamma Spectroscopy
Gamma Scan by method RICH-RC-5017

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III. Quality Control

The analytical results for each analysis performed under SDG W03216 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.

QC and sample results are reported in the same units.

IV. Comments

Alpha Spectroscopy
Uranium-234, -235, -238 by method RICH-RC-5079:
The LCS, batch blank, sample duplicate (B0Y6L7) and sample results are within contractual requirements.

Gamma Spectroscopy
Gamma Scan by method RICH-RC-5017:
The LCS, batch blank, sample duplicate (B0Y6L7) and sample 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

Jackie Waddell
Project Manager

SEVERN TRENT SERVICES

SAMPLE RESULTS

LAB NAME:	**STL Richland**	**SDG: /RPT GRP:**	W03216 / 10980
LOT,RPT DB ID:	J0G060222-1 9DFREA10	**MATRIX:**	SOIL
CLIENT ID:	B0Y6L7	**DATE RECEIVED:**	7/6/2000 2:25:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	RPT UNIT	YIELD	METHOD NUMBER	WORK ORDE	BAT-CH
U-234	7.58E-01	J	1.2E-01	1.9E-01	2.74E-02	pCi/g	84.49%	RICHRC5079	DFREA	0193272
U-235	3.35E-02	J	2.6E-02	2.6E-02	1.95E-02	pCi/g	84.49%	RICHRC5079	DFREA	0193272
U-238	7.86E-01	J	1.2E-01	1.9E-01	4.09E-02	pCi/g	84.49%	RICHRC5079	DFREA	0193272
CO-60	1.09E-02	U	1.3E-02	1.3E-02	2.36E-02	pCi/g		RICHRC5017	DFREA	0193275
CS-137	-5.18E-03	U	1.2E-02	1.2E-02	2.04E-02	pCi/g		RICHRC5017	DFREA	0193275
EU-152	-1.31E-02	U	3.9E-02	3.9E-02	5.38E-02	pCi/g		RICHRC5017	DFREA	0193275
EU-154	-5.12E-03	U	4.3E-02	4.3E-02	7.18E-02	pCi/g		RICHRC5017	DFREA	0193275
EU-155	-4.83E-03	U	3.5E-02	3.5E-02	5.80E-02	pCi/g		RICHRC5017	DFREA	0193275
RA-226	4.81E-01		6.9E-02	6.9E-02	3.77E-02	pCi/g		RICHRC5017	DFREA	0193275
RA-228	6.47E-01		1.2E-01	1.2E-01	7.77E-02	pCi/g		RICHRC5017	DFREA	0193275

Number of Results: 10

Result = IDL When Not Detected

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

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DUPLICATE RESULTS

LAB NAME:	**STL Richland**		**SDG: /RPT GRP:**	W03216 / 10980
LOT,RPT DB ID:	J0G060222-1	DFREA14R	**MATRIX:**	SOIL
CLIENT ID:	B0Y6L7 DUP		**DATE RECEIVED:**	7/6/2000 2:25:00 P
ORIG LAB ID:	9DFREA10			

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
U-234	8.46E-01	J	1.3E-01	2.0E-01	2.60E-02	pCi/g	94.99%	RICHRC5079	7.58E-01	10.99%
U-235	6.30E-02	J	3.5E-02	3.7E-02	2.46E-02	pCi/g	94.99%	RICHRC5079	3.35E-02	61.22%
U-238	8.28E-01	J	1.2E-01	2.0E-01	2.46E-02	pCi/g	94.99%	RICHRC5079	7.86E-01	5.15%

Number of Results: 3

Result = IDL When Not Detecte

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

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DUPLICATE RESULTS

LAB NAME:	**STL Richland**		**SDG: /RPT GRP:**	W03216 / 10980
LOT,RPT DB ID:	J0G060222-1	DFREA15R	**MATRIX:**	SOIL
CLIENT ID:	B0Y6L7 DUP		**DATE RECEIVED:**	7/6/2000 2:25:00 P
ORIG LAB ID:	9DFREA10			

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
CO-60	-1.24E-03	U	1.3E-02	1.3E-02	2.18E-02	pCi/g		RICHRC5017	1.09E-02	250.99%
CS-137	-1.35E-02	U	1.2E-02	1.2E-02	1.93E-02	pCi/g		RICHRC5017	-5.18E-03	88.89%
EU-152	-3.86E-02	U	3.0E-02	3.0E-02	4.81E-02	pCi/g		RICHRC5017	-1.31E-02	98.65%
EU-154	2.66E-03	U	4.4E-02	4.4E-02	7.49E-02	pCi/g		RICHRC5017	-5.12E-03	633.08%
EU-155	4.02E-02	U	3.2E-02	3.2E-02	5.42E-02	pCi/g		RICHRC5017	-4.83E-03	254.63%
RA-226	4.84E-01		7.2E-02	7.2E-02	3.74E-02	pCi/g		RICHRC5017	4.81E-01	0.53%
RA-228	6.05E-01		1.0E-01	1.0E-01	7.68E-02	pCi/g		RICHRC5017	6.47E-01	6.75%

Number of Results: 7

Result = IDL When Not Detecte

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

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SEVERN TRENT SERVICES

BLANK RESULTS

LAB NAME: STL Richland **SDG /RPT GRP:** W03216 / 10980

LOT,RPT DB ID: J0G110000-27 DG12711B **MATRIX:** SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	RPT UNIT	YIELD	METHOD NUMBER	WORK ORDE	BAT-CH
U-234	-8.60E-04	U	9.6E-03	9.6E-03	3.35E-02	pCi/g	106.59%	RICHRC5079	DG1271	0193272
U-235	-3.44E-03	U	3.4E-03	3.5E-03	2.95E-02	pCi/g	106.59%	RICHRC5079	DG1271	0193272
U-238	6.88E-03	U	1.2E-02	1.2E-02	2.43E-02	pCi/g	106.59%	RICHRC5079	DG1271	0193272

Number of Results: 3

Result = IDL When Not Detected

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

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SEVERN TRENT SERVICES

BLANK RESULTS

LAB NAME: STL Richland **SDG /RPT GRP:** W03216 / 10980

LOT,RPT DB ID: J0G110000-27 DG12911B **MATRIX:** SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	RPT UNIT	YIELD	METHOD NUMBER	WORK ORDE	BAT-CH
CO-60	6.00E-03	U	7.4E-03	7.4E-03	1.41E-02	pCi/g		RICHRC5017	DG1291	0193275
CS-137	1.70E-03	U	8.2E-03	8.2E-03	1.44E-02	pCi/g		RICHRC5017	DG1291	0193275
EU-152	1.51E-02	U	2.3E-02	2.3E-02	3.98E-02	pCi/g		RICHRC5017	DG1291	0193275
EU-154	-5.85E-03	U	2.2E-02	2.2E-02	3.75E-02	pCi/g		RICHRC5017	DG1291	0193275
EU-155	1.26E-02	U	1.8E-02	1.8E-02	3.07E-02	pCi/g		RICHRC5017	DG1291	0193275
RA-226	4.48E-02		3.3E-02	3.3E-02	2.54E-02	pCi/g		RICHRC5017	DG1291	0193275
RA-228	2.81E-02	U	6.7E-02	6.7E-02	6.87E-02	pCi/g		RICHRC5017	DG1291	0193275

Number of Results: 7

Result = IDL When Not Detected

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

Severn Trent Laboratories Richland

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SEVERN TRENT SERVICES

LABORATORY CONTROL SAMPLE

LAB NAME:	STL Richland	**SDG: /RPT GRP:**	W03216 / 10980
LAB SAMPLE ID:	DG12712S	**MATRIX:**	SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
U-234	7.51E-01	J	1.1E-01	1.8E-01	2.29E-02	pCi/g	103.92%	8.64E-01	86.85%
U-235	1.38E-02	U	1.6E-02	1.7E-02	2.55E-02	pCi/g	103.92%	3.94E-02	34.87%
U-238	7.72E-01	J	1.1E-01	1.8E-01	1.94E-02	pCi/g	103.92%	9.05E-01	85.25%

Number of Results: 3

Result = IDL When Not Detecte

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

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SEVERN TRENT SERVICES

LABORATORY CONTROL SAMPLE

LAB NAME:	**STL Richland**	**SDG: /RPT GRP:**	W03216 / 10980
LAB SAMPLE ID:	DG12912S	**MATRIX:**	SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
CS-137	3.15E-01		5.3E-02	5.3E-02	4.88E-02	pCi/g		3.04E-01	103.91%

Number of Results: 1

Result = IDL When Not Detecte

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

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STL RICHLAND
Data Review Checklist
RADIOCHEMISTRY

Priority

Lot Number: JOG060222	
Client ID: BHI	
Due Date: 7-21-00	
QC Batch Number: 0193272	SDG Number: 3216
Method Test Parameter: U750	
Matrix: Soil	

Review Item	Yes (√)	No (√)	N/A (√)	2nd Level Review (√)
A. Calibration 1. Is the calibration documentation included where applicable?			✓	✓
B. Sample Analysis 1. Are the sample yields within acceptance criteria?	✓			
2. Were all sample holding times met?	✓			
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			
C. QC Samples 1. Is the blank yield within acceptance criteria?	✓			
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			
3. Does the blank result meet the Contract criteria?	✓			
4. Is the blank result < the Contract Detection Limit?	✓			
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓	
6. Is the LCS result within acceptance criteria?	✓			
7. Is the LCS yield within acceptance criteria?	✓			
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓			
9. Do the MS/MSD results and yields meet acceptance criteria?			✓	
10. Do the duplicate sample results and yields meet acceptance criteria?	✓			
D. Other 1. Are all Nonconformances included and noted?			✓	
2. Are all required forms filled out?	✓			
3. Was the correct methodology used?	✓			
4. Was transcription checked?	✓			
5. Were all calculations checked at a minimum frequency?	✓			
6. Were units checked?	✓			

Comments on any "No" response: _____

First Level Review: Pam Kenitzer Date: 7-28-00

Second Level Review: Jackie Wadsell Date: 7/28/00

LS-038, Rev.6, 5/00

STL RICHLAND
Data Review Checklist
RADIOCHEMISTRY

Lot Number:	J06060222
Client ID:	BHI
Due Date:	7-26-00
QC Batch Number:	0193275
SDG Number:	013216
Method Test Parameter:	gamma
Matrix:	soil

Review Item	Yes (√)	No (√)	N/A (√)	2nd Level Review (√)
A. Calibration 1. Is the calibration documentation included where applicable?			✓	✓
B. Sample Analysis 1. Are the sample yields within acceptance criteria?			✓	✓
2. Were all sample holding times met?	✓			✓
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			✓
C. QC Samples 1. Is the blank yield within acceptance criteria?			✓	✓
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			✓
3. Does the blank result meet the Contract criteria?	✓			✓
4. Is the blank result < the Contract Detection Limit?	✓			✓
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓	✓
6. Is the LCS result within acceptance criteria?	✓			✓
7. Is the LCS yield within acceptance criteria?			✓	✓
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓			✓
9. Do the MS/MSD results and yields meet acceptance criteria?			✓	✓
10. Do the duplicate sample results and yields meet acceptance criteria?	✓			✓
D. Other 1. Are all Nonconformances included and noted?			✓	✓
2. Are all required forms filled out?	✓			✓
3. Was the correct methodology used?	✓			✓
4. Was transcription checked?	✓			✓
5. Were all calculations checked at a minimum frequency?	✓			✓
6. Were units checked?	✓			✓

Comments on any "No" response: _____

First Level Review: Pam Kenitzer Date: 7-24-00

Second Level Review: Jackie Waldeel Date: 7/26/00

LS-038, Rev.6, 5/00

CHAIN OF CUSTODY

W-21038

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-037-03	Page 1 of 1

Collector: Doug Bowers	Company Contact: Jeff Lerch — Telephone No.: 373-5904	Project Coordinator: TRENT, SJ	Price Code: 8L — Data Turnaround: 21 days
Project Designation: 300-FF-1 Landfill 1A Cleanup - Verification Sampling	Sampling Location: 300 FF-1 1A landfill	SAF No.: B00-037	Air Quality ☐
Ice Chest No.: COOLER # 101	Field Logbook No.: EL1395-4 — COA: RNDF1A2600	Method of Shipment: ~~Fed Ex~~ 013 7600 GOV. VEHICLE	
Shipped To: Quanterra Incorporated	Offsite Property No.: N/A	Bill of Lading/Air Bill No.: N/A	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SDG W03216

SAMPLE ANALYSIS Due 7-27-00 J06060222

Preservation	None	Cool 4C	None	Cool 4C	Cool 4C	None				
Type of Container	P	aG	aG	aG	aG	~~aG~~ P				
No. of Container(s)	1	1	1	1	1	1				
Volume	20mL X	60mL	60mL X	120mL	250mL	1000mL X				
	Activity Scan	See item (1) in Special Instructions.	Isotopic Uranium	Semi-VOA - 8270A (TCL)	PCBs - 8082	See item (2) in Special Instructions.				

Sample No.	Matrix *	Sample Date	Sample Time										
B0Y6L7 DFREA	Soil	6-28-00	0925	X	X	X	X	X	X			B0Y6P5	

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By: Doug Bowers Date/Time: 6-28-00/1750	Received By: R. Thoren Date/Time: R. Thoren 6-28-00/1745	(1) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Arsenic, Beryllium, Lead, Selenium, Thallium}
Relinquished By: ~~SJGALE 7600 11:30~~ Date/Time:	Received By: ~~FED EX 7600~~ Date/Time:	(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}
Relinquished By: SJGALE 7-6-00 2:25 Date/Time:	Received By: 7-6-00 2:25 Date/Time:	R. THOREN UNAVAILABLE TO SIGN COC.
Relinquished By: Date/Time:	Received By: Date/Time:	
Relinquished By: Date/Time:	Received By: Date/Time:	3C
Relinquished By: Date/Time:	Received By: Date/Time:	

Matrix *: S=Soil, SE=Sediment, SO=Solid, S=Sludge, W=Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, WI=Wipe, L=Liquid, V=Vegetation, X=Other

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

BHI-EE-011 (10/99)

0013

ERC Radiological Counting Facility Analysis Report

RCF Number RCF8090

Sample Date & Time 6/28/00 0925

Project ID: 300-FF-1 1A LANDFILL **SAF Number:** B00-037

Date Analyzed 7/6/00 8:05:07

Sample ID: B0Y6P5

Gamma Energy Analysis

Nuclide		Activity (pCi/g)		Error (pCi/g)	MDC (pCi/g)
K-40	<	7.7E+00			7.7E+00
Co-60	<	5.7E-01			5.7E-01
Cs-137	<	6.4E-01			6.4E-01
Eu-152	<	2.0E+00			2.0E+00
Eu-154	<	1.9E+00			1.9E+00
Eu-155	<	2.0E+00			2.0E+00
Th-232D	<	2.0E+00			2.0E+00
U-235	<	5.1E+00			5.1E+00
U-238D		4.7E+00	+/-	1.3E+00	1.4E+00
Am-241	<	1.2E+00			1.2E+00

Total GEA (pCi/g)	4.7E+00	+/-	1.3E+00

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	N/R	+/-	N/R
Gross Beta	N/R	+/-	N/R

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDA = Less than detection limit.
All GEA results reported as "<" list 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 > MDA 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 Pa-234m.
The analysis of Np-237 is based on the activity of Pa-233.
U-238dau is the activity of Pb-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-232dau is the activity of Ac-228, Pb-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 inapplicable results for the Th, U, transuranics and daughter products. The results must then be balanced for the gross alpha analysis.
**The gross alpha results are not corrected for mass absorbtion
No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Analyst G. L. Hastings 7/6/00

Report To JEFF LERCH

Fax 373-5373

Report Printed: Thursday, July 06, 2000

Figure 1. Sample Check-in List

Date/Time Received: 7-6-00 1425 SDG#: W03216

Work Order Number: 106-060222 SAF#: B00-037

Shipping Container ID: COOLER #101 Chain of Custody #: B00-037-03

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? 6 Yes [✓] No [ ]

7. Collection date and date of laboratory receipt are within project specific holding time requirements? Yes [ ] No [ ]

8. Cooler temperature: 4°

9. Vermiculite/packing materials is: Wet [✓] Dry [ ]

10. Samples have: ✓ tape ___ hazard labels ✓ custody seals ✓ appropriate sample labels

11. Samples are: ✓ in good condition ___ leaking ___ broken ___ 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: 7-6-00

Telephone/Fax/E:mailed to: _____ On _____ By _____

Client Sample Screening Results

10-Jul-00

7/11/00

CLIENT CODE	ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
BHI	B0Y6L7DFREA		7/10/2000 7:41:00 AM	QUAD24C	7/10/2000 4:05:05 PM	B0Y6L7DFREA	30	5	0.088333333	90	2.03
	DFREA	SOIL		Bkg:	7/7/2000 2:20:16 AM	BKG	600	47	0.078333333	582	0.97

Ani Date: 7/10/00 Tot Sa, Alq: 1.31E+03 , 9.37E+01 Alp; (Dpm/ 4.55E-01 (uCi/ 2.86E-03 (pCi/ 2.19E+00 + 4.9E+00 CAT I 2.3E+01 Lab Alq

Ppt mg: 93.7 Units: g , mg Bet; Alq): 4.40E+00 Sa): 2.77E-02 L|g): 2.12E+01 + 3.4E+00 4.7E+00 L|g

RQC053

Parent Batch:
Associated Batches:
:
:
:
:

Severn Trent Laboratories, Inc.
Information Sheet Rad Prep

Run Date: 7/11/00
Time: 11:16:48

Page: 1

PRIORITY
21day

****
* *
* QC BATCH: 0193272 *
* *
****

PRIORITY
21day

WQ3216

SR: Uranium-234,235,238 by Alpha Spec
7S: UIso PrpRC5013/RC5019, SepRC5079(5039)
5I: CLIENT: HANFORD

Analytical Due Date: 7/21/00
Project Manager: JW2

Lot# Work Order	Client	Analyt Due Matrix	Client Name Aliquot	Geometry	Count Time	Mid/Ave Date/Time		Tracer ID Spike ID	CRDL	Units	Screen Info - (Ci) Alpha	Beta	PM Bin
J0G060222-001 DFREA-1-01 Comments:	SOIL SOIL	7/21/00	Bechtel Hanford, .0000		.000	6/28/00	9:25		1	pCi/g	**NYS 75-07/00	**NYS	JW2
J0G060222-001 X DFREA-1-04 Comments:	SOIL SOIL	7/21/00	Bechtel Hanford, .0000		.000	6/28/00	9:25		1	pCi/g	**NYS 75-07/00	**NYS	JW2
J0G110000-272 B DG127-1-01 Comments:	SOLID	7/21/00	Bechtel Hanford,			6/28/00	9:25		1	pCi/g	**NA	**NA	JW2
J0G110000-272 C DG127-1-02 Comments:	SOLID	7/21/00	Bechtel Hanford,			6/28/00	9:25			pCi/g	**NA	**NA	JW2

Total Number of Samples In Batch: 00004

Batch Information: Dry Wt: Y Decay Correct: Y Blank Sub: None Call In:

Uncert: Both Sigma: 1.960 ODR: Target List + Other Detected

BLANK CRDL		Tracer Yield		Type	QC Control Limits
Uranium 234	1	Uranium-232	(020-105)	RPD	
Uranium 235	1			RPD	
Uranium 238	1			RPD	

** NYS = Not Yet Screened
** NA = Not Applicable
** Other = Other than Gross Alpha or Gross Beta
++ Indicates that Batch Information has changed for this sample. Print worksheet for details.

0017

COC Signature Page

W03216

Lot or Batch #: 0193270

	Initials/Date	Procedure #
Released By	7-11-00 RWK	RICHRC005
Received	7-11-00	RichRC503/5017
Released By	7-12-00	n/a
Received	SL 7/12/00	RC5019
Released By	SK 7/25/00	n/a
Received	7-25-00	RC 5079
Released By	7-26-00	n/a
Received	SD 7/26/00	RC5039-2
Released By	SD 7/28/00	n/a
Received	CO 7/28/00	RICHRD008K1
Released By	CO 7/28/00	n/a
Received	JM 7-28-00	Radrale V3.1
Released By	JM 7-28-00	n/a
Received	PK 7.28 00	RICHRC002
	PK 7-28-00	

RC-131, Rev. I, 6/99

RQC053

Parent Batch:
Associated Batches:
:
:
:
:

Severn Trent Laboratories, Inc.
Information Sheet Rad Prep

Run Date: 7/11/00
Time: 11:17:54

Page: 1

****
* *
* QC BATCH: 0193275 *
* *
****

PRIORITY
7day

W03916

T9: Gamma by HPGE 10 day ingrowth 7/22
AW: Gamma PrpRC5017
5I: CLIENT: HANFORD

Analytical Due Date: 7/26/00
Project Manager: JW2

Lot# Work Order	Client	Analyt Matrix	Due Aliquot	Client Name Geometry	Count Time	Mid/Ave Date/Time	Tracer ID Spike ID	CRDL	Units	Screen Info - (Ci) Alpha	Beta	PM Bin
J0G060222-001 DFREA-1-03 Comments:	SOIL SOIL	7/26/00		Bechtel Hanford, .0000	.000	6/28/00 9:25		5.00E-02	pCi/g	**NYS 75-07/00	**NYS	JW2
J0G060222-001 X DFREA-1-05 Comments:	SOIL SOIL	7/26/00		Bechtel Hanford, .0000	.000	6/28/00 9:25		5.00E-02	pCi/g	**NYS 75-07/00	**NYS	JW2
J0G110000-275 B DG129-1-01 Comments:	SOLID	7/26/00		Bechtel Hanford,		6/28/00 9:25		1.00E-01	pCi/g	**NA	**NA	JW2
J0G110000-275 C DG129-1-02 Comments:	SOLID	7/26/00		Bechtel Hanford,		6/28/00 9:25		0.1	pCi/g	**NA	**NA	JW2

Total Number of Samples In Batch: 00004

Batch Information: Dry Wt: ? Decay Correct: Y Blank Sub: None Call In:

Uncert: Both Sigma: 1.960 ODR: Target List + Other Detected

BLANK CRDL		Tracer Yield	Type	QC Control Limits
Radium,226	1.00E-01		RPD	
Radium 228	2.00E-01		RPD	
Cobalt 60	5.00E-02		RPD	
Cesium 137	1.00E-01		RPD	
Europium 152	1.00E-01		RPD	
Europium 154	1.00E-01		RPD	
Europium 155	1.00E-01		RPD	

** NYS = Not Yet Screened
** NA = Not Applicable
** Other = Other than Gross Alpha or Gross Beta
++ Indicates that Batch Information has changed for this sample. Print worksheet for details.

0019

COC Signature Page

W03214

Lot or Batch #: 0193275

	Initials/Date	Procedure #
Released By	PWK 7-11-00	RICHRC0007
Received	7-11-00	RichRC5013/5017
Released By	7-12-00	n/a
Received	7/12/00	RICHRC0007
Released By	7/24/00	n/a
Received	PK 7.24.00	RICHRC0002
Released By		n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		

RC-131, Rev.1, 6/99

ORIGINAL Dayes

SDR # B00-115
Revision #: 0
Date Initiated: 07/11/00

SAMPLE DISPOSITION RECORD

SAF: B00-037
OU: 300-FF-1
Project ID: 300-FF-1 RD
Task ID: 11
Sampling Event: Landfill 1A Verification Sampling

Laboratory: Severn Trent Inc.

Task Manager: James, J.R.

Sampling Information:
Number of Samples: 1
ID Numbers: B0Y6L7
Matrix: soil
Collection Date: 06/28/00

Issue Background:

Class: ☒ Project Data Use ☐ General Laboratory Direction ☐ Validation Direction ☐ Sample Management Direction

Type: (7) Other data use impact

Description: Temperature of sample cooler upon arrival at laboratory beyond criteria

Disposition:

Description: Lab was directed to continue with analysis despite elevated sample cooler temperature.

Justification: For the analyses requested on this sample: PCBs, ICP metals, and BNAs, the elevated temperature would not have affected the analytes in question. The purpose of this SDR is to document that the elevated temperature was noted, communicated to the project, and that the lab was instructed to proceed with the analysis.

Approval Signatures:

S. J. Trent David Wisher (for S.J. Trent) 7/11/00
Project Coordinator (Print/Sign Name) Date

J.R. James J R James 7/21/00
Task Manager (Print/Sign Name) Date

BHI-EE-109 (02/99)

SEVERN TRENT SERVICES

STL St. Louis

CASE NARRATIVE

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, Washington 99352

July 26, 2000

Attention: Joan Kessner

Project Number	:	37272
SAF	:	B00-037
SDG	:	W03216
Number of Samples	:	one (1)
Sample Matrix	:	Soil
Data Deliverable	:	Summary
Date SDG Closed	:	7/6/00

JUL 2000 RECEIVED

II. Introduction

On July 6, 2000, one (1) "soil" sample was received by STL-Richland and transferred to STL-St. Louis for chemical analysis. The samples were received at the St. Louis lab on 7/7/00 at a temperature of 18 degrees C. Richland was notified of the out-of-control temperature. See the attached Sample Summary form for the Lab ID's and corresponding Client Ids.

III. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits.

Analyses requested:
ICP Metals – 6010A(TAL)
ICP Metals – 6010A (add-on) {As,Be,Pb,Se,Tl}
Semi-VOA – 8270A (TCL)
PCB - 8082

Deviation from Request: The BNA's were analyzed using method 8270C.

IV. Definitions

The following codes are used to denote laboratory quality control samples and can be found in the data summary section of this report:

QCBLK- Quality Control Blank, Method Blank
QCLCS- Quality Control Laboratory Control Sample, Blank Spike
MS- Matrix Spike.
DUP- Matrix Duplicate
MSD- Matrix Spike Duplicate.

SEVERN TRENT SERVICES

STL St. Louis

Bechtel Hanford Incorporated
July 26, 2000
Project Number: 37272
SDG: W03216
Page 2

V. Comments

General: The term "Detection Limit" used in the analytical data reports refers to either the lab's standard reporting limits or contractually required reporting limits, whichever is applicable.

Please refer to the attached cross-reference table for the standard preparation methods used at Quanterra, St. Louis.

Metals: A Laboratory Control Sample, Method Blank, Matrix Spike and Matrix Spike Duplicate were analyzed with each preparation batch per the protocol for this analysis.

The Iron MS/MSD recovery was outside QC limits due to the level of Iron found in the native sample. The result was greater than four times the spike amount added. Aluminum and Manganese also recovered outside acceptance criteria. The out-of-control spikes have been flagged. All LCS recoveries were within criteria.

BNA: A Laboratory Control Sample, Method Blank, Matrix Spike and Matrix Spike Duplicate were analyzed with each preparation batch per the protocol for this analysis.

The RPD for several compounds is outside the acceptance criteria in the MS/MSD and is flagged. The individual compound recoveries all meet QC limits.

PCB: A Laboratory Control Sample, Method Blank, Matrix Spike and Matrix Spike Duplicate were analyzed with each preparation batch per the protocol for this analysis.

There were no comments or non-conformances associated with the PCB data.

I certify that this Summary 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:

Marti Ward
St. Louis Project Manager

SAMPLE SUMMARY

F0G070222

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
DFV4L	001	B0Y6L7	06/28/00	09:25

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

METHODS SUMMARY

F0G070222

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Inductively Coupled Plasma (ICP) Metals	SW846 6010B	SW846 3050B
Percent Moisture	MCAWW 160.3 MOD	MCAWW 160.3 MOD
PCBs by SW-846 8082	SW846 8082	SW846 3550
Semivolatile Organic Compounds by GC/MS	SW846 8270C	SW846 3550B

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

PSL20300 SEVERN TRENT LABORATORIES, INC Run Date: 7/07/00
Page 1 CLIENT ANALYSIS SUMMARY Time: 15:01:12
STL St. Louis User Id.: WATSONJ

CLIENT: 127642 BECHTEL HANFORD, INC. QUOTE/SAR #: 37272
PROJECT MANAGER: MARTI WARD LAB ID: F-0G070222-001
PROJECT #: 300-FF-1 WORK ORDER: DFV4L
REPORT TO: Bechtel Hanford, Inc. RECEIVING DATE: 7/07/00
P.O. NUMBER: MRC-SBB-A-19981 SAMPLING DATE: 6/28/00
SITE: B00-037 ANALYTICAL DUE DATE: 7/25/00N
AMOUNT REC"D: 60MLG,120G,250G REPORT DUE DATE: 7/28/00
STORAGE LOC: R3B PRIORITY: 18
LOT COMMENTS: QC is billable SAMPLING TIME: 9:25
MATRIX: SOLID RECEIVING TIME: 8:40
SAMPLE ID: B0Y6L7
QC PACKAGE: Special Report - see checklist SDG# : W03216
SAMPLE COMMENTS:

Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Moisture, Percent (160.3)	06	7/07/00	0/00/00	10/05/00
NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION				
(A-88-WM-01) DFV4L-1-01 Protocol: A QC Program: STANDARD TEST SET				
Inductively Coupled Plasma (6010B)	06	7/07/00	0/00/00	12/25/00
METALS, TOTAL - Soils				
M6010_S AG,AL,AS,BA,BE,CA,CD,CO,CR,CU,FE,KX,MG,MN,NA,NI,PB,SB,SE,TL,VX,ZN				
(A-46-QO-01) DFV4L Protocol: A QC Program: STANDARD TEST SET				
Base/Neutrals and Acids (8270C)	06	7/07/00	7/12/00	8/21/00
SONICATION - Low Level				
STL: SW-846 8270C				
(A-13-QL-01) DFV4L-1-28 Protocol: A QC Program: STANDARD TEST SET				
PCBs (8082)	06	7/07/00	7/12/00	8/21/00
SONICATION w/ACID STRIP (PCB)				
STL: HANFORD PCB GC:LIST-1(7)				
(A-71-QH-01) DFV4L-1-2C Protocol: A QC Program: STANDARD TEST SET				

PSL20300 SEVERN TRENT LABORATORIES, INC Run Date: 7/07/00
Page 1 CLIENT ANALYSIS SUMMARY Time: 15:01:12
STL St. Louis User Id.: WATSONJ

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 300-FF-1
REPORT TO: Bechtel Hanford, Inc.
P.O. NUMBER: MRC-SBB-A-19981
SITE: B00-037
AMOUNT REC"D: 60MLG,120G,250G
STORAGE LOC: R3B
LOT COMMENTS: QC is billable
MATRIX: SOLID
SAMPLE ID: B0Y6L7
QC PACKAGE: Special Report - see checklist
SAMPLE COMMENTS:

QUOTE/SAR #: 37272
LAB ID: F-0G070222-001-D
WORK ORDER: DFV4L MSD
RECEIVING DATE: 7/07/00
SAMPLING DATE: 6/28/00
ANALYTICAL DUE DATE: 7/25/00N
REPORT DUE DATE: 7/28/00
PRIORITY: 18
SAMPLING TIME: 9:25
RECEIVING TIME: 8:40
SDG# : W03216

Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Inductively Coupled Plasma (6010B)	06	7/07/00	0/00/00	12/25/00
METALS, TOTAL - Soils				
M6010_S AG,AL,AS,BA,BE,CA,CD,CO,CR,CU,FE,KX,MG,MN,NA,NI,PB,SB,SE,TL,VX,ZN				
(A-46-QO-01) DFV4L Protocol: A QC Program: STANDARD TEST SET				
Base/Neutrals and Acids (8270C)	06	7/07/00	7/12/00	8/21/00
SONICATION - Low Level				
STL: SW-846 8270C				
(A-13-QL-01) DFV4L-1-2A Protocol: A QC Program: STANDARD TEST SET				
PCBs (8082)	06	7/07/00	7/12/00	8/21/00
SONICATION w/ACID STRIP (PCB)				
STL: HANFORD PCB GC:LIST-1(7)				
(A-71-QH-01) DFV4L-1-2E Protocol: A QC Program: STANDARD TEST SET				

PSL20300 SEVERN TRENT LABORATORIES, INC Run Date: 7/07/00
Page 1 CLIENT ANALYSIS SUMMARY Time: 15:01:12
STL St. Louis User Id.: WATSONJ

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 300-FF-1
REPORT TO: Bechtel Hanford, Inc.
P.O. NUMBER: MRC-SBB-A-19981
SITE: B00-037
AMOUNT REC"D: 60MLG,120G,250G
STORAGE LOC: R3B
LOT COMMENTS: QC is billable
MATRIX: SOLID
SAMPLE ID: B0Y6L7
QC PACKAGE: Special Report - see checklist
SAMPLE COMMENTS:

QUOTE/SAR #: 37272
LAB ID: F-0G070222-001-S
WORK ORDER: DFV4L MS
RECEIVING DATE: 7/07/00
SAMPLING DATE: 6/28/00
ANALYTICAL DUE DATE: 7/25/00N
REPORT DUE DATE: 7/28/00
PRIORITY: 18
SAMPLING TIME: 9:25
RECEIVING TIME: 8:40
SDG# : W03216

Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Inductively Coupled Plasma (6010B)	06	7/07/00	0/00/00	12/25/00
METALS, TOTAL - Soils				
M6010_S AG,AL,AS,BA,BE,CA,CD,CO,CR,CU,FE,KX,MG,MN,NA,NI,PB,SB,SE,TL,VX,ZN				
(A-46-QO-01) DFV4L Protocol: A QC Program: STANDARD TEST SET				
Base/Neutrals and Acids (8270C)	06	7/07/00	7/12/00	8/21/00
SONICATION - Low Level				
STL: SW-846 8270C				
(A-13-QL-01) DFV4L-1-29 Protocol: A QC Program: STANDARD TEST SET				
PCBs (8082)	06	7/07/00	7/12/00	8/21/00
SONICATION w/ACID STRIP (PCB)				
STL: HANFORD PCB GC:LIST-1(7)				
(A-71-QH-01) DFV4L-1-2D Protocol: A QC Program: STANDARD TEST SET				

Q-27038

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Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-037-03	Page 1 of 1
Collector: Doug Bowers	Company Contact: Jeff Lerch; Telephone No.: 373-5904	Project Coordinator: TRENT, SJ	Price Code: 8L; Data Turnaround: 21 days; Air Quality ☐
Project Designation: 300-FF-1 Landfill 1A Cleanup - Verification Sampling	Sampling Location: 300 FF-1 1A landfill	SAF No.: B00-037	
Ice Chest No.: COOLER #101	Field Logbook No.: EL1395-4; COA: RNDF1A2600	Method of Shipment: ~~Fed Ex~~ 913 7600 GOV. VEHICLE	
Shipped To: Quanterra Incorporated	Offsite Property No.: N/A	Bill of Lading/Air Bill No.: N/A	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SDA

W03216

SAMPLE ANALYSIS Due 7-27-00

J06060222

Preservation	None	Cool 4C	None	Cool 4C	Cool 4C	None				
Type of Container	P	aG	aG	aG	aG	~~aG~~ P				
No. of Container(s)	1	1	1	1	1	1				
Volume	20mL X	60mL	60mL X	120mL	250mL	1000mL X				
	Activity Scan	See Item (1) in Special Instructions ✓	Isotopic Uranium	Semi-VOA - 8270A (TCL) ✓	PCBs - 8082 ✓	See Item (2) in Special Instructions				

✓ = recvd. in SRC-STL

Sample No.	Matrix *	Sample Date	Sample Time									
B0Y6L7 DFREA	Soil	6-28-00	0925	X	X	X	X	X	X			B0Y6P5

all 100 % full

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers 6-28-00/1750	Date/Time	Received By: R. Thoren 6-28-00/1745	Date/Time
Relinquished By: ~~SIGALE 7600 1130~~	Date/Time	Received By: ~~FED EX 7600~~	Date/Time
Relinquished By: SIGALE 7-6-00 2:23	Date/Time	Received By: 7-6-00 2:25	Date/Time
Relinquished By: 7-6-00	Date/Time	Received By: SRC 07-07-00 0840	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Arsenic, Beryllium, Lead, Selenium, Thallium)

(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

R. THOREN UNAVAILABLE TO SIGN COC.

3C

Matrix *: S=Soil; SD=Sediment; SO=Solid; S=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; WI=Wipe; L=Liquid; V=Vegetation; X=Other

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

BHI-EE-011 (10/99)

LOT #F0G070222

STL St. Louis

9

ERC Radiological Counting Facility Analysis Report

RCF Number RCF8090

Sample Date & Time 6/28/00 0925

Project ID: 300-FF-1 1A LANDFILL SAF Number: B00-037

Date Analyzed 7/6/00 8:05:07

Sample ID: B0Y6P5

Gamma Energy Analysis

Nuclide		Activity (pCi/g)		Error (pCi/g)	MDC (pCi/g)
K-40	<	7.7E+00			7.7E+00
Co-60	<	5.7E-01			5.7E-01
Cs-137	<	6.4E-01			6.4E-01
Eu-152	<	2.0E+00			2.0E+00
Eu-154	<	1.9E+00			1.9E+00
Eu-155	<	2.0E+00			2.0E+00
Th-232D	<	2.0E+00			2.0E+00
U-235	<	5.1E+00			5.1E+00
U-238D		4.7E+00	+/-	1.3E+00	1.4E+00
Am-241	<	1.2E+00			1.2E+00

Total GEA (pCi/g) 4.7E+00 +/- 1.3E+00

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	N/R	+/-	N/R
Gross Beta	N/R	+/-	N/R

Definitions:

All error reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDA = Less than detection limit.
All GEA results reported as "<" list 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 > MDA 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 Pa-234m.
The analysis of Np-237 is based on the activity of Pa-233.
U-238dau is the activity of Pb-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-232dau is the activity of Ac-228, Pb-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 inapplicable results for the Th, U, transuranics and daughter products. The results must then be balanced for the gross alpha analysis.
**The gross alpha results are not corrected for resist absorption
No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Analyst G. L. Hastings 7/6/00

Report To: JEFF LERCH

Fax: 373-6373

Report Printed: Thursday, July 06, 2000

Figure 1. Sample Check-in List

Date/Time Received: 7-6-00 14:25 SDG#: W03216

Work Order Number: 106-060222 SAF#: B00-037

Shipping Container ID: COOLER #101 Chain of Custody #: B00-037-03

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 []
   6

7. Collection date and date of laboratory receipt are within project specific holding time requirements? Yes [] No []

8. Cooler temperature: 4°

9. Vermiculite/packing materials is: Wet [✓] Dry []

10. Samples have: ✓ tape ___ hazard labels
    ✓ custody seals ✓ appropriate sample labels

11. Samples are: ✓ in good condition ___ leaking
    ___ broken ___ 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: 7-6-00

Telephone/Fax/E:mailed to: _____ On _____ By _____

Committed to *Your* Success

Lot No.: F0G070222
W03216

Condition Upon Receipt Variance Report
St. Louis Laboratory

Client: Bechtel Hanford
Quote No: 37272
Shipper/No: Airborne 002663443 344
Date: 07.07.00 Time: 0840
Initiated by: SueMBSD
RFA/COC Numbers: B00-037-03

Condition/Variance (Check all that apply):

1. ☐ Sample received broken/leaking.
2. ☐ Sample received without proper preservative.
   - ☑ Cooler temperature not within 4°C ± 2°C
     Record temperature: 17.9°
   - ☐ pH _____
   - ☐ other: _____
3. ☐ Sample received in improper container.
4. ☐ Sample received without proper paperwork. Explain: _____
5. ☐ Paperwork received without sample.
6. ☐ No sample ID on sample container.
7. ☐ Custody tape disturbed/broken/missing/not tamper evident type (circle all that apply).
8. ☐ Sample ID on container does not match sample ID on paperwork. Explain: _____
9. ☐ All coolers on airbill not received with shipment.
10. ☐ Sample volume insufficient for analysis
11. ☐ Other (explain below)

☐ **No variances were noted during sample receipt.**

☐ **Cooler Temperature Upon Receipt in °C:** 17.9°

Temperature Variance Does Not Affect the Following Analyses: metals

Notes: Cooler should be 4±2. Notified M. Ward 07.07.00 12:30.

Corrective Action:

☒ Client's Name: Jackie Waddell / Joan Kessler Informed ~~verbally~~ email on: 7/7/00 By: M Ward

☐ Client's Name: _____ Informed in writing on: _____ By: _____

☒ Sample(s) processed "as is".

☐ Sample(s) on hold until: _____ If released, notify: _____

Sample Control Supervisor Review: (or designate) SueMBSD Date: 07.07.00

Project Management Review: M Ward Date: 7.10.00

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE
THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED
IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY HIS/HER INITIALS AND THE DATE NEXT TO THAT ITEM

Form: SL-ADMIN-0004, Revised 6/21/00 SOP Reference: STL-QA-0006

BECHTEL HANFORD, INC.

Client Sample ID: B0Y6L7

GC/MS Semivolatiles

Lot-Sample #...: F0G070222-001 **Work Order #...:** DFV4L128 **Matrix.....:** SOLID
Date Sampled...: 06/28/00 **Date Received..:** 07/06/00
Prep Date.....: 07/12/00 **Analysis Date..:** 07/19/00
Prep Batch #...: 0196209
Dilution Factor: 1
% Moisture.....: 3.2 **Method.....:** SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Phenol	ND	340	ug/kg	47
bis(2-Chloroethyl)-ether	ND	340	ug/kg	30
2-Chlorophenol	ND	340	ug/kg	40
1,3-Dichlorobenzene	ND	340	ug/kg	34
1,4-Dichlorobenzene	ND	340	ug/kg	31
1,2-Dichlorobenzene	ND	340	ug/kg	36
2-Methylphenol	ND	340	ug/kg	42
2,2'-oxybis(1-Chloropropane)	ND	340	ug/kg	35
4-Methylphenol	ND	340	ug/kg	52
N-Nitrosodi-n-propyl-amine	ND	340	ug/kg	39
Hexachloroethane	ND	340	ug/kg	30
Nitrobenzene	ND	340	ug/kg	31
Isophorone	ND	340	ug/kg	28
2-Nitrophenol	ND	340	ug/kg	40
2,4-Dimethylphenol	ND	340	ug/kg	40
bis(2-Chloroethoxy) methane	ND	340	ug/kg	25
2,4-Dichlorophenol	ND	340	ug/kg	62
1,2,4-Trichloro-benzene	ND	340	ug/kg	24
Naphthalene	ND	340	ug/kg	22
4-Chloroaniline	ND	340	ug/kg	56
Hexachlorobutadiene	ND	340	ug/kg	24
4-Chloro-3-methylphenol	ND	340	ug/kg	78
2-Methylnaphthalene	ND	340	ug/kg	31
Hexachlorocyclopenta-diene	ND	1700	ug/kg	26
2,4,6-Trichloro-phenol	ND	340	ug/kg	57
2,4,5-Trichloro-phenol	ND	340	ug/kg	89
2-Chloronaphthalene	ND	340	ug/kg	19
2-Nitroaniline	ND	1700	ug/kg	58
Dimethyl phthalate	ND	340	ug/kg	44
Acenaphthylene	ND	340	ug/kg	27
2,6-Dinitrotoluene	ND	340	ug/kg	61

(Continued on next page)

BECHTEL HANFORD, INC.

Client Sample ID: B0Y6L7

GC/MS Semivolatiles

Lot-Sample #...: F0G070222-001 Work Order #...: DFV4L128 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
3-Nitroaniline	ND	1700	ug/kg	38
Acenaphthene	ND	340	ug/kg	22
2,4-Dinitrophenol	ND	1700	ug/kg	55
4-Nitrophenol	ND	1700	ug/kg	81
Dibenzofuran	ND	340	ug/kg	29
2,4-Dinitrotoluene	ND	340	ug/kg	77
Diethyl phthalate	79 J	340	ug/kg	57
Fluorene	ND	340	ug/kg	33
4-Chlorophenyl phenyl ether	ND	340	ug/kg	33
4-Nitroaniline	ND	1700	ug/kg	54
4,6-Dinitro-2-methylphenol	ND	1700	ug/kg	120
N-Nitrosodiphenylamine	ND	340	ug/kg	31
4-Bromophenyl phenyl ether	ND	340	ug/kg	25
Hexachlorobenzene	ND	340	ug/kg	25
Pentachlorophenol	ND	1700	ug/kg	67
Phenanthrene	ND	340	ug/kg	15
Anthracene	ND	340	ug/kg	22
Carbazole	ND	340	ug/kg	96
Di-n-butyl phthalate	ND	340	ug/kg	26
Fluoranthene	45 J	340	ug/kg	26
Pyrene	ND	1700	ug/kg	170
Butyl benzyl phthalate	ND	340	ug/kg	17
Benzo(a)anthracene	ND	340	ug/kg	14
3,3'-Dichlorobenzidine	ND	1700	ug/kg	29
Chrysene	ND	340	ug/kg	15
bis(2-Ethylhexyl) phthalate	ND	340	ug/kg	38
Di-n-octyl phthalate	ND	340	ug/kg	28
Benzo(b)fluoranthene	ND	340	ug/kg	18
Benzo(k)fluoranthene	ND	340	ug/kg	34
Benzo(a)pyrene	ND	340	ug/kg	15
Indeno(1,2,3-cd)pyrene	ND	340	ug/kg	85
Benzo(ghi)perylene	ND	340	ug/kg	150
Dibenzo(a,h)anthracene	ND	340	ug/kg	34

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	70	(22 - 119)
Phenol-d5	75	(24 - 127)
Nitrobenzene-d5	69	(39 - 106)
2-Fluorobiphenyl	70	(42 - 106)
2,4,6-Tribromophenol	69	(42 - 120)
Terphenyl-d14	54	(18 - 97)

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BECHTEL HANFORD, INC.

Client Sample ID: B0Y6L7

GC/MS Semivolatiles

Lot-Sample #...: F0G070222-001 Work Order #...: DFV4L128 Matrix.....: SOLID

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

BECHTEL HANFORD, INC.

B0Y6L7

GC/MS Semivolatiles

Lot-Sample #: F0G070222-001 **Work Order #:** DFV4L128 **Matrix:** SOLID

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS

PARAMETER	CAS #	ESTIMATED RESULT		RETENTION TIME	UNITS
Unknown aldol condensate		8400 B	M	2.836	ug/kg

NOTE(S):

M: Result was measured against nearest internal standard assuming a response factor of 1.

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: F0G070222 Work Order #...: DFV4L129-MS Matrix.....: SOLID
MS Lot-Sample #: F0G070222-001 DFV4L12A-MSD
Date Sampled...: 06/28/00 Date Received..: 07/06/00
Prep Date.....: 07/12/00 Analysis Date..: 07/19/00
Prep Batch #...: 0196209
Dilution Factor: 1 % Moisture.....: 3.2

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Phenol	ND	2580	1830	ug/kg	71		SW846 8270C
	ND	2580	1780	ug/kg	69	2.6	SW846 8270C
2-Chlorophenol	ND	2580	1740	ug/kg	67		SW846 8270C
	ND	2580	1830	ug/kg	71	5.0	SW846 8270C
1,4-Dichlorobenzene	ND	1720	1100	ug/kg	64		SW846 8270C
	ND	1720	1230	ug/kg	71	11	SW846 8270C
N-Nitrosodi-n-propyl-amine	ND	1720	1340	ug/kg	78		SW846 8270C
	ND	1720	1200	ug/kg	70	11	SW846 8270C
1,2,4-Trichloro-benzene	ND	1720	1110	ug/kg	65		SW846 8270C
	ND	1720	1290	ug/kg	75	15	SW846 8270C
4-Chloro-3-methylphenol	ND	2580	1910	ug/kg	74		SW846 8270C
	ND	2580	1990	ug/kg	77	4.5	SW846 8270C
Acenaphthene	ND	1720	1270	ug/kg	74		SW846 8270C
	ND	1720	1350	ug/kg	79	6.5	SW846 8270C
4-Nitrophenol	ND	2580	2680	ug/kg	104		SW846 8270C
	ND	2580	1140	ug/kg	44 p,J	81	SW846 8270C
2,4-Dinitrotoluene	ND	1720	1470	ug/kg	85		SW846 8270C
	ND	1720	1030	ug/kg	60 p	35	SW846 8270C
Pentachlorophenol	ND	2580	2050	ug/kg	79		SW846 8270C
	ND	2580	476	ug/kg	18 p,J	124	SW846 8270C
Pyrene	ND	1720	1190	ug/kg	69		SW846 8270C
	ND	1720	1290	ug/kg	75	7.6	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	72	(22 - 119)
	72	(22 - 119)
Phenol-d5	73	(24 - 127)
	70	(24 - 127)
Nitrobenzene-d5	71	(39 - 106)
	74	(39 - 106)
2-Fluorobiphenyl	69	(42 - 106)
	78	(42 - 106)
2,4,6-Tribromophenol	75	(42 - 120)
	66	(42 - 120)

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MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: F0G070222 **Work Order #...:** DFV4L129-MS **Matrix.....:** SOLID
MS Lot-Sample #: F0G070222-001 DFV4L12A-MSD

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Terphenyl-d14	71	(18 - 97)
	80	(18 - 97)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

Results and reporting limits have been adjusted for dry weight.

p Relative percent difference (RPD) is outside stated control limits.

J Estimated result. Result is less than RL.

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: F0G070222 **Work Order #...:** DG78R101 **Matrix.....:** SOLID
MB Lot-Sample #: F0G140000-209

Prep Date.....: 07/12/00
Analysis Date..: 07/19/00 **Prep Batch #...:** 0196209
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Phenol	ND	330	ug/kg	SW846 8270C
bis(2-Chloroethyl)-ether	ND	330	ug/kg	SW846 8270C
2-Chlorophenol	ND	330	ug/kg	SW846 8270C
1,3-Dichlorobenzene	ND	330	ug/kg	SW846 8270C
1,4-Dichlorobenzene	ND	330	ug/kg	SW846 8270C
1,2-Dichlorobenzene	ND	330	ug/kg	SW846 8270C
2-Methylphenol	ND	330	ug/kg	SW846 8270C
2,2'-oxybis(1-Chloropropa	ND	330	ug/kg	SW846 8270C
4-Methylphenol	ND	330	ug/kg	SW846 8270C
N-Nitrosodi-n-propyl-amine	ND	330	ug/kg	SW846 8270C
Hexachloroethane	ND	330	ug/kg	SW846 8270C
Nitrobenzene	ND	330	ug/kg	SW846 8270C
Isophorone	ND	330	ug/kg	SW846 8270C
2-Nitrophenol	ND	330	ug/kg	SW846 8270C
2,4-Dimethylphenol	ND	330	ug/kg	SW846 8270C
bis(2-Chloroethoxy) methane	ND	330	ug/kg	SW846 8270C
2,4-Dichlorophenol	ND	330	ug/kg	SW846 8270C
1,2,4-Trichloro-benzene	ND	330	ug/kg	SW846 8270C
Naphthalene	ND	330	ug/kg	SW846 8270C
4-Chloroaniline	ND	330	ug/kg	SW846 8270C
Hexachlorobutadiene	ND	330	ug/kg	SW846 8270C
4-Chloro-3-methylphenol	ND	330	ug/kg	SW846 8270C
2-Methylnaphthalene	ND	330	ug/kg	SW846 8270C
Hexachlorocyclopenta-diene	ND	1600	ug/kg	SW846 8270C
2,4,6-Trichloro-phenol	ND	330	ug/kg	SW846 8270C
2,4,5-Trichloro-phenol	ND	330	ug/kg	SW846 8270C
2-Chloronaphthalene	ND	330	ug/kg	SW846 8270C
2-Nitroaniline	ND	1600	ug/kg	SW846 8270C
Dimethyl phthalate	ND	330	ug/kg	SW846 8270C
Acenaphthylene	ND	330	ug/kg	SW846 8270C
2,6-Dinitrotoluene	ND	330	ug/kg	SW846 8270C
3-Nitroaniline	ND	1600	ug/kg	SW846 8270C
Acenaphthene	ND	330	ug/kg	SW846 8270C
2,4-Dinitrophenol	ND	1600	ug/kg	SW846 8270C

(Continued on next page)

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: F0G070222 **Work Order #...:** DG78R101 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
4-Nitrophenol	ND	1600	ug/kg	SW846 8270C
Dibenzofuran	ND	330	ug/kg	SW846 8270C
2,4-Dinitrotoluene	ND	330	ug/kg	SW846 8270C
Diethyl phthalate	ND	330	ug/kg	SW846 8270C
Fluorene	ND	330	ug/kg	SW846 8270C
4-Chlorophenyl phenyl ether	ND	330	ug/kg	SW846 8270C
4-Nitroaniline	ND	1600	ug/kg	SW846 8270C
4,6-Dinitro-2-methylphenol	ND	1600	ug/kg	SW846 8270C
N-Nitrosodiphenylamine	ND	330	ug/kg	SW846 8270C
4-Bromophenyl phenyl ether	ND	330	ug/kg	SW846 8270C
Hexachlorobenzene	ND	330	ug/kg	SW846 8270C
Pentachlorophenol	ND	1600	ug/kg	SW846 8270C
Phenanthrene	ND	330	ug/kg	SW846 8270C
Anthracene	ND	330	ug/kg	SW846 8270C
Carbazole	ND	330	ug/kg	SW846 8270C
Di-n-butyl phthalate	ND	330	ug/kg	SW846 8270C
Fluoranthene	ND	330	ug/kg	SW846 8270C
Pyrene	ND	1600	ug/kg	SW846 8270C
Butyl benzyl phthalate	ND	330	ug/kg	SW846 8270C
Benzo(a)anthracene	ND	330	ug/kg	SW846 8270C
3,3'-Dichlorobenzidine	ND	1600	ug/kg	SW846 8270C
Chrysene	ND	330	ug/kg	SW846 8270C
bis(2-Ethylhexyl) phthalate	ND	330	ug/kg	SW846 8270C
Di-n-octyl phthalate	ND	330	ug/kg	SW846 8270C
Benzo(b)fluoranthene	ND	330	ug/kg	SW846 8270C
Benzo(k)fluoranthene	ND	330	ug/kg	SW846 8270C
Benzo(a)pyrene	ND	330	ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	330	ug/kg	SW846 8270C
Benzo(ghi)perylene	ND	330	ug/kg	SW846 8270C
Dibenzo(a,h)anthracene	ND	330	ug/kg	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	76	(22 - 119)
Phenol-d5	81	(24 - 127)
Nitrobenzene-d5	79	(39 - 106)
2-Fluorobiphenyl	77	(42 - 106)
2,4,6-Tribromophenol	68	(42 - 120)
Terphenyl-d14	70	(18 - 97)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

BECHTEL HANFORD, INC.

Method Blank Report

GC/MS Semivolatiles

Lot-Sample #: F0G140000-209 B **Work Order #:** DG78R101 **Matrix:** SOLID

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS

PARAMETER	CAS #	ESTIMATED RESULT		RETENTION TIME	UNITS
Unknown aldol condensate		11000	M	2.878	ug/kg

NOTE(S):

M: Result was measured against nearest internal standard assuming a response factor of 1.

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: F0G070222 **Work Order #...:** DG78R102 **Matrix.....:** SOLID
LCS Lot-Sample#: F0G140000-209
Prep Date.....: 07/12/00 **Analysis Date..:** 07/15/00
Prep Batch #...: 0196209
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Phenol	**2500**	**1260**	**ug/kg**	**50**	**SW846 8270C**
2-Chlorophenol	**2500**	**1350**	**ug/kg**	**54**	**SW846 8270C**
1,4-Dichlorobenzene	**1670**	**924**	**ug/kg**	**55**	**SW846 8270C**
N-Nitrosodi-n-propyl-amine	**1670**	**865**	**ug/kg**	**52**	**SW846 8270C**
1,2,4-Trichloro-benzene	**1670**	**946**	**ug/kg**	**57**	**SW846 8270C**
4-Chloro-3-methylphenol	**2500**	**1440**	**ug/kg**	**58**	**SW846 8270C**
Acenaphthene	**1670**	**958**	**ug/kg**	**58**	**SW846 8270C**
4-Nitrophenol	**2500**	**825 J**	**ug/kg**	**33**	**SW846 8270C**
2,4-Dinitrotoluene	**1670**	**742**	**ug/kg**	**45**	**SW846 8270C**
Pentachlorophenol	**2500**	**389 J**	**ug/kg**	**16**	**SW846 8270C**
Pyrene	**1670**	**1020**	**ug/kg**	**61**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	56	(22 - 119)
Phenol-d5	53	(24 - 127)
Nitrobenzene-d5	57	(39 - 106)
2-Fluorobiphenyl	61	(42 - 106)
2,4,6-Tribromophenol	54	(42 - 120)
Terphenyl-d14	68	(18 - 97)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

J Estimated result. Result is less than RL.

BECHTEL HANFORD, INC.

Client Sample ID: B0Y6L7

~~GC-Semivolatiles~~ PCBs Dayes 7/27/00

Lot-Sample #...:	F0G070222-001	**Work Order #...:**	DFV4L12C	**Matrix.....:**	SOLID
Date Sampled...:	06/28/00	**Date Received..:**	07/06/00		
Prep Date.....:	07/10/00	**Analysis Date..:**	07/24/00		
Prep Batch #...:	0193387				
Dilution Factor:	1				
% Moisture.....:	3.2	**Method.....:**	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	34	ug/kg	31
Aroclor 1221	ND	34	ug/kg	31
Aroclor 1232	ND	34	ug/kg	31
Aroclor 1242	ND	34	ug/kg	31
Aroclor 1248	ND	34	ug/kg	31
Aroclor 1254	ND	34	ug/kg	32
Aroclor 1260	ND	34	ug/kg	32

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	106	(10 - 199)
Decachlorobiphenyl	112	(10 - 200)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

MATRIX SPIKE SAMPLE DATA REPORT

~~GC Semivolatiles~~ PCBs Dayes 7/27/00

Client Lot #...: F0G070222 Work Order #...: DFV4L12D-MS Matrix.....: SOLID
MS Lot-Sample #: F0G070222-001 DFV4L12E-MSD
Date Sampled...: 06/28/00 Date Received..: 07/06/00
Prep Date.....: 07/10/00 Analysis Date..: 07/24/00
Prep Batch #...: 0193387
Dilution Factor: 1 % Moisture.....: 3.2

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Aroclor 1016	ND	172	193	ug/kg	112		SW846 8082
	ND	172	175	ug/kg	102	9.7	SW846 8082
Aroclor 1260	ND	172	180	ug/kg	105		SW846 8082
	ND	172	164	ug/kg	95	9.5	SW846 8082

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	108	(10 - 199)
	94	(10 - 199)
Decachlorobiphenyl	112	(10 - 200)
	100	(10 - 200)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

Results and reporting limits have been adjusted for dry weight.

METHOD BLANK REPORT

~~GC Semivolatiles~~ PCBs Dayes 7/27/00

Client Lot #...: F0G070222 **Work Order #...:** DG1C1101 **Matrix.....:** SOLID
MB Lot-Sample #: F0G110000-387

Prep Date.....: 07/10/00
Analysis Date..: 07/24/00 **Prep Batch #...:** 0193387
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Aroclor 1016	ND	33	ug/kg	SW846 8082
Aroclor 1221	ND	33	ug/kg	SW846 8082
Aroclor 1232	ND	33	ug/kg	SW846 8082
Aroclor 1242	ND	33	ug/kg	SW846 8082
Aroclor 1248	ND	33	ug/kg	SW846 8082
Aroclor 1254	ND	33	ug/kg	SW846 8082
Aroclor 1260	ND	33	ug/kg	SW846 8082

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	42	(10 - 199)
Decachlorobiphenyl	100	(10 - 200)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

~~GC Semivolatiles~~ PCBs Dayes 7/27/00

Client Lot #...: F0G070222 **Work Order #...:** DG1C1102 **Matrix.....:** SOLID
LCS Lot-Sample#: F0G110000-387
Prep Date.....: 07/10/00 **Analysis Date..:** 07/24/00
Prep Batch #...: 0193387
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Aroclor 1016	**167**	**174**	**ug/kg**	**104**	**SW846 8082**
Aroclor 1260	**167**	**171**	**ug/kg**	**103**	**SW846 8082**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	92	(62 - 162)
Decachlorobiphenyl	107	(53 - 145)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

BECHTEL HANFORD, INC.

Client Sample ID: B0Y6L7

TOTAL Metals

Lot-Sample #...: F0G070222-001 **Matrix.....:** SOLID
Date Sampled...: 06/28/00 **Date Received..:** 07/06/00
% Moisture.....: 3.2

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0199242						
Aluminum	5560	20.7	mg/kg	SW846 6010B	07/17-07/19/00	DFV4L102
		Dilution Factor: 1		MDL.....: 2.5		
Antimony	ND	6.2	mg/kg	SW846 6010B	07/17-07/19/00	DFV4L105
		Dilution Factor: 1		MDL.....: 4.9		
Arsenic	ND	10.3	mg/kg	SW846 6010B	07/17-07/21/00	DFV4L108
		Dilution Factor: 1		MDL.....: 6.7		
Barium	69.0	20.7	mg/kg	SW846 6010B	07/17-07/19/00	DFV4L10C
		Dilution Factor: 1		MDL.....: 0.093		
Beryllium	0.45 B	0.52	mg/kg	SW846 6010B	07/17-07/19/00	DFV4L10F
		Dilution Factor: 1		MDL.....: 0.010		
Cadmium	ND	0.52	mg/kg	SW846 6010B	07/17-07/19/00	DFV4L10J
		Dilution Factor: 1		MDL.....: 0.18		
Calcium	7210	517	mg/kg	SW846 6010B	07/17-07/19/00	DFV4L10M
		Dilution Factor: 1		MDL.....: 9.9		
Chromium	8.5	1.0	mg/kg	SW846 6010B	07/17-07/19/00	DFV4L10Q
		Dilution Factor: 1		MDL.....: 0.31		
Cobalt	7.4	5.2	mg/kg	SW846 6010B	07/17-07/19/00	DFV4L10U
		Dilution Factor: 1		MDL.....: 0.45		
Copper	9.9	2.6	mg/kg	SW846 6010B	07/17-07/19/00	DFV4L10X
		Dilution Factor: 1		MDL.....: 0.39		
Iron	18700	10.3	mg/kg	SW846 6010B	07/17-07/21/00	DFV4L112
		Dilution Factor: 1		MDL.....: 2.3		
Lead	ND	5.2	mg/kg	SW846 6010B	07/17-07/21/00	DFV4L115
		Dilution Factor: 1		MDL.....: 3.3		
Magnesium	4210	517	mg/kg	SW846 6010B	07/17-07/19/00	DFV4L118
		Dilution Factor: 1		MDL.....: 9.7		
Manganese	272	1.6	mg/kg	SW846 6010B	07/17-07/19/00	DFV4L11C
		Dilution Factor: 1		MDL.....: 0.062		

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BECHTEL HANFORD, INC.

Client Sample ID: B0Y6L7

TOTAL Metals

Lot-Sample #...: F0G070222-001 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Nickel	9.0	4.1	mg/kg	SW846 6010B	07/17-07/19/00	DFV4L11F
		Dilution Factor: 1		MDL.....: 0.89		
Potassium	978	517	mg/kg	SW846 6010B	07/17-07/19/00	DFV4L11J
		Dilution Factor: 1		MDL.....: 292		
Selenium	ND	10.3	mg/kg	SW846 6010B	07/17-07/21/00	DFV4L11M
		Dilution Factor: 1		MDL.....: 4.1		
Silver	ND	1.0	mg/kg	SW846 6010B	07/17-07/19/00	DFV4L11Q
		Dilution Factor: 1		MDL.....: 0.95		
Sodium	144 B	517	mg/kg	SW846 6010B	07/17-07/19/00	DFV4L11U
		Dilution Factor: 1		MDL.....: 10.0		
Thallium	ND	10.3	mg/kg	SW846 6010B	07/17-07/21/00	DFV4L11X
		Dilution Factor: 1		MDL.....: 3.0		
Vanadium	48.2	5.2	mg/kg	SW846 6010B	07/17-07/19/00	DFV4L122
		Dilution Factor: 1		MDL.....: 0.40		
Zinc	37.3	2.1	mg/kg	SW846 6010B	07/17-07/19/00	DFV4L125
		Dilution Factor: 1		MDL.....: 0.70		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F0G070222 **Matrix.....:** SOLID
Date Sampled...: 06/28/00 **Date Received..:** 07/06/00

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT		UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: F0G070222-001 **Prep Batch #...:** 0199242										
Aluminum										
	5560	207	5770		mg/kg	104		SW846 6010B	07/17-07/19/00	DFV4L103
	5560	207	5710	N	mg/kg	73	1.1	SW846 6010B	07/17-07/19/00	DFV4L104
				Dilution Factor: 1						
Antimony										
	ND	51.7	42.3		mg/kg	82		SW846 6010B	07/17-07/19/00	DFV4L106
	ND	51.7	39.7		mg/kg	77	6.2	SW846 6010B	07/17-07/19/00	DFV4L107
				Dilution Factor: 1						
Arsenic										
	ND	207	203		mg/kg	98		SW846 6010B	07/17-07/21/00	DFV4L109
	ND	207	203		mg/kg	98	0.08	SW846 6010B	07/17-07/21/00	DFV4L10A
				Dilution Factor: 1						
Barium										
	69.0	207	262		mg/kg	93		SW846 6010B	07/17-07/19/00	DFV4L10D
	69.0	207	261		mg/kg	93	0.35	SW846 6010B	07/17-07/19/00	DFV4L10E
				Dilution Factor: 1						
Beryllium										
	0.45	5.17	5.46		mg/kg	97		SW846 6010B	07/17-07/19/00	DFV4L10G
	0.45	5.17	5.37		mg/kg	95	1.8	SW846 6010B	07/17-07/19/00	DFV4L10H
				Dilution Factor: 1						
Cadmium										
	ND	5.17	5.07		mg/kg	98		SW846 6010B	07/17-07/19/00	DFV4L10K
	ND	5.17	5.26		mg/kg	102	3.6	SW846 6010B	07/17-07/19/00	DFV4L10L
				Dilution Factor: 1						
Calcium										
	7210	5170	12000		mg/kg	93		SW846 6010B	07/17-07/19/00	DFV4L10N
	7210	5170	11200		mg/kg	77	7.2	SW846 6010B	07/17-07/19/00	DFV4L10P
				Dilution Factor: 1						
Chromium										
	8.5	20.7	26.6		mg/kg	88		SW846 6010B	07/17-07/19/00	DFV4L10R
	8.5	20.7	26.4		mg/kg	87	0.74	SW846 6010B	07/17-07/19/00	DFV4L10T
				Dilution Factor: 1						
Cobalt										
	7.4	51.7	54.0		mg/kg	90		SW846 6010B	07/17-07/19/00	DFV4L10V
	7.4	51.7	52.8		mg/kg	88	2.3	SW846 6010B	07/17-07/19/00	DFV4L10W
				Dilution Factor: 1						

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MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F0G070222 **Matrix.....:** SOLID
Date Sampled...: 06/28/00 **Date Received..:** 07/06/00

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Copper									
	9.9	25.8	33.4	mg/kg	91		SW846 6010B	07/17-07/19/00	DFV4L110
	9.9	25.8	33.2	mg/kg	90	0.69	SW846 6010B	07/17-07/19/00	DFV4L111
			Dilution Factor: 1						
Iron									
	18700	103	19100 N	mg/kg	366		SW846 6010B	07/17-07/21/00	DFV4L113
	18700	103	18600 N,*	mg/kg	0.0	200	SW846 6010B	07/17-07/21/00	DFV4L114
			Dilution Factor: 1						
Lead									
	ND	51.7	52.1	mg/kg	101		SW846 6010B	07/17-07/21/00	DFV4L116
	ND	51.7	51.9	mg/kg	100	0.26	SW846 6010B	07/17-07/21/00	DFV4L117
			Dilution Factor: 1						
Magnesium									
	4210	5170	8900	mg/kg	91		SW846 6010B	07/17-07/19/00	DFV4L119
	4210	5170	8750	mg/kg	88	1.8	SW846 6010B	07/17-07/19/00	DFV4L11A
			Dilution Factor: 1						
Manganese									
	272	51.7	311	mg/kg	76		SW846 6010B	07/17-07/19/00	DFV4L11D
	272	51.7	310 N	mg/kg	74	0.22	SW846 6010B	07/17-07/19/00	DFV4L11E
			Dilution Factor: 1						
Nickel									
	9.0	51.7	53.7	mg/kg	86		SW846 6010B	07/17-07/19/00	DFV4L11G
	9.0	51.7	53.7	mg/kg	86	0.09	SW846 6010B	07/17-07/19/00	DFV4L11H
			Dilution Factor: 1						
Potassium									
	978	5170	6010	mg/kg	97		SW846 6010B	07/17-07/19/00	DFV4L11K
	978	5170	6000	mg/kg	97	0.14	SW846 6010B	07/17-07/19/00	DFV4L11L
			Dilution Factor: 1						
Selenium									
	ND	207	192	mg/kg	93		SW846 6010B	07/17-07/21/00	DFV4L11N
	ND	207	191	mg/kg	93	0.07	SW846 6010B	07/17-07/21/00	DFV4L11P
			Dilution Factor: 1						
Silver									
	ND	5.17	4.22	mg/kg	82		SW846 6010B	07/17-07/19/00	DFV4L11R
	ND	5.17	4.32	mg/kg	84	2.2	SW846 6010B	07/17-07/19/00	DFV4L11T
			Dilution Factor: 1						

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MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F0G070222 **Matrix.....:** SOLID
Date Sampled...: 06/28/00 **Date Received..:** 07/06/00

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Sodium									
	144	5170	5070	mg/kg	95		SW846 6010B	07/17-07/19/00	DFV4L11V
	144	5170	4980	mg/kg	94	1.7	SW846 6010B	07/17-07/19/00	DFV4L11W
				Dilution Factor: 1					
Thallium									
	ND	207	192	mg/kg	93		SW846 6010B	07/17-07/21/00	DFV4L120
	ND	207	193	mg/kg	93	0.36	SW846 6010B	07/17-07/21/00	DFV4L121
				Dilution Factor: 1					
Vanadium									
	48.2	51.7	94.9	mg/kg	90		SW846 6010B	07/17-07/19/00	DFV4L123
	48.2	51.7	91.6	mg/kg	84	3.5	SW846 6010B	07/17-07/19/00	DFV4L124
				Dilution Factor: 1					
Zinc									
	37.3	51.7	84.4	mg/kg	91		SW846 6010B	07/17-07/19/00	DFV4L126
	37.3	51.7	82.7	mg/kg	88	2.0	SW846 6010B	07/17-07/19/00	DFV4L127
				Dilution Factor: 1					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

N Spiked analyte recovery is outside stated control limits.

* Relative percent difference (RPD) is outside stated control limits.

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F0G070222 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: F0G170000-242 **Prep Batch #...:** 0199242						
Aluminum	ND	20.0	mg/kg	SW846 6010B	07/17-07/19/00	DGC04108
		Dilution Factor: 1				
Antimony	ND	6.0	mg/kg	SW846 6010B	07/17-07/19/00	DGC04109
		Dilution Factor: 1				
Arsenic	ND	10.0	mg/kg	SW846 6010B	07/17-07/21/00	DGC0410A
		Dilution Factor: 1				
Barium	ND	20.0	mg/kg	SW846 6010B	07/17-07/19/00	DGC04101
		Dilution Factor: 1				
Beryllium	**0.012 B**	**0.50**	**mg/kg**	**SW846 6010B**	**07/17-07/19/00**	**DGC04102**
		Dilution Factor: 1				
Cadmium	ND	0.50	mg/kg	SW846 6010B	07/17-07/19/00	DGC04103
		Dilution Factor: 1				
Calcium	ND	500	mg/kg	SW846 6010B	07/17-07/19/00	DGC04104
		Dilution Factor: 1				
Chromium	**0.36 B**	**1.0**	**mg/kg**	**SW846 6010B**	**07/17-07/19/00**	**DGC04105**
		Dilution Factor: 1				
Cobalt	ND	5.0	mg/kg	SW846 6010B	07/17-07/19/00	DGC04106
		Dilution Factor: 1				
Copper	ND	2.5	mg/kg	SW846 6010B	07/17-07/19/00	DGC04107
		Dilution Factor: 1				
Iron	ND	10.0	mg/kg	SW846 6010B	07/17-07/21/00	DGC0410K
		Dilution Factor: 1				
Lead	ND	5.0	mg/kg	SW846 6010B	07/17-07/21/00	DGC0410L
		Dilution Factor: 1				
Magnesium	ND	500	mg/kg	SW846 6010B	07/17-07/19/00	DGC0410M
		Dilution Factor: 1				
Manganese	ND	1.5	mg/kg	SW846 6010B	07/17-07/19/00	DGC0410C
		Dilution Factor: 1				
Nickel	**0.92 B**	**4.0**	**mg/kg**	**SW846 6010B**	**07/17-07/19/00**	**DGC0410D**
		Dilution Factor: 1				

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METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F0G070222 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Potassium	ND	500	mg/kg	SW846 6010B	07/17-07/19/00	DGC0410E
		Dilution Factor: 1				
Selenium	ND	10.0	mg/kg	SW846 6010B	07/17-07/21/00	DGC0410F
		Dilution Factor: 1				
Silver	ND	1.0	mg/kg	SW846 6010B	07/17-07/19/00	DGC0410G
		Dilution Factor: 1				
Sodium	ND	500	mg/kg	SW846 6010B	07/17-07/19/00	DGC0410H
		Dilution Factor: 1				
Thallium	ND	10.0	mg/kg	SW846 6010B	07/17-07/21/00	DGC0410J
		Dilution Factor: 1				
Vanadium	ND	5.0	mg/kg	SW846 6010B	07/17-07/19/00	DGC0410N
		Dilution Factor: 1				
Zinc	ND	2.0	mg/kg	SW846 6010B	07/17-07/19/00	DGC0410P
		Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

B Estimated result. Result is less than RL.

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Lot-Sample #...: F0G070222 Matrix.....: SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Aluminum	4800	4370	mg/kg	91		SW846 6010B	07/17-07/19/00	0199242
	4800	4430	mg/kg	92	1.4	SW846 6010B	07/17-07/19/00	0199242
			Dilution Factor: 1					
Antimony	49.8	54.8	mg/kg	110		SW846 6010B	07/17-07/19/00	0199242
	49.8	57.4	mg/kg	115	4.7	SW846 6010B	07/17-07/19/00	0199242
			Dilution Factor: 1					
Arsenic	53.2	57.9	mg/kg	109		SW846 6010B	07/17-07/21/00	0199242
	53.2	58.8	mg/kg	111	1.6	SW846 6010B	07/17-07/21/00	0199242
			Dilution Factor: 1					
Barium	112	113	mg/kg	101		SW846 6010B	07/17-07/19/00	0199242
	112	116	mg/kg	103	2.4	SW846 6010B	07/17-07/19/00	0199242
			Dilution Factor: 1					
Beryllium	68.3	69.5	mg/kg	102		SW846 6010B	07/17-07/19/00	0199242
	68.3	72.1	mg/kg	106	3.6	SW846 6010B	07/17-07/19/00	0199242
			Dilution Factor: 1					
Cadmium	151	157	mg/kg	104		SW846 6010B	07/17-07/19/00	0199242
	151	163	mg/kg	108	3.9	SW846 6010B	07/17-07/19/00	0199242
			Dilution Factor: 1					
Calcium	1320	1270	mg/kg	96		SW846 6010B	07/17-07/19/00	0199242
	1320	1230	mg/kg	93	2.9	SW846 6010B	07/17-07/19/00	0199242
			Dilution Factor: 1					
Chromium	99.4	94.0	mg/kg	95		SW846 6010B	07/17-07/19/00	0199242
	99.4	95.7	mg/kg	96	1.8	SW846 6010B	07/17-07/19/00	0199242
			Dilution Factor: 1					
Cobalt	60.4	59.1	mg/kg	98		SW846 6010B	07/17-07/19/00	0199242
	60.4	61.4	mg/kg	102	3.9	SW846 6010B	07/17-07/19/00	0199242
			Dilution Factor: 1					
Copper	59.2	60.9	mg/kg	103		SW846 6010B	07/17-07/19/00	0199242
	59.2	62.5	mg/kg	106	2.6	SW846 6010B	07/17-07/19/00	0199242
			Dilution Factor: 1					

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LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Lot-Sample #...: F0G070222 Matrix.....: SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Iron	9880	10000	mg/kg	101		SW846 6010B	07/17-07/21/00	0199242
	9880	9890	mg/kg	100	1.1	SW846 6010B	07/17-07/21/00	0199242
			Dilution Factor: 1					
Lead	97.8	103	mg/kg	105		SW846 6010B	07/17-07/21/00	0199242
	97.8	105	mg/kg	107	1.8	SW846 6010B	07/17-07/21/00	0199242
			Dilution Factor: 1					
Magnesium	1220	1130	mg/kg	93		SW846 6010B	07/17-07/19/00	0199242
	1220	1140	mg/kg	94	0.75	SW846 6010B	07/17-07/19/00	0199242
			Dilution Factor: 1					
Manganese	218	212	mg/kg	97		SW846 6010B	07/17-07/19/00	0199242
	218	217	mg/kg	100	2.2	SW846 6010B	07/17-07/19/00	0199242
			Dilution Factor: 1					
Nickel	63.3	61.4	mg/kg	97		SW846 6010B	07/17-07/19/00	0199242
	63.3	64.6	mg/kg	102	5.1	SW846 6010B	07/17-07/19/00	0199242
			Dilution Factor: 1					
Potassium	2100	2170	mg/kg	103		SW846 6010B	07/17-07/19/00	0199242
	2100	2080	mg/kg	99	4.5	SW846 6010B	07/17-07/19/00	0199242
			Dilution Factor: 1					
Selenium	143	146	mg/kg	102		SW846 6010B	07/17-07/21/00	0199242
	143	146	mg/kg	102	0.07	SW846 6010B	07/17-07/21/00	0199242
			Dilution Factor: 1					
Silver	107	116	mg/kg	108		SW846 6010B	07/17-07/19/00	0199242
	107	115	mg/kg	108	0.43	SW846 6010B	07/17-07/19/00	0199242
			Dilution Factor: 1					
Sodium	545	493	mg/kg	90		SW846 6010B	07/17-07/19/00	0199242
	545	521	mg/kg	96	5.6	SW846 6010B	07/17-07/19/00	0199242
			Dilution Factor: 1					
Thallium	103	108	mg/kg	104		SW846 6010B	07/17-07/21/00	0199242
	103	110	mg/kg	107	2.1	SW846 6010B	07/17-07/21/00	0199242
			Dilution Factor: 1					

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LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Lot-Sample #...: F0G070222 **Matrix.....:** SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Vanadium	70.2	73.4	mg/kg	105		SW846 6010B	07/17-07/19/00	0199242
	70.2	73.3	mg/kg	104	0.17	SW846 6010B	07/17-07/19/00	0199242
			Dilution Factor: 1					
Zinc	123	122	mg/kg	99		SW846 6010B	07/17-07/19/00	0199242
	123	126	mg/kg	102	3.0	SW846 6010B	07/17-07/19/00	0199242
			Dilution Factor: 1					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.