0059288

SAF-B00-030
100 F Area - Full Protocol
FINAL DATA PACKAGE

FAX RESULTS TO:

Mike Stankovich ____N/A_____
INITIAL/DATE

VERIFICATION OF CLIENT RECEIPT:

Phone or CC:Mail to Mike Stankovich ____N/A_____
INITIAL/DATE

COMPLETE COPY OF DATA PACKAGE TO:

Mike Stankovich X9-10 BJ 2/4/03
INITIAL/DATE

Jeanette Duncan BJ 2/4/03
INITIAL/DATE

COMMENTS: (PLEASE INCLUDE THE FOLLOWING ON THE FAX COVER SHEET)

SDG W03941 SAF-B00-030

Rad only Chem only X Rad & Chem

X Complete Partial

Waste Site: 116-F-1

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MAY 13 2003
EDMC

Analytical Data Package Prepared For

Bechtel Hanford

Radiochemical Analysis By

STL Richland

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

Assigned Laboratory Code: STLRL

Data Package Contains 47 *Pages*

Report No.: 21624

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
W03941	B00-030	J00FF8	J3A080273-1	FFRAG1AA	9FFRAG10	3009227
		J00FK9	J3A080273-2	FFRAJ1AE	9FFRAJ10	3009225
		J00FK9	J3A080273-2	FFRAJ1AD	9FFRAJ10	3009226
		J00FK9	J3A080273-2		9FFRAJ10	3009229

RECEIVED JAN 2003

SEVERN TRENT STL

CERTIFICATE OF ANALYSIS

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

January 29, 2003

Attention: Joan Kessner

SAF Number	:	B00-030
Date SDG Closed	:	January 8, 2003
Number of Samples	:	Two (2)
Sample Type	:	Soil
SDG Number	:	W03941
Data Deliverable	:	21-Day / Summary

I. Introduction

On January 8, 2003, two soil samples were received at STL Richland (STLR) for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Bechtel Hanford, Inc. (BHI) specific IDs:

STLR ID#	BHI ID#	MATRIX	DATE OF RECEIPT
FFRAG	J00FF8	SOIL	1/8/03
FFRAJ	J00FK9	SOIL	1/8/03

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:

Gas Proportional Counting
Total Strontium by method RICH-RC-5006
Liquid Scintillation Counting
Carbon-14 by method RICH-RC-5022
Gamma Spectroscopy
Gamma Spec by method RICH-RC-5017
Chemical Analyses
Chromium Hex by EPA method 7196A

III. Quality Control

The analytical results for each analysis performed under SDG W03941 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

Gas Proportional Counting

Total Strontium by method RICH-RC-5006:

The LCS, batch blank, sample duplicate (J00FF8), and sample results are within contractual requirements.

Liquid Scintillation Counting

Carbon-14 by method RICH-RC-5022:

The LCS, batch blank, sample duplicate (J00FK9), and sample results are within contractual requirements.

Gamma Spectroscopy

Gamma Spec by method RICH-RC-5017:

The LCS, batch blank, sample duplicate (J00FK9), and sample results are within contractual requirements.

Chemical Analyses

Chromium Hex by EPA method 7196A:

The matrix spike is lower than acceptable. The sample analyzed three times and all three times the matrix spike was low. This points out a matrix effect. The LCS, batch blank, sample duplicate (J00FK9), matrix spike (J00FK9), color (J00FK9 PbCrO4) spike, 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:

Barbara M. Gillespie
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 D5174	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 = constants * f(x,y,z,...). 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/vn), 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.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or STL Richland.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) ***u_c - Combined Uncertainty.***	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, ***u_c the combined uncertainty.*** The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or STL Richland "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. Lc=(1.645 * Sqrt(2*(BkgrndCnt/BkgrndCntMin)/SCntMin)) * (ConvFct/(Eff*Yld*Abn*Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC|MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. MDC = (4.65 * Sqrt((BkgrndCnt/BkgrndCntMin)/SCntMin) + 2.71/SCntMin) * (ConvFct/(Eff * Yld * Abn * Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the **Work Order** Number.
RER	The equation Replicate Error Ratio = (S-D)/[sqrt($TPUs^2$ + $TPUd^2$)] as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by STL Richland upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

Date: 29-Jan-03

Sample Results Summary
STL Richland STLRL
Ordered by Client Sample ID, Batch No.

Report No. : 21624

SDG No: W03941

Client ID	Work Order Number	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	MDC|MDA	RER
J00FF8	FFRAG1AA	STRONTIUM	2.99E-01 +- 1.2E-01		pCi/g	84.80%	1.45E-01	
J00FF8 DUP	FFRAG1AD	STRONTIUM	3.61E-01 +- 1.3E-01		pCi/g	91.70%	1.25E-01	0.7
J00FK9	FFRAJ1AE	C-14	2.77E-01 +- 3.8E-01	U	pCi/g	100.00%	8.07E-01	
J00FK9	FFRAJ1AD	CO-60	-1.70E-03 +- 1.2E-02	U	pCi/g		2.11E-02	
		CS-137	6.35E-02 +- 2.2E-02		pCi/g		2.36E-02	
		EU-152	7.42E-02 +- 5.4E-02	U	pCi/g		6.44E-02	
		EU-154	-3.24E-03 +- 4.2E-02	U	pCi/g		7.06E-02	
		EU-155	2.52E-02 +- 5.2E-02	U	pCi/g		8.73E-02	
J00FK9	9FFRAJ10	HEXCHROME	3.98E-01 +- 0.0E+00		mg/kg	N/A	8.00E-02	
J00FK9 DUP	FFRAJ1AF	C-14	3.81E-01 +- 3.8E-01	U	pCi/g	100.00%	8.03E-01	0.4
J00FK9 DUP	FFRAJ1AG	CO-60	9.65E-03 +- 1.1E-02	U	pCi/g		2.01E-02	1.4
		CS-137	6.94E-02 +- 1.9E-02		pCi/g		1.86E-02	0.4
		EU-152	1.34E-01 +- 4.2E-02	U	pCi/g		5.40E-02	1.7
		EU-154	4.27E-03 +- 3.5E-02	U	pCi/g		6.00E-02	0.3
		EU-155	4.13E-02 +- 2.9E-02	U	pCi/g		4.88E-02	0.5
J00FK9 DUP	FFRAJ1AR	HEXCHROME	3.80E-01 +- 0.0E+00		mg/kg	N/A	8.00E-02	

Number of Results: 16

RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

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

Date: 29-Jan-03

Report No. : 21624

SDG No.: W03941

QC Type	Work Order Number	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	Recovery	Bias	MDC|MDA
BLANK QC	FFTML1AA	C-14	4.78E-02 +- 1.5E-01	U	pCi/g	100.00%			3.28E-01
BLANK QC	FFTMM1AA	CO-60	-1.23E-03 +- 7.4E-03	U	pCi/g				1.28E-02
		CS-137	6.52E-03 +- 8.1E-03	U	pCi/g				1.44E-02
		EU-152	-8.35E-04 +- 2.2E-02	U	pCi/g				3.69E-02
		EU-154	2.90E-03 +- 2.4E-02	U	pCi/g				4.21E-02
		EU-155	1.25E-02 +- 1.7E-02	U	pCi/g				2.86E-02
BLANK QC	FFTMP1AA	STRONTIUM	8.15E-02 +- 6.8E-02	U	pCi/g	88.90%			1.30E-01
BLANK QC	FFTMR1AB	HEXCHROME	2.25E-02 +- 0.0E+00	U	mg/kg	N/A			8.00E-02
LCS	FFTML1AC	C-14	7.35E+00 +- 3.9E-01		pCi/g	100.00%	101.50%	0.0	3.27E-01
LCS	FFTMM1AC	CS-137	3.41E-01 +- 5.7E-02		pCi/g		118.18%	0.2	3.25E-02
		K-40	2.01E+01 +- 2.5E+00		pCi/g		102.61%	0.0	2.52E-01
		RA-226	9.90E-01 +- 1.6E-01		pCi/g		86.01%	-0.1	5.35E-02
		RA-228	2.13E+00 +- 3.0E-01		pCi/g		113.61%	0.1	1.01E-01
		U-238DHP	1.67E+00 +- 7.0E-01		pCi/g		158.42%	0.6	6.00E-01
LCS	FFTMP1AC	STRONTIUM	1.09E+00 +- 3.2E-01		pCi/g	81.50%	95.72%	0.0	1.58E-01
MATRIX SPI	FFRAJ1HW	HEXCHROME	2.59E+01 +- 0.0E+00		mg/kg	N/A	58.99%	-0.4	8.00E-02
LCS	FFTMR1AS	HEXCHROME	3.64E+01 +- 0.0E+00		mg/kg	N/A	91.03%	-0.1	8.00E-02

Number of Results: 17

Bias - (Result/Expected)-1 as defined by ANSI N13.30.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM I

SAMPLE RESULTS

Date: 29-Jan-03

Lab Name:	STL Richland	SDG:	W03941	Collection Date:	1/7/2003 8:39:00 AM
Lot-Sample No.:	J3A080273-1	Report No. :	21624	Received Date:	1/8/2003 1:30:00 PM
Client Sample ID:	J00FF8	COC No. :	B00-030-084	Matrix:	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 3009227	Work Order: FFRAG1AA			Report DB ID: 9FFRAG10								
STRONTIUM	2.99E-01		9.1E-02	1.2E-01	1.45E-01	pCi/g	84.80%	*(2.1)*	1/16/03 07:56 p		6.0	SRTOT_SEP_PRECIP
						6.72E-02		*(5.)*			G	GPC32A

Number of Results: 1

Comments:

80

STL Richland
rptSTLRchSample
V3.97 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM I

SAMPLE RESULTS

Date: 29-Jan-03

Lab Name:	STL Richland	**SDG:**	W03941	**Collection Date:**	1/7/2003 9:00:00 AM
Lot-Sample No.:	J3A080273-2	**Report No. :**	21624	**Received Date:**	1/8/2003 1:30:00 PM
Client Sample ID:	J00FK9	**COC No. :**	B00-030-086	**Matrix:**	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 3009225	**Work Order:** FFRAJ1AE			**Report DB ID:** 9FFRAJ10								
C-14	2.77E-01	U	3.4E-01	3.8E-01	8.07E-01	pCi/g	100.00%	*0.34*	1/13/03 10:54 p		2.03	C14_LSC
						3.87E-01	5.00E+01	*(1.5)*			G	LSC6
Batch: 3009226	**Work Order:** FFRAJ1AD			**Report DB ID:** 9FFRAJ10								
CO-60	-1.70E-03	U	1.2E-02	1.2E-02	2.11E-02	pCi/g		*-0.08*	1/16/03 06:36 a		368.8	GAMMA_GS
							5.00E-02	*-0.27*			g	GER2$1
CS-137	6.35E-02		2.2E-02	2.2E-02	2.36E-02	pCi/g		*(2.7)*	1/16/03 06:36 a		368.8	GAMMA_GS
							1.00E-01	*(5.8)*			g	GER2$1
EU-152	7.42E-02	U	5.4E-02	5.4E-02	6.44E-02	pCi/g		*(1.2)*	1/16/03 06:36 a		368.8	GAMMA_GS
							1.00E-01	*(2.7)*			g	GER2$1
EU-154	-3.24E-03	U	4.2E-02	4.2E-02	7.06E-02	pCi/g		*-0.05*	1/16/03 06:36 a		368.8	GAMMA_GS
							1.00E-01	*-0.16*			g	GER2$1
EU-155	2.52E-02	U	5.2E-02	5.2E-02	8.73E-02	pCi/g		*0.29*	1/16/03 06:36 a		368.8	GAMMA_GS
							1.00E-01	*0.97*			g	GER2$1
Batch: 3009229	**Work Order:**			**Report DB ID:** 9FFRAJ10								
HEXCHROME	3.98E-01			0.0E+00	8.00E-02	mg/kg	N/A	*(5.)*	1/11/03		2.5	EPA7196
								N/A			G	

Number of Results: 7

Comments:

09

STL Richland
rptSTLRchSample
V3.97 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 29-Jan-03

DUPLICATE RESULTS

Lab Name:	STL Richland	**SDG:**	W03941	**Collection Date:**	1/7/2003 8:39:00 AM
Lot-Sample No.:	J3A080273-1	**Report No. :**	21624	**Received Date:**	1/8/2003 1:30:00 PM
Client Sample ID:	J00FF8 DUP	**COC No. :**	B00-030-084	**Matrix:**	SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 3009227	**Work Order:** FFRAG1AD			**Report DB ID:** FFRAG1DR		**Orig Sa DB ID:** 9FFRAG10						
STRONTIUM	3.61E-01		8.9E-02	1.3E-01	1.25E-01	pCi/g	91.70%	(2.9)	1/16/03 07:56 p		6.02	SRTOT_SEP_PRECIP
	2.99E-01	RER	0.7					(5.6)			G	GPC32B

Number of Results: 1

Comments:

10

STL Richland
rptSTLRchDupV3.
97 A97

RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

FORM II

Date: 29-Jan-03

DUPLICATE RESULTS

Lab Name:	STL Richland	**SDG:**	W03941	**Collection Date:**	1/7/2003 9:00:00 AM
Lot-Sample No.:	J3A080273-2	**Report No. :**	21624	**Received Date:**	1/8/2003 1:30:00 PM
Client Sample ID:	J00FK9 DUP	**COC No. :**	B00-030-086	**Matrix:**	SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 3009225	**Work Order:** FFRAJ1AF			**Report DB ID:** FFRAJ1FR		**Orig Sa DB ID:** 9FFRAJ10						
C-14	3.81E-01	U	3.4E-01	3.8E-01	8.03E-01	pCi/g	100.00%	0.47	1/13/03 11:36 p		2.039	C14_LSC
	2.77E-01	U RER	0.4			5.00E+01		(2.)			G	LSC6
Batch: 3009226	**Work Order:** FFRAJ1AG			**Report DB ID:** FFRAJ1GR		**Orig Sa DB ID:** 9FFRAJ10						
CO-60	9.65E-03	U	1.1E-02	1.1E-02	2.01E-02	pCi/g		0.48	1/16/03 04:49 p		368.8	GAMMA_GS
	-1.70E-03	U RER	1.4			5.00E-02		(1.7)			g	GER8$1
CS-137	6.94E-02		1.9E-02	1.9E-02	1.86E-02	pCi/g		(3.7)	1/16/03 04:49 p		368.8	GAMMA_GS
	6.35E-02	RER	0.4			1.00E-01		(7.2)			g	GER8$1
EU-152	1.34E-01	U	4.2E-02	4.2E-02	5.40E-02	pCi/g		(2.5)	1/16/03 04:49 p		368.8	GAMMA_GS
	7.42E-02	U RER	1.7			1.00E-01		(6.3)			g	GER8$1
EU-154	4.27E-03	U	3.5E-02	3.5E-02	6.00E-02	pCi/g		0.07	1/16/03 04:49 p		368.8	GAMMA_GS
	-3.24E-03	U RER	0.3			1.00E-01		0.24			g	GER8$1
EU-155	4.13E-02	U	2.9E-02	2.9E-02	4.88E-02	pCi/g		0.85	1/16/03 04:49 p		368.8	GAMMA_GS
	2.52E-02	U RER	0.5			1.00E-01		(2.9)			g	GER8$1
Batch: 3009229	**Work Order:**			**Report DB ID:** FFRAJ1AR		**Orig Sa DB ID:** 9FFRAJ10						
HEXCHROME	3.80E-01			0.0E+00	8.00E-02	mg/kg	N/A	(4.8)	1/11/03		2.5	EPA7196
	3.98E-01	RPD	0.0					N/A			G	

Number of Results: 7

Comments:

RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

BLANK RESULTS

Date: 29-Jan-03

Lab Name: STL Richland

SDG: W03941

Lot-Sample No.: J3A090000-225

Report No. : 21624

Matrix: SOIL

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 3009225	Work Order: FFTML1AA			Report DB ID: FFTML1AB								
C-14	4.78E-02	U	1.4E-01	1.5E-01	3.28E-01	pCi/g	100.00%	0.15	1/13/03 09:30 p		5.0	C14_LSC
					1.57E-01	5.00E+01		0.63			G	LSC6

Number of Results: 1

Comments:

STL Richland
rptSTLRchBlank
V3.97 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

BLANK RESULTS

Date: 29-Jan-03

Lab Name: STL Richland **SDG:** W03941

Lot-Sample No.: J3A090000-226 **Report No. :** 21624 **Matrix:** SOIL

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 3009226	**Work Order:** FFTMM1AA			**Report DB ID:** FFTMM1AX								
CO-60	-1.23E-03	U	7.4E-03	7.4E-03	1.28E-02	pCi/g		-0.1	1/16/03 06:39 a		348.0	GAMMA_GS
						5.00E-02		-0.33			g	GER5$1
CS-137	6.52E-03	U	8.1E-03	8.1E-03	1.44E-02	pCi/g		0.45	1/16/03 06:39 a		348.0	GAMMA_GS
						1.00E-01		(1.6)			g	GER5$1
EU-152	-8.35E-04	U	2.2E-02	2.2E-02	3.69E-02	pCi/g		-0.02	1/16/03 06:39 a		348.0	GAMMA_GS
						1.00E-01		-0.08			g	GER5$1
EU-154	2.90E-03	U	2.4E-02	2.4E-02	4.21E-02	pCi/g		0.07	1/16/03 06:39 a		348.0	GAMMA_GS
						1.00E-01		0.24			g	GER5$1
EU-155	1.25E-02	U	1.7E-02	1.7E-02	2.86E-02	pCi/g		0.44	1/16/03 06:39 a		348.0	GAMMA_GS
						1.00E-01		(1.5)			g	GER5$1
Batch: 3009229	**Work Order:**			**Report DB ID:** FFTMR1AB								
HEXCHROME	2.25E-02	U		0.0E+00	8.00E-02	mg/kg	N/A	0.28	1/11/03		2.5	EPA7196
								N/A			G	

Number of Results: 6

Comments:

STL Richland
rptSTLRchBlank
V3.97 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

BLANK RESULTS

Date: 29-Jan-03

Lab Name: STL Richland **SDG:** W03941

Lot-Sample No.: J3A090000-227 **Report No. :** 21624 **Matrix:** SOIL

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 3009227	Work Order: FFTMP1AA			Report DB ID: FFTMP1AB								
STRONTIUM	8.15E-02	U	6.4E-02	6.8E-02	1.30E-01	pCi/g	88.90%	0.63	1/16/03 07:56 p		6.0	SRTOT_SEP_PRECIP
					6.02E-02			(2.4)			G	GPC32C

Number of Results: 1

Comments:

14

STL Richland
rptSTLRchBlank
V3.97 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 29-Jan-03

LCS RESULTS

Lab Name: STL Richland

SDG: W03941

Lot-Sample No.: J3A090000-225

Report No. : 21624

Matrix: SOIL

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 3009225	Work Order: FFTML1AC			Report DB ID: FFTML1CS									
C-14	7.35E+00		3.0E-01	3.9E-01	3.27E-01	pCi/g	100.00%	7.24E+00	2.4E-01	101.50%	1/13/03 10:12 p	5.0	C14_LSC
							Rec Limits:	70.	130.	0.0		G	LSC6

Number of Results: 1

Comments:

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

FORM II

LCS RESULTS

Date: 29-Jan-03

Lab Name: STL Richland **SDG:** W03941

Lot-Sample No.: J3A090000-226 **Report No. :** 21624 **Matrix:** SOIL

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 3009226	**Work Order:** FFTMM1AC			**Report DB ID:** FFTMM1CM									
CS-137	3.41E-01		5.7E-02	5.7E-02	3.25E-02	pCi/g		2.88E-01	1.3E-02	118.18%	1/16/03 06:37 a	200.01	GAMMA_GS
							Rec Limits:	70.	130.	0.2		g	GER8$1
K-40	2.01E+01		2.5E+00	2.5E+00	2.52E-01	pCi/g		1.95E+01	1.9E+00	102.61%	1/16/03 06:37 a	200.01	GAMMA_GS
							Rec Limits:	70.	130.	0.0		g	GER8$1
RA-226	9.90E-01		1.6E-01	1.6E-01	5.35E-02	pCi/g		1.15E+00	5.2E-02	86.01%	1/16/03 06:37 a	200.01	GAMMA_GS
							Rec Limits:	70.	130.	-0.1		g	GER8$1
RA-228	2.13E+00		3.0E-01	3.0E-01	1.01E-01	pCi/g		1.87E+00	9.6E-02	113.61%	1/16/03 06:37 a	200.01	GAMMA_GS
							Rec Limits:	70.	130.	0.1		g	GER8$1
U-238DHP	1.67E+00		7.0E-01	7.0E-01	6.00E-01	pCi/g		1.05E+00	5.4E-02	158.42%	1/16/03 06:37 a	200.01	GAMMA_GS
							Rec Limits:			0.6		g	GER8$1
Batch: 3009229	**Work Order:**			**Report DB ID:** FFTMR1AS									
HEXCHROME	3.64E+01			0.0E+00	8.00E-02	mg/kg	N/A	4.00E+01		91.03%	1/11/03	2.5	EPA7196
							Rec Limits:			-0.1		G	

Number of Results: 6

Comments:

STL Richland **Bias** - (Result/Expected)-1 as defined by ANSI N13.30.

rptSTLRchLcs
V3.97 A97

FORM II

Date: 29-Jan-03

LCS RESULTS

Lab Name: STL Richland **SDG:** W03941

Lot-Sample No.: J3A090000-227 **Report No. :** 21624 **Matrix:** SOIL

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 3009227	**Work Order:** FFTMP1AC			**Report DB ID:** FFTMP1CS									
STRONTIUM	1.09E+00		1.5E-01	3.2E-01	1.58E-01	pCi/g	81.50%	1.13E+00	2.2E-02	95.72%	1/16/03 07:56 p	6.0	SRTOT_SEP_PRECIP
							Rec Limits:	70.	130.	0.0		G	GPC32D

Number of Results: 1

Comments:

FORM II

Date: 29-Jan-03

MATRIX SPIKE RESULTS

Lab Name: STL Richland **SDG:** W03941

Lot-Sample No.: J3A080273-2 **Report No. :** 21624 **Matrix:** SOIL

Parameter	SpikeResult, Orig Rst	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA	Rpt Unit, CRDL	Yield	Rec-overy	Exp-ected	Exp Uncert	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 3009229	Work Order:			Report DB ID:	FFRAJ1HW		Orig Sa DB ID:	9FFRAJ10					
HEXCHROME	2.59E+01			0.0E+00	8.00E-02	mg/kg	N/A	58.99%	4.38E+01		1/11/03	2.5	EPA7196
	3.98E-01	RPD	1.9									G	

Number of Results: 1

Comments:

STL Richland
rptSTLRchMs
V3.97 A97

RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
Bias - (Result/Expected)-1 as defined by ANSI N13.30.

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
First Level Review

Lot Number: J3A080273
Client ID: BHI
Due Date: 1-29-03
QC Batch Number: 3009226
Method Test Parameter: Gamma
Matrix: Soil
SDG Number: W03941

Review Item	Yes (√)	No (√)	N/A (√)
A. COC 1. Is the ICOC page complete (includes all applicable analysts, dates, SOP numbers and revisions)?	✓		
B. QC Batch 1. Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2. Are the QC appropriate for the analysis included in the batch?	✓	✓	
3. Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)?	✓		
4. Does the Worksheets include a Tracer Vial label for each sample?			✓
C. QC & Samples 1. Is the blank result, yield and MDA within contract limits?	✓		
2. Is the LCS result, yield and MDA within contract limits?	✓	✓	
3. Are the MS/MSD results, yields and MDAs within contract limits?			✓
4. Are the duplicate results, yields and MDAs within contract limits?	✓		
5. Are the sample yields and MDAs within contract limits?	✓		
D. Raw Data 1. Were results calculated in the correct units?	✓		
2. Were analysis volumes entered correctly?	✓		
3. Were yields entered correctly?			✓
4. Were spectra reviewed/meet contractual requirements?	✓		
5. Were raw counts reviewed for anomalies?			✓
E. Other 1. Are all Nonconformances included and noted? J07152	✓		
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. Are worksheet entries complete and correct?	✓		

Comments on any "No" response:

First Level Review: [signature] Date: 1-27-03

LS-038A, Rev. 9, 8/02

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 3009226

Review Item	Yes (√)	No (√)	N/A (√)
A. Sample Analysis 1. Are the sample yields within acceptance criteria?			✓
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
B. QC Samples 1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
8. Do the MS/MSD results and yields meet acceptance criteria?			✓
9. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. 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: _____

Second Level Review: Bob McKillop Date: 1/28/03

Clouseau
Nonconformance Memo

SEVERN TRENT SERVICES

NCM #:	J07152	Classification:	**Anomaly**
NCM Initiated By:	Dale OConnell	Status:	**PMREVIEW**
Date Opened:	01/27/03	Production Area:	Environmental - Prep
Date Closed:	N/A	Tests:	Gamma by GER
		Lot #'s (Sample #'s):	J3A080273 (2); J3A090000 (226)
		QC Batch:	3009226

Nonconformance: Insufficient sample volume for QC
Subcategory: Insufficient sample volume to prepare MS/MSD or duplicate

Problem Description / Root Cause

Name	Date	Description
Dale OConnell	01/27/03	There was insufficient sample volume provided to prepare a duplicate. Client requested U-238DHP at lower abundance, therefore erratic recoveries and higher MDA.

Corrective Action

Name	Date	Corrective Action
Dale OConnell	01/27/03	Precision determination achieved by recounting sample on a different detector. Report results with recoveries achieved.

Approval History

Name	Date Approved:	Position
Dale OConnell	01/27/03	Group Leader

P

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
First Level Review

Lot Number: J3A080273
Client ID: BHI
Due Date: 1/29/2003
QC Batch Number: 3009227
Method Test Parameter: TH TOTAL STRONTIUM
Matrix: SOIL
SDG Number: N/A WO3941

Review Item	Yes (√)	No (√)	N/A (√)
A. COC 1. Is the ICOC page complete (includes all applicable analysts, dates, SOP numbers and revisions)?	✓		
B. QC Batch 1. Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2. Are the QC appropriate for the analysis included in the batch?	✓		
3. Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)?	✓		
4. Does the Worksheets include a Tracer Vial label for each sample?	✓		
C. QC & Samples 1. Is the blank result, yield and MDA within contract limits?	✓		
2. Is the LCS result, yield and MDA within contract limits?	✓		
3. Are the MS/MSD results, yields and MDAs within contract limits?			✓
4. Are the duplicate results, yields and MDAs within contract limits?	✓		
5. Are the sample yields and MDAs within contract limits?	✓		
D. Raw Data 1. Were results calculated in the correct units?	✓		
2. Were analysis volumes entered correctly?	✓		
3. Were yields entered correctly?	✓		
4. Were spectra reviewed/meet contractual requirements?			✓
5. Were raw counts reviewed for anomalies?	✓		
E. 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. Are worksheet entries complete and correct?	✓		

Comments on any "No" response:

First Level Review: Pam Anderson Date: 1-17-03

LS-038A, Rev. 9, 8/02

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 309227

Review Item	Yes (√)	No (√)	N/A (√)
A. Sample Analysis 1. Are the sample yields within acceptance criteria?	✓		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
B. QC Samples 1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
8. Do the MS/MSD results and yields meet acceptance criteria?			✓
9. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. 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: _____

Second Level Review: Barbara M Billingsley Date: 1/17/03

LS-038B, Rev. 10, 8/02

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
First Level Review

P

Lot Number: 03A080773
Client ID: B#I
Due Date: 1/29/03
QC Batch Number: 3009225
Method Test Parameter: S3-C4
Matrix: Soil
SDG Number: W03941

Review Item	Yes (√)	No (√)	N/A (√)
A. COC 1. Is the ICOC page complete (includes all applicable analysts, dates, SOP numbers and revisions)?	✓		
B. QC Batch 1. Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2. Are the QC appropriate for the analysis included in the batch?	✓		
3. Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)?	✓		
4. Does the Worksheets include a Tracer Vial label for each sample?			✓
C. QC & Samples 1. Is the blank result, yield and MDA within contract limits?	✓		
2. Is the LCS result, yield and MDA within contract limits?	✓		
3. Are the MS/MSD results, yields and MDAs within contract limits?			✓
4. Are the duplicate results, yields and MDAs within contract limits?	✓		
5. Are the sample yields and MDAs within contract limits?	✓		
D. Raw Data 1. Were results calculated in the correct units?	✓		
2. Were analysis volumes entered correctly?	✓		
3. Were yields entered correctly?			✓
4. Were spectra reviewed/meet contractual requirements?	✓		
5. Were raw counts reviewed for anomalies?	✓		
E. 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. Are worksheet entries complete and correct?	✓		

Comments on any "No" response:

First Level Review: Pam Anderson Date: 1-16-03

24

LS-038A, Rev. 9, 8/02

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 3009225

Review Item	Yes (√)	No (√)	N/A (√)
A. Sample Analysis 1. Are the sample yields within acceptance criteria?			✓
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
B. QC Samples 1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
8. Do the MS/MSD results and yields meet acceptance criteria?			✓
9. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. 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: _____

Second Level Review: Beth M Gillespie Date: 1/16/03

LS-038B, Rev. 10, 8/02

SEVERN TRENT SERVICES

Richland Laboratory
Data Review Check List
METALS

Work Order Number(s): Batch 3009229

Lab Sample Numbers or SDG: W0394

Method/Test/Parameter: Cr^{+6} : soil

Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd 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 (✓)	2nd Level Review (✓)
E. Other				
1. Are all nonconformances included and noted? J07089	✓			✓
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:

First analysis not included w/ original data, only Rerun. Data Reviewer unaware data initially reviewed was re-analysis, and initiated rerun. Data Reviewer rerun not needed. Report results analyzed 1-11-03 & 1-20-03

Analyst:_____ Date:_____

Second-Level Review: [signature] Date: 1-20-03

Form No. CG-191, Rev. 3, 12/01

CHAIN OF CUSTODY

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-030-084	Page 1 of 1

Collector Nielson	Company Contact Mike Stankovich	Telephone No. 531-7620	Project Coordinator TRENT, SJ	Price Code 8L Air Quality ☐	Data Turnaround 21 Days
Project Designation 100 F Area - Full Protocol	Sampling Location 100-F-35		SAF No. B00-030		
Ice Chest No. ERC 97-079	Field Logbook No. EL-1535-8	COA R10F352600	Method of Shipment FedEx		
Shipped To Severn Trent Incorporated, Richland	Offsite Property No. NA		Bill of Lading/Air Bill No. NA		

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive T:c TO J008C9

Special Handling and/or Storage

None

SDG W03941

SAMPLE ANALYSIS Due 1-29 J3A080273

Preservation	None											
Type of Container	aG											
No. of Container(s)	1											
Volume	60mL											
	Strontium-89,90 -- Total Sr; ~~Nickel-63~~; Carbon-14 NO 1-6-3											
Sample No.	Matrix *	Sample Date	Sample Time									
J00FF8 FFRAG	SOIL	1-7-03	0839	X								

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time 1430	Received By/Stored In	Date/Time
MTStankovich 1-7-3		3B/3728 1-7-3	1430
Relinquished By/Removed From	Date/Time 1300	Received By/Stored In	Date/Time 1300
3B 3728 1-8-03		R. Fahley R. Fahley 1-8-3	
Relinquished By/Removed From	Date/Time 1330	Received By/Stored In	Date/Time 13:30
R. Fahley R. Fahley 1-8-3		SR A. Rhineheart 1-8-03	
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

SPECIAL INSTRUCTIONS

Personnel not available to relinquish samples from the 3728 Ref # 3B on 1/8/03

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=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 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-030-086	Page 1 of 1

Collector Nielson/Stankovich	Company Contact Mike Stankovich	Telephone No. 531-7620	Project Coordinator TRENT, SJ	Price Code 8L Air Quality ☐	Data Turnaround 21 Days
Project Designation 100 F Area - Full Protocol	Sampling Location 116-F-1		SAF No. B00-030		
Ice Chest No. ERC 97-029	Field Logbook No. EL-1535-8	COA R116F12600	Method of Shipment FedEx		
Shipped To Severn Trent Incorporated, Richland	Offsite Property No. NA		Bill of Lading/Air Bill No. NA		

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Tie To B13 DV9

Special Handling and/or Storage

Cool 4°C

Preservation	None	Cool 4C	None	None	None					
Type of Container	aG	aG	P	aG	P					
No. of Container(s)	1	1	1	1	1					
Volume	60mL	60mL	1000mL	60mL	20mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions. RC 1.8.03	Chromium Hex - 7196	See item (2) in Special Instructions.	~~Strontium-89,90 -- Total Sr; Nickel-63;~~ Carbon-14 RC 1.8.3	Activity Scan RC 1.8.3					
Sample No.	Matrix *	Sample Date	Sample Time							
J00FK9 FFRAJ	SOIL	1.7.3	0900	–	–	–	–			
~~J00FL0~~	~~SOIL~~	1.7.3								

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
MCK MStankovich 1.7.3	1430	3B/3728 1.7.3	1430
3B 3728 01.08.03	1300	R. Fahlen R. Fahlen 1.8.03	1300
ERC R Fahlen R. Fahlen 1.8.3	1330	STL Hoopa A. Rhineheart 1-8-03	1330

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Chromium, Lead); Mercury - 7471 - (CV)
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Personnel not available to relinquish samples from the 3728
Ref # 3B on 1/8/03

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=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 (03/01/2002)

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1989

R211116-06 J008C9

DATA SHEET

F35

SDG	7406	Client/Case no	Hanford SDG H1989
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R211116-06	Client sample id	J008C9
Dept sample id	7406-006	Location/Matrix	100-F-35 Verification SOLID
Received	11/22/02	Collected/Weight	11/20/02 07:45 1658 g
% solids	100.0	Custody/SAF No	B00-030-070 B00-030

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	45.1	2.0	0.62	1.0		SR
Uranium 233/234	U-233/234	0.026	0.11	0.20	1.0	U	U
Uranium 235	15117-96-1	0	0.064	0.25	1.0	U	U
Uranium 238	U-238	0.132	0.11	0.20	1.0	U	U
Plutonium 238	13981-16-3	0.036	0.14	0.27	1.0	U	PU
Plutonium 239/240	PU-239/240	1.36	0.44	0.27	1.0		PU
Americium 241	14596-10-2	2.03	0.67	0.41	1.0		AM
Potassium 40	13966-00-2	4.14	0.27	0.14			GAM
Cobalt 60	10198-40-0	U		0.015	0.050	U	GAM
Cesium 137	10045-97-3	U		0.014	0.10	U	GAM
Radium 226	13982-63-3	0.165	0.028	0.025			GAM
Radium 228	15262-20-1	0.172	0.045	0.047			GAM
Europium 152	14683-23-9	U		0.034	0.10	U	GAM
Europium 154	15585-10-1	U		0.052	0.10	U	GAM
Europium 155	14391-16-3	U		0.039	0.10	U	GAM
Thorium 228	14274-82-9	0.205	0.021	0.021			GAM
Thorium 232	TH-232	0.172	0.045	0.047			GAM
Uranium 235	15117-96-1	U		0.058		U	GAM
Uranium 238	U-238	U		1.8		U	GAM
Americium 241	14596-10-2	U		0.050		U	GAM

100 F Area - Full Protocol

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/13/02

ERC Radiological Counting Facility Analysis Report

RCF Number RCF9825 **Sample Date & Time** 11/6/01 1225

Project ID: 116-F-1 **SAF Number:** B00-029 **Date Analyzed** 11/12/01 8:04:

Sample ID: B13DV9

Gamma Energy Analysis

Nuclide		Activity (pCi/g)		Error (pCi/g)	MDC (pCi/g)
Co-60		1.3E+00	+/-	1.6E-01	8.3E-02
Cs-137		1.0E+01	+/-	7.4E-01	8.8E-02
Eu-152		1.7E+01	+/-	9.4E-01	3.3E-01
Eu-154		2.1E+00	+/-	2.9E-01	2.3E-01
Eu-155	<	2.8E-01			2.8E-01
Am-241	<	1.7E-01			1.7E-01

Total GEA (pCi/g)	3.0E+01	+/-	2.1E+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 C. W. Landes 11/13/01

Report To	Fax
Mike Stankovich	521-8001
Joan Kessner	372-9487

Report Printed: Tuesday, November 13, 2001

SEVERN TRENT SERVICES

Sample Check-in List

Date/Time Received: 1/8/03 @ 1330 ar

Client: BHI SDG #: W0394H NA [ ] SAF #: B00-030 NA [ ]

Work Order Number: J3A080273 Chain of Custody # B00-030-084, -086

Shipping Container ID: ERC-97-079 Air Bill # N/A

1. Custody Seals on shipping container intact? NA [ ] Yes [X] No [ ]
2. Custody Seals dated and signed? NA [ ] Yes [X] No [ ]
3. Chain of Custody record present? Yes [X] No [ ]
4. Cooler temperature: 4°C NA [ ] 5. Vermiculite/packing materials is NA [ ] Wet [ ] Dry [X]
6. Number of samples in shipping container: 4
7. Sample holding times exceeded? NA [X] Yes [ ] No [ ]
8. Samples have:
   ____ tape
   X custody seals
   X hazard labels
   X appropriate samples labels
9. Samples are:
   X in good condition
   ____ broken
   ____ leaking
   ____ have air bubbles
   (Only for samples requiring head space)
10. Sample pH taken? NA [X] pH<2 [ ] pH>2 [ ]
11. Sample Location, Sample Collector Listed? * Yes [X] No [ ]
    *For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [ ] No [X]
13. Description of anomalies (include sample numbers): _____

Sample Custodian: [signature] Date: 1/8/03

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on _____ by _____ Person contacted _____

[ ] No action necessary; process as is.

Project Manager _____ Date _____

LS-023, 9/01, Rev. 4

1/9/2003 9:40:21 AM

Sample Preparation/Analysis

127642, BECHTEL HANFORD, INC.
Bechtel Hanford, Inc.

AX Gamma PrpRC5013/5017
TA Gamma by HPGE
5I CLIENT: HANFORD

PRIORITY

Balance Id: PB3001-S
Pipet #: N/A
Sep1 DT/Tm Tech:
Sep2 DT/Tm Tech:
Prep Tech: MB

Report Due: 01/29/2003 WO3941

Batch: 3009226 SOIL pCi/g PM, Quote: BG2, 27038

SEQ Batch, Test: None

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit (g)	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date
1 FFRAJ-1-AD J3A080273-2-SAMP		368.8				S200	600	G2	1636	1/16/03 S
01/07/2003 09:00		AmtRec: LP,2X60G		#Containers: 3		Scr Rst:		Alpha:	Beta:	
2 FFRAJ-1-AG-X J3A080273-2-DUP		368.8						G8	1/17 0249	1/16/2003 00
01/07/2003 09:00		AmtRec: LP,2X60G		#Containers: 3		Scr Rst:		Alpha:	Beta:	
3 FFTMM-1-AA-BX J3A090000-226-MBLK		348.0	OSBK					G5	1639	1/16/03 S
01/07/2003 09:00		AmtRec:		#Containers: 1		Scr Rst:		Alpha:	Beta:	
4 FFTMM-1-AC-CM J3A090000-226-MLCS		200.01	CAL491					G8	1637	
1/1/03 ~~01/07/2003 09:00~~ MB 1/13/03		AmtRec:		#Containers: 1		Scr Rst:		Alpha:	Beta:	

Comments: MB 1/13/03 Recount dup on different detector.

All Clients for Batch:
127642, BECHTEL HANFORD, INC. Bechtel Hanford, Inc. , BG2, 27038

FFRAJ1AD-SAMP Constituent List:

Co-60	RDL:5.00E-02	pCi/g	LCL:	UCL:	RPD:	Cs-137	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Eu-152	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:	Eu-154	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Eu-155	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:						

FFTMM1AA-MBLK:

Co-60	RDL:5.00E-02	pCi/g	LCL:	UCL:	RPD:	Cs-137	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Eu-152	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:	Eu-154	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Eu-155	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:						

FFTMM1AC-MLCS:

Sample Preparation/Analysis

AX Gamma PrpRC5013/5017
TA Gamma by HPGE
5I CLIENT: HANFORD

PRIORITY

Balance Id:
Pipet #:
Sep1 DT/Tm Tech:
Sep2 DT/Tm Tech:
Prep Tech:

Report Due: 01/29/2003

Batch: 3009226 pCi/g

SEQ Batch, Test: None

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date
Cs-137	RDL:0.1	pCi/g	LCL:70	UCL:130	RPD:35	K-40	RDL:--	pCi/g	LCL:70	UCL:130	RPD:35
Ra-226	RDL:0.1	pCi/g	LCL:70	UCL:130	RPD:35	RA-228	RDL:0.2	pCi/g	LCL:70	UCL:130	RPD:35
RA-228DA	RDL:0.2	pCi/g	LCL:70	UCL:130	RPD:35	U-238	RDL:	pCi/g	LCL:70	UCL:130	RPD:35

FFRAJ1AD-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FFTMM1AA-MBLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FFTMM1AC-MLCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

1/27/03 12:39:59 PM

ICOC Fraction Transfer/Status Report

ByDate: 12/28/02, 1/28/03, Batch: '3009226', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
3009226						
AC		CalcC	BELSITOB	1/10/03 8:05:16 AM		
SC			WagarR	IsBatched	1/9/03 9:40:12 AM	ICOC_RADCALC v4.5.3.2
SC			BELSITOB	InPrep	1/10/03 8:05:16 AM	RICH-RC-5013 REVISION 4
SC			BELSITOB	InPrep	1/10/03 8:05:19 AM	RICH-RC-5017 REVISION 3
SC			BELSITOB	Prep1C	1/13/03 10:50:15 AM	RICH-RC-5013 REVISION 4
SC			BELSITOB	Prep1C	1/13/03 10:50:20 AM	RICH-RC-5017 REVISION 3
SC			BlackCL	InCnt1	1/13/03 10:53:13 AM	RICH-RD-0007 REVISION 3
SC			BlackCL	CalcC	1/17/03 12:15:08 PM	RICH-RD-0007 REVISION 3
AC			BELSITOB	1/10/03 8:05:19 AM		
AC			BELSITOB	1/13/03 10:50:15 AM		
AC			BELSITOB	1/13/03 10:50:20 AM		
AC			BlackCL	1/13/03 10:53:13 AM		
AC			BlackCL	1/17/03 12:15:08 PM		

36

AC: Accepting Entry; SC: Status Change

1/14/03 2:23:02 PM

Sample Preparation/Analysis

Balance Id:1120373922 1#02, #4

127642, BECHTEL HANFORD, INC.
Bechtel Hanford, Inc.

CH Sr-Total PrpRC5013, SepRC5006
TH Total Strontium by GPC
5I CLIENT: HANFORD

PRIORITY

Pipet #: NA

Report Due: 01/29/2003 W03941

Sep1 DT/Tm Tech: 1/16/03 11:50 AM

Batch: 3009227 SOIL pCi/g PM, Quote: BG2, 27038

Sep2 DT/Tm Tech: NA

SEQ Batch, Test: None

Prep Tech: ,WAGNERJ

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry (mg)	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date
1 FFRAG-1-AA J3A080273-1-SAMP		6.0g,in	SRTA8555 12/06/02 09/19/02,r			84.8	50	32A	2020	1/16/2002 AP
01/07/2003 08:39		AmtRec: 60G	#Containers: 1				Scr Rst:	Alpha: 1.77E+02 pCi/g		Beta: 7.06E+01 pCi/g
2 FFRAG-1-AD-X J3A080273-1-DUP		6.02g,in	SRTA8556 12/06/02 09/19/02,r			91.7 mf ~~94.5~~ 1/16/03		32B	2020	1/16/2002 AP
01/07/2003 08:39		AmtRec: 60G	#Containers: 1				Scr Rst:	Alpha: 1.77E+02 pCi/g		Beta: 7.06E+01 pCi/g
3 FFTMP-1-AA-B J3A090000-227-BLK		6.0g,in	SRTA8557 12/06/02 09/19/02,r			88.9		32C	2020	1/16/2002 AP
01/07/2003 08:39		AmtRec:	#Containers: 1				Scr Rst:	Alpha:		Beta:
4 FFTMP-1-AC-C J3A090000-227-LCS		6.0g,in	STSB0653 10/03/02 09/19/02,r			81.5		32D	2020	1/16/2002 AP
01/07/2003 08:39		AmtRec:	#Containers: 1				Scr Rst:	Alpha:		Beta:

Comments:

All Clients for Batch:
127642, BECHTEL HANFORD, INC. Bechtel Hanford, Inc. , BG2, 27038

FFRAG1AA-SAMP Constituent List:

Sr-90	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35

FFTMP1AA-BLK:

Sr-90	RDL:1	pCi/g	LCL:	UCL:	RPD:

FFTMP1AC-LCS:

Sr-90	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35

FFRAG1AA-SAMP Calc Info:

1/17/03 2:28:56 PM

ICOC Fraction Transfer/Status Report

ByDate: 12/18/02, 1/18/03, Batch: '3009227', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
3009227						
AC		CalcC	BELSITOB	1/10/03 8:05:27 AM		
SC			WagarR	IsBatched	1/9/03 9:40:12 AM	ICOC_RADCALC v4.5.3.2
SC			BELSITOB	InPrep	1/10/03 8:05:27 AM	RICH-RC-5013 REVISION 4
SC			BELSITOB	InPrep	1/13/03 10:56:34 AM	RICH-RC-5013 REVISION 4
SC			BELSITOB	Prep1C	1/14/03 9:17:54 AM	RICH-RC-5013 REVISION 4
SC			WAGNERJ	InPrep2	1/14/03 2:19:43 PM	RICH-RC-5013 REVISION 4
SC			WAGNERJ	Prep2C	1/15/03 11:21:10 AM	RICH-RC-5013 REVISION 4
SC			FABREM	InSep1	1/15/03 11:28:08 AM	RICH-RC-5006 REVISION 4
SC			FABREM	Sep1C	1/16/03 3:20:31 PM	RICH-RC-5006 REVISION 4
SC			DAWKINSO	InCnt1	1/16/03 4:23:20 PM	RICH-RD-0003 REVISION 3
SC			BlackCL	InCnt1	1/17/03 8:44:47 AM	RICH-RD-0003 REVISION 3
SC			BlackCL	CalcC	1/17/03 8:51:15 AM	RICH-RD-0003 REVISION 3
AC			BELSITOB	1/13/03 10:56:34 AM		
AC			BELSITOB	1/14/03 9:17:54 AM		
AC			WAGNERJ	1/14/03 2:19:43 PM		
AC			WAGNERJ	1/15/03 11:21:10 AM		
AC			FABREM	1/15/03 11:28:08 AM		
AC			FABREM	1/16/03 3:20:31 PM		
AC			DAWKINSO	1/16/03 4:23:20 PM		
AC			BlackCL	1/17/03 8:44:47 AM		
AC			BlackCL	1/17/03 8:51:15 AM		

38

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 10

ICOCFractions

1/9/03 4:11:41 PM

Sample Preparation/Analysis

127642, BECHTEL HANFORD, INC.
Bechtel Hanford, Inc.

Report Due: 01/29/2003

5S C-14 Prp/SepRC5022
S3 Carbon-14 by Liquid Scint
5I CLIENT: HANFORD

PRIORITY

Balance Id: 029
Pipet #: NA
Sep1 DT/Tm Tech: 1-13-03 DW
Sep2 DT/Tm Tech: NA
Prep Tech:

Batch: 3009225 SOIL pCi/g PM, Quote: BG2, 27038

SEQ Batch, Test: None

W03941

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date
1 FFRAJ-1-AE J3A080273-2-SAMP								
01/07/2003 09:00		AmtRec: LP,2X60G	#Containers: 3		Scr Rst:	Alpha: 1.86E+02 pCi/g	Beta: 7.04E+01 pCi/g	
2 FFRAJ-1-AF-X J3A080273-2-DUP								
01/07/2003 09:00		AmtRec: LP,2X60G	#Containers: 3		Scr Rst:	Alpha: 1.86E+02 pCi/g	Beta: 7.04E+01 pCi/g	
3 FFTML-1-AA-B J3A090000-225-BLK								
01/07/2003 09:00		AmtRec:	#Containers: 1		Scr Rst:	Alpha:	Beta:	
4 FFTML-1-AC-C J3A090000-225-LCS								
01/07/2003 09:00		AmtRec:	#Containers: 1		Scr Rst:	Alpha:	Beta:	
5 FFTML-1-AD-BN J3A090000-225-IBLK								
01/07/2003 09:00		AmtRec:	#Containers: 1		Scr Rst:	Alpha:	Beta:	
6 FFTML-1-AE-BN J3A090000-225-IBLK								
01/07/2003 09:00		AmtRec:	#Containers: 1		Scr Rst:	Alpha:	Beta:	

STL Richland
Richland Wa.

Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt,
r - Reference date, ec-Enrichment Cell, ct-Cocktailed Added

WO Cnt: 6
ICOC v4.5.3.2

1/9/2003 9:40:21 AM

Sample Preparation/Analysis

5S C-14 Prp/SepRC5022
S3 Carbon-14 by Liquid Scint
5I CLIENT: HANFORD

PRIORITY

Balance Id: 029
Pipet #:
Sep1 DT/Tm Tech: 1-13-03 am
Sep2 DT/Tm Tech:
Prep Tech:

Report Due: 01/29/2003

Batch: 3009225 pCi/g

SEQ Batch, Test: None

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date

Comments:

All Clients for Batch:
127642, BECHTEL HANFORD, INC. Bechtel Hanford, Inc. , BG2, 27038

FFRAJ1AE-SAMP Constituent List:
C-14 RDL:50 pCi/g LCL:70 UCL:130 RPD:35
FFTML1AA-BLK:
C-14 RDL:50 pCi/g LCL: UCL: RPD:
FFTML1AC-LCS:
C-14 RDL:50 pCi/g LCL:70 UCL:130 RPD:35
FFTML1AD-IBLK:
C-14 RDL:50 pCi/g LCL: UCL: RPD:
FFTML1AE-IBLK:
C-14 RDL:50 pCi/g LCL: UCL: RPD:

FFRAJ1AE-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FFTML1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FFTML1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FFTML1AD-IBLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FFTML1AE-IBLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

1/16/03 3:30:44 PM

ICOC Fraction Transfer/Status Report

ByDate: 12/17/02, 1/17/03, Batch: '3009225', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
3009225						
AC		CalcC	BELSITOB	1/10/03 8:05:10 AM		
SC			WagarR	IsBatched	1/9/03 9:40:12 AM	ICOC_RADCALC v4.5.3.2
SC			BELSITOB	InPrep	1/10/03 8:05:10 AM	RICH-RC-5013 REVISION 4
SC			BELSITOB	Prep1C	1/10/03 8:05:47 AM	RICH-RC-5013 REVISION 4
SC			McDowellD	InSep1	1/13/03 11:14:19 AM	RICH-RC-5022 REVISION 3
SC			McDowellD	Sep1C	1/13/03 2:39:11 PM	RICH-RC-5022 REVISION 3
SC			DAWKINSO	InCnt1	1/13/03 2:52:49 PM	RICH-RD-0001 REVISION 2
SC			BlackCL	CalcC	1/14/03 9:52:06 AM	RICH-RD-0001 REVISION 2
AC			BELSITOB	1/10/03 8:05:47 AM		
AC			McDowellD	1/13/03 11:14:19 AM		
AC			McDowellD	1/13/03 2:39:11 PM		
AC			DAWKINSO	1/13/03 2:52:49 PM		
AC			BlackCL	1/14/03 9:52:06 AM		

41

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 6

ICOCFractions

SEVERN TRENT SERVICES

*** RE-ANALYSIS REQUEST ***

DUE DATE 1-29-03

CUSTOMER BHI

ANALYSIS Cr+6

MATRIX Soil

LOT NUMBER J3A080273

SAMPLE DELIVERY GROUP W03941

OLD BATCH NUMBER 3009229

NEW BATCH NUMBER 3014211

	LAB SAMPLE ID	REASON FOR REQUEST & ANALYSIS COMMENTS
1)	FFRAS-1-AA	RERUN to confirm matrix effect
2)	+QC	Failed soluble MS
3)		
4)		No SA left to rerun
5)		
6)		
7)		
8)		
9)		
10)		
11)		
12)		
13)		
14)		
15)		
16)		
17)		
18)		
19)		
20)		
	LAB QC ID	Assigned with new batch.

12

1/14/03 8:49:56 AM

Sample Preparation/Analysis

127642, BECHTEL HANFORD, INC.
Bechtel Hanford, Inc.

DW Alkaline Digestion by method 3060A
EA Chromium, Hexavalent (7196A)
5I CLIENT: HANFORD

Report Due: 01/29/2003 W03941

Balance Id:
Pipet #:
Sep1 DT/Tm Tech:
Sep2 DT/Tm Tech:
Prep Tech:

Batch: 3014211 **SOIL** **mg/kg** **PM, Quote: BG2, 27038**

SEQ Batch, Test: None All Tests: 3009225 5SS3, 3009226 AXTA, 3009227 CHTH, 3009228 88OV, 3009229 DWEA, 3009230 88OV, 3014211 DWEA,

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date
1 FFRAJ-1-AL-S J3A080273-2-MS 01/07/2003 09:00		AmtRec: LP,2X60G		#Containers: 3		Scr Rst:	Alpha: 1.86E+02 pCi/g		Beta: 7.04E+01 pCi/g	
2 FFRAJ-1-AM-D J3A080273-2-MSD 01/07/2003 09:00		AmtRec: LP,2X60G		#Containers: 3		Scr Rst:	Alpha: 1.86E+02 pCi/g		Beta: 7.04E+01 pCi/g	
3 FFRAJ-1-AN-X J3A080273-2-DUP 01/07/2003 09:00		AmtRec: LP,2X60G		#Containers: 3		Scr Rst:	Alpha: 1.86E+02 pCi/g		Beta: 7.04E+01 pCi/g	
4 FFRAJ-2-AA J3A080273-2-SAMP 01/07/2003 09:00		AmtRec: LP,2X60G		#Containers: 3		Scr Rst:	Alpha: 1.86E+02 pCi/g		Beta: 7.04E+01 pCi/g	
5 FF2Q3-1-AA-B J3A140000-211-BLK 01/07/2003 09:00		AmtRec:		#Containers: 1		Scr Rst:	Alpha:		Beta:	
6 FF2Q3-1-AC-C J3A140000-211-LCS 01/07/2003 09:00		AmtRec:		#Containers: 1		Scr Rst:	Alpha:		Beta:	

1/14/03 8:49:56 AM

Sample Preparation/Analysis

DW Alkaline Digestion by method 3060A
EA Chromium, Hexavalent (7196A)
5I CLIENT: HANFORD

Report Due: 01/29/2003

Batch: 3014211 mg/kg

SEQ Batch, Test: None

Balance Id:

Pipet #: _____

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

Prep Tech:

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date

Comments:

All Clients for Batch:
127642, BECHTEL HANFORD, INC. Bechtel Hanford, Inc. , BG2, 27038

FFRAJ1AL-MS Constituent List:

FFRAJ1AM-MSD Constituent List:

FF2Q31AA-BLK:

FF2Q31AC-LCS:

FFRAJ1AL-MS Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FFRAJ1AM-MSD Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FF2Q31AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FF2Q31AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

1/9/2003 9:40:22 AM

Sample Preparation/Analysis

127642, BECHTEL HANFORD, INC. ,
Bechtel Hanford, Inc.

Report Due: 01/29/2003 W03941

DW Alkaline Digestion by method 3060A
EA Chromium, Hexavalent (7196A)
5I CLIENT: HANFORD

PRIORITY

Balance Id:

Pipet #: _____

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

Prep Tech:

Batch: 3009229 **SOIL** **mg/kg** **PM, Quote: BG2, 27038**

SEQ Batch, Test: None

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date
1 FFRAJ-1-AA										
J3A080273-2-SAMP										
01/07/2003 09:00		AmtRec: LP,2X60G		#Containers: 3		Scr Rst:		Alpha:		Beta:
2 FFRAJ-1-AH-S										
J3A080273-2-MS										
01/07/2003 09:00		AmtRec: LP,2X60G		#Containers: 3		Scr Rst:		Alpha:		Beta:
3 FFRAJ-1-AJ-X										
J3A080273-2-DUP										
01/07/2003 09:00		AmtRec: LP,2X60G		#Containers: 3		Scr Rst:		Alpha:		Beta:
4 FFRAJ-1-AK-S										
J3A080273-2-MS										
01/07/2003 09:00		AmtRec: LP,2X60G		#Containers: 3		Scr Rst:		Alpha:		Beta:
5 FFTMR-1-AA-B										
J3A090000-229-BLK										
01/07/2003 09:00		AmtRec:		#Containers: 1		Scr Rst:		Alpha:		Beta:

Comments:

All Clients for Batch:
127642, BECHTEL HANFORD, INC. Bechtel Hanford, Inc. , BG2, 27038

FFRAJ1AA-SAMP Constituent List:

FFRAJ1AH-MS Constituent List:

Sample Preparation/Analysis

DW Alkaline Digestion by method 3060A
EA Chromium, Hexavalent (7196A).
5I CLIENT: HANFORD

PRIORITY

Report Due: 01/29/2003

Batch: 3009229 mg/kg

SEQ Batch, Test: None

Balance Id:

Pipet #:

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

Prep Tech:

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date

FFRAJ1AK-MS:

FFTMR1AA-BLK:

FFRAJ1AA-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FFRAJ1AH-MS Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FFRAJ1AK-MS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FFTMR1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

1/20/03 2:08:21 PM

ICOC Fraction Transfer/Status Report

ByDate: 12/21/02, 1/21/03, Batch: '3009229', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
3009229						
AC		**Sep1C**	**SturdevantC**	1/11/03 5:09:35 PM		
SC			WagarR	IsBatched	1/9/03 9:40:12 AM	ICOC_RADCALC v4.5.3.2
SC			SturdevantC	Sep1C	1/11/03 5:09:35 PM	RICH-WC-5005 REVISION 5

47

AC: Accepting Entry; SC: Status Change

SEVERN TRENT STL

ANALYTICAL REPORT

PROJECT NO. 100H AREA FULL

B00-030

Lot #: F3A100179
SDG #: W03941

Joan Kessner

Bechtel Hanford, Inc.
3190 George Washington Way
Richland, WA 99352

SEVERN TRENT LABORATORIES, INC.

MWard

MARTI WARD
Project Manager

RECEIVED
JAN 2003

January 16, 2003

Severn Trent Laboratories, Inc.
STL St. Louis • 13715 Rider Trail North, Earth City, MO 63045
Tel 314 298 8566 Fax 314 298 8757 • www.stl-inc.com

A part of Severn Trent plc

SEVERN TRENT STL

CASE NARRATIVE

Bechtel Hanford Incorporated
3190 George Washington Way
Richland, Washington 99352
January 27, 2003

Attention: Joan Kessner

Project Number	:	40232
SAF	:	B00-030
SDG	:	W03941
Number of Samples	:	one
Sample Matrix	:	Soil
Data Deliverable	:	Summary
Date SDG Closed	:	January 8, 2003

II. Introduction

On January 10, 2003, one (1) "soil" sample was received by STL--St. Louis for chemical analysis. The sample was received at the St. Louis lab at ambient temperature. Review the COC and CUR forms for variations in sample condition or temperature upon arrival at the lab. 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. This report is incomplete without the Case Narrative. Results are reported "as received"; i.e. wet weight, unless otherwise noted on the data sheets.

Analyses requested: see attached Method Summary Sheet

Deviation from Request: metals run by 6010B instead of 6010A

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 STL

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.

There were no comments or non-conformances associated with this 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

Marti Ward
St. Louis Project Manager

SAMPLE SUMMARY

F3A100179

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
FFWJX	001	J00FK9	01/07/03	09:00
FFWKN	002	J00FL0	01/08/03	08:45

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

F3A100179

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Mercury in Solid Waste (Manual Cold-Vapor)	SW846 7471A	SW846 7471A
Percent Moisture	MCAWW 160.3 MOD	MCAWW 160.3 MOD
Trace Inductively Coupled Plasma (ICP) Metals	SW846 6010B	SW846 3050B

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.

LOT# F3A100179

STL ST. LOUIS

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B00-030-086

Collector: Nielson/Stankovich	Company Contact: Mike Stankovich	Telephone No.: 531-7620	Project Coordinator: TRENT, SJ
Price Code: 8L	Data Turnaround: 21 Days	Air Quality: ☐	
Project Designation: 100 F Area - Full Protocol	Sampling Location: 116-F-1		SAF No.: B00-030
Ice Chest No.: ERC-96-087	Field Logbook No.: EL-1535-8	COA: R116F12600	Method of Shipment: FedEx
Shipped To: Severn Trent Incorporated, ~~Richland~~ ST LOUIS	Offsite Property No.: A030 099		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Tie To B13 DV9

Special Handling and/or Storage

Preservation	None	Cool 4C	None	None	None						
Type of Container	aG	aG	P	aG	P						
No. of Container(s)	1	1	1	1	1						
Volume	60mL	60mL	1000mL	60mL	2[illegible]mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions	Chromium Hex - 7196	See item (2) in Special Instructions	Strontium-89,90 -- Total Sr, Nickel-63, Carbon-14	Activity Scan						

W03941

Sample No.	Matrix *	Sample Date	Sample Time										
J00FK9	SOIL	1-7-3	0900	–	–	–	–						
~~J00FL0~~	~~SOIL~~	1-7-3											

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
MCK mstankovich	1-7-3 1430	3B/3728	1-7-3 1430
3B 3728	1-9-3 1000	R. Fallen R. Fallen	1-9-3 1000
R Fallen R. Fallen	1-9-3 1000	Fed Ex	

Sign/Print Names

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Chromium, Lead}; Mercury - 7471 - (CV)
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Personnel not available to relinquish samples from the 3728 Ref# 3B on 1-9-03

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=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: [illegible]	Title	Date/Time: 1-10-03 0900
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

LOT# F3A100179

STL ST. LOUIS

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B00-030-086	Page 1 of 1
Collector: Nielson/Stankovich	Company Contact: Mike Stankovich	Telephone No.: 531-7620	Project Coordinator: TRENT, SJ	Price Code: 8L; Data Turnaround: 21 Days
Project Designation: 100 F Area - Full Protocol	Sampling Location: 116-F-1		SAF No.: B00-030	Air Quality ☐
Ice Chest No.: FRC-96-087	Field Logbook No.: EL-1535-8	COA: R116F12600	Method of Shipment: FedEx	
Shipped To: Severn Trent Incorporated, ~~Richland~~ ST LOUIS	Offsite Property No.: A030 099		Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

Preservation	None	Cool 4C	None	None	None						
Type of Container	aG	aG	P	aG	P						
No. of Container(s)	1	1	1	1	1						
Volume	60mL	60mL	1000mL	60mL	20mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions	Chromium Hex - 7196	See item (2) in Special Instructions	Strontium-89,90 - Total Sr, Nickel-63; Carbon-14	Activity Scan						

W03941

Sample No.	Matrix *	Sample Date	Sample Time										
~~J00FK0~~	~~SOIL~~	NO 1-7-3											
J00FL0	SOIL	1-8-3	0845	✓	✓	✓	✓	✓					

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: MR STANKOVICH 1-8-3	1430	3G/3728 1-8-3	1430
Relinquished By/Removed From: REF 3B 19-03	10 30	SJ GALE	1903 1030
Relinquished By/Removed From: SJ GALE	1903 1030	FED EX	
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Chromium, Lead); Mercury - 7471 - (CV)
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Personnel not available to relinquish samples from the 3728 Ref # 3B on 1/9/03

Matrix *
S=Soil
SE=Sediment
SO=Solid
SJ=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: Chris Ahers	Title	Date/Time: 1-10-03 0900
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

ERC Radiological Counting Facility Analysis Report

RCF Number RCF9825 **Sample Date & Time** 11/6/01 1225

Project ID: 116-F-1 **SAF Number:** B00-029 **Date Analyzed** 11/12/01 8:04:

Sample ID: B13DV9

Gamma Energy Analysis

Nuclide		Activity (pCi/g)		Error (pCi/g)	MDC (pCi/g)
Co-60		1.3E+00	+/-	1.6E-01	8.3E-02
Cs-137		1.0E+01	+/-	7.4E-01	8.8E-02
Eu-152		1.7E+01	+/-	9.4E-01	3.3E-01
Eu-154		2.1E+00	+/-	2.9E-01	2.3E-01
Eu-155	<	2.8E-01			2.8E-01
Am-241	<	1.7E-01			1.7E-01

116F1

Total GEA (pCi/g)	3.0E+01	+/-	2.1E+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 C. W. Landes 11/13/01

Report To	Fax
Mike Stankovich	521-8001
Joan Kessner	372-9487

Report Printed: Tuesday, November 13, 2001

LOT# F3A100179

STL ST. LOUIS

SEVERN TRENT SERVICES

Lot No.: F3A10017
W03941

Condition Upon Receipt Form
St. Louis Laboratory

Client: Bechtel Hanford

Date: 10-03 Time: 0900

Quote No: 40232

Initiated by: KA

Shipper/No: 792804453160

COC/RFA Numbers: BBD-030-086

Condition/Variance (Circle "Y" for yes and "N" for no. If "N" is circled, see notes for explanation):

1.	Y N	Sample received in undamaged condition.	5.	Y N	Sample volume sufficient for analysis.
2.	Y N	Sample received within 4°C ± 2°C*. Record temperature: Ambient	6.	Y N	Sample received with Chain of Custody.
			7.	Y N	Chain of Custody matches sample IDs on containers.
3.	Y N N/A	Sample received with proper pH**.	8.	Y N	Custody seal received intact and tamper evident on cooler.
4.	Y N	Sample received in proper containers.	9.	Y N	Custody seal received intact and tamper evident on bottles.

*** Temperature Variance Does Not Affect the Following Analyses:** _____

**** For DOE-AL (Pantex, LANL, Sandia, Timet) sites, remember to pH all containers received, except for VOA, TOX, and soils.**

Notes:

Corrective Action:

☐ Client's Name: _____ Informed verbally on: _____ By: _____

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

☐ Sample(s) processed "as is". _____

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

Sample Control Supervisor (or designate) Review: Kris Albers Date: 1-10-03

Project Management Review: [illegible] Date: 1-10-03

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 THEIR INITIALS AND THE DATE NEXT TO THAT ITEM

SL-ADMIN-0004, Revised 5/24/01
\\Qstlmo05\QA\FORMS\ST-LOUIS\ADMIN\Admin004_rev_5_24_01.doc

LOT# F3A100179

METALS

BECHTEL HANFORD, INC.

Client Sample ID: J00FK9

TOTAL Metals

Lot-Sample #...: F3A100179-001 Matrix.....: SOLID
Date Sampled...: 01/07/03 Date Received..: 01/09/03
% Moisture.....: 5.0

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 3013160						
Mercury	0.015 B	0.035	mg/kg	SW846 7471A	01/13/03	FFWJX1AA
		Dilution Factor: 1		MDL.....: 0.0082		
Prep Batch #...: 3014119						
Arsenic	3.3	1.1	mg/kg	SW846 6010B	01/14-01/15/03	FFWJX1AD
		Dilution Factor: 1		MDL.....: 0.10		
Chromium	10.8	1.1	mg/kg	SW846 6010B	01/14-01/15/03	FFWJX1AC
		Dilution Factor: 1		MDL.....: 0.12		
Lead	8.5 J	0.53	mg/kg	SW846 6010B	01/14-01/15/03	FFWJX1AE
		Dilution Factor: 1		MDL.....: 0.070		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F3A100179 **Matrix.....:** SOLID
Date Sampled...: 01/07/03 **Date Received..:** 01/09/03

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: F3A100179-001 **Prep Batch #...:** 3013160									
								% Moisture.....: 5.0	
Mercury									
	0.015	0.175	0.193	mg/kg	101		SW846 7471A	01/13/03	FFWJX1AH
	0.015	0.175	0.193	mg/kg	101	0.0	SW846 7471A	01/13/03	FFWJX1AJ
			Dilution Factor: 1						
MS Lot-Sample #: F3A100179-001 **Prep Batch #...:** 3014119									
								% Moisture.....: 5.0	
Arsenic									
	3.3	210	211	mg/kg	99		SW846 6010B	01/14-01/15/03	FFWJX1AM
	3.3	210	204	mg/kg	95	3.4	SW846 6010B	01/14-01/15/03	FFWJX1AN
			Dilution Factor: 1						
Chromium									
	10.8	21.0	33.8	mg/kg	110		SW846 6010B	01/14-01/15/03	FFWJX1AK
	10.8	21.0	28.2	mg/kg	83	18	SW846 6010B	01/14-01/15/03	FFWJX1AL
			Dilution Factor: 1						
Lead									
	8.5	52.6	59.0	mg/kg	96		SW846 6010B	01/14-01/15/03	FFWJX1AP
	8.5	52.6	56.1	mg/kg	91	5.0	SW846 6010B	01/14-01/15/03	FFWJX1AQ
			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.

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F3A100179 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: F3A130000-160 **Prep Batch #...:** 3013160						
Mercury	ND	0.033	mg/kg	SW846 7471A	01/13/03	FF0391AA
		Dilution Factor: 1				
MB Lot-Sample #: F3A140000-119 **Prep Batch #...:** 3014119						
Arsenic	ND	1.0	mg/kg	SW846 6010B	01/14-01/15/03	FF2A51AC
		Dilution Factor: 1				
Chromium	ND	1.0	mg/kg	SW846 6010B	01/14-01/15/03	FF2A51AA
		Dilution Factor: 1				
Lead	**0.11 B**	**0.50**	**mg/kg**	**SW846 6010B**	**01/14-01/15/03**	**FF2A51AD**
		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

Client Lot #...: F3A100179 **Matrix.....:** SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: F3A130000-160 **Prep Batch #...:** 3013160							
Mercury	9.41	8.33	mg/kg	89	SW846 7471A	01/13/03	FF0391AC
			Dilution Factor: 10				
LCS Lot-Sample#: F3A140000-119 **Prep Batch #...:** 3014119							
Chromium	82.6	87.4	mg/kg	106	SW846 6010B	01/14-01/15/03	FF2A51AF
			Dilution Factor: 1				
Arsenic	197	211	mg/kg	107	SW846 6010B	01/14-01/15/03	FF2A51AG
			Dilution Factor: 1				
Lead	95.0	99.7	mg/kg	105	SW846 6010B	01/14-01/15/03	FF2A51AH
			Dilution Factor: 1				

NOTE(S):

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