0059213

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 2/19/03
INITIAL/DATE

Jeanette Duncan BJ 2/19/03
INITIAL/DATE

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

SDG W03948 SAF-B00-030

Rad only Chem only X Rad & Chem

X Complete Partial

Waste Site: 100-F-19 Overburden

RECEIVED
APR 28 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 59 Pages

Report No.: 21770

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
W03948	B00-030	J00FV1	J3A160144-1	FF6J11AG	9FF6J110	3018103
		J00FV1	J3A160144-1	FF6J11AF	9FF6J110	3018104
		J00FV1	J3A160144-1	FF6J11AC	9FF6J110	3018105
		J00FV1	J3A160144-1	FF6J11AD	9FF6J110	3018106
		J00FV1	J3A160144-1	FF6J11AA	9FF6J110	3018109
		J00FV2	J3A160144-2	FF6J61AG	9FF6J610	3018103
		J00FV2	J3A160144-2	FF6J61AF	9FF6J610	3018104
		J00FV2	J3A160144-2	FF6J61AC	9FF6J610	3018105
		J00FV2	J3A160144-2	FF6J61AD	9FF6J610	3018106
		J00FV2	J3A160144-2	FF6J61AA	9FF6J610	3018109
		J00FV3	J3A160144-3	FF6J71AG	9FF6J710	3018103
		J00FV3	J3A160144-3	FF6J71AF	9FF6J710	3018104
		J00FV3	J3A160144-3	FF6J71AC	9FF6J710	3018105
		J00FV3	J3A160144-3	FF6J71AD	9FF6J710	3018106
		J00FV3	J3A160144-3	FF6J71AA	9FF6J710	3018109

FEB 2003

SEVERN TRENT STL

CERTIFICATE OF ANALYSIS

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

February 13, 2003

Attention: Joan Kessner

SAF Number	:	B00-030
Date SDG Closed	:	January 16, 2003
Number of Samples	:	Three (3)
Sample Type	:	Soil
SDG Number	:	W03948
Data Deliverable	:	21-Day / Summary

I. Introduction

On January 16, 2003, three 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 ID:

STLR ID#	BHI ID#	MATRIX	DATE OF RECEIPT
FF6J1	J00FV1	SOIL	1/16/03
FF6J6	J00FV2	SOIL	1/16/03
FF6J7	J00FV3	SOIL	1/16/03

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
Nickel-63 by method RICH-RC-5069
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 W03948 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 (J00FV2), and sample results are within contractual requirements.

Liquid Scintillation Counting
Carbon-14 by method RICH-RC-5022:
The LCS, batch blank, sample duplicate (J00FV1), and sample results are within contractual requirements.

Nickel-63 by method RICH-RC-5069:
The LCS, batch blank, sample duplicate (J00FV2), and sample results are within contractual requirements.

Gamma Spectroscopy
Gamma Spec by method RICH-RC-5017:
The LCS, batch blank, sample duplicate (J00FV1), and sample results are within contractual requirements.

Chemical Analyses
Chromium Hex by EPA method 7196A:
The LCS, batch blank, sample duplicate (J00FV1), matrix spike (J00FV1), color (J00FV1 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.

Sample Results Summary

STL Richland STLRL

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

Date: 13-Feb-03

Report No. : 21770

SDG No: W03948

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	MDC or MDA	CRDL	RPD
3018104 GAMMA_GS									
J00FV1									
	FF6J11AF	CO-60	-3.99E-03 +- 1.1E-02	U	pCi/g		1.83E-02	5.00E-02	
		CS-137	1.02E-02 +- 1.1E-02	U	pCi/g		1.92E-02	1.00E-01	
		EU-152	-6.51E-03 +- 2.7E-02	U	pCi/g		4.47E-02	1.00E-01	
		EU-154	4.52E-03 +- 3.2E-02	U	pCi/g		5.53E-02	1.00E-01	
		EU-155	-1.05E-03 +- 2.6E-02	U	pCi/g		4.47E-02	1.00E-01	
J00FV1 DUP									
	FF6J11AJ	CO-60	5.34E-03 +- 1.2E-02	U	pCi/g		2.14E-02	5.00E-02	
		CS-137	1.85E-02 +- 1.2E-02	U	pCi/g		2.14E-02	1.00E-01	
		EU-152	1.10E-02 +- 3.1E-02	U	pCi/g		4.83E-02	1.00E-01	
		EU-154	-7.18E-03 +- 3.8E-02	U	pCi/g		6.57E-02	1.00E-01	
		EU-155	4.11E-02 +- 2.8E-02	U	pCi/g		4.71E-02	1.00E-01	
J00FV2									
	FF6J61AF	CO-60	1.88E-03 +- 1.2E-02	U	pCi/g		2.06E-02	5.00E-02	
		CS-137	1.97E-02 +- 1.3E-02	U	pCi/g		2.24E-02	1.00E-01	
		EU-152	-1.54E-02 +- 4.9E-02	U	pCi/g		5.32E-02	1.00E-01	
		EU-154	-1.13E-02 +- 4.1E-02	U	pCi/g		6.98E-02	1.00E-01	
		EU-155	1.33E-02 +- 3.8E-02	U	pCi/g		6.34E-02	1.00E-01	
J00FV3									
	FF6J71AF	CO-60	3.85E-04 +- 1.2E-02	U	pCi/g		1.99E-02	5.00E-02	
		CS-137	2.24E-03 +- 1.3E-02	U	pCi/g		2.14E-02	1.00E-01	
		EU-152	2.87E-02 +- 4.4E-02	U	pCi/g		5.61E-02	1.00E-01	
		EU-154	-3.50E-02 +- 3.8E-02	U	pCi/g		6.20E-02	1.00E-01	
		EU-155	2.47E-02 +- 4.9E-02	U	pCi/g		8.19E-02	1.00E-01	
3018105 SRTOT_SEP_PRECIP_GPC									
J00FV1									
	FF6J11AC	STRONTIUM	0.00E+00 +- 5.0E-02	U	pCi/g	82.60%	1.21E-01		
J00FV2									
	FF6J61AC	STRONTIUM	2.70E-02 +- 5.7E-02	U	pCi/g	78.30%	1.27E-01		
J00FV2 DUP									
	FF6J61AH	STRONTIUM	4.92E-02 +- 6.3E-02	U	pCi/g	74.50%	1.34E-01		58.2
J00FV3									
	FF6J71AC	STRONTIUM	4.34E-02 +- 5.8E-02	U	pCi/g	83.20%	1.24E-01		
3018103 C14_LSC									
J00FV1									
	FF6J11AG	C-14	-1.90E-01 +- 3.7E-01	U	pCi/g	100.00%	8.28E-01	5.00E+01	
J00FV1 DUP									
	FF6J11AH	C-14	-3.90E-01 +- 3.6E-01	U	pCi/g	100.00%	8.28E-01	5.00E+01	-69.0
J00FV2									

STL Richland

rptSTLRchSaSummary2 V3.98 A97

RPD - Relative Percent Difference.

U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

Sample Results Summary

STL Richland STLRL

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

Date: 13-Feb-03

Report No. : 21770

SDG No: W03948

Batch	Client Id / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	MDC or MDA	CRDL	RPD
3018103 C14_LSC									
	J00FV2								
	FF6J61AG	C-14	-9.04E-02 +- 3.8E-01	U	pCi/g	100.00%	8.32E-01	5.00E+01	
	J00FV3								
	FF6J71AG	C-14	-3.40E-01 +- 3.6E-01	U	pCi/g	100.00%	8.26E-01	5.00E+01	
3018106 NI63LSC									
	J00FV1								
	FF6J11AD	NI-63	-1.82E+00 +- 4.9E+00	U	pCi/g	92.21%	6.31E+00	3.00E+01	
	J00FV2								
	FF6J61AD	NI-63	2.43E+00 +- 5.2E+00	U	pCi/g	90.53%	6.41E+00	3.00E+01	
	J00FV2 DUP								
	FF6J61AJ	NI-63	5.01E+00 +- 5.8E+00	U	pCi/g	84.15%	6.79E+00	3.00E+01	69.6
	J00FV3								
	FF6J71AD	NI-63	7.67E+00 +- 5.3E+00		pCi/g	97.08%	5.85E+00	3.00E+01	
3018109 EPA7196									
	J00FV1								
	FF6J11AA	HEXCHROME	3.50E-01 +- 0.0E+00	U	mg/kg	N/A	8.00E-02	3.50E-01	
	J00FV1 DUP								
	FF6J11AL	HEXCHROME	3.50E-01 +- 0.0E+00	U	mg/kg	N/A	8.00E-02	3.50E-01	0.0
	J00FV2								
	FF6J61AA	HEXCHROME	3.50E-01 +- 1.6E-02	U	mg/kg	N/A	3.50E-01	3.50E-01	
	J00FV3								
	FF6J71AA	HEXCHROME	3.50E-01 +- 0.0E+00	U	mg/kg	N/A	8.00E-02	3.50E-01	

No. of Results: 36

RPD - Relative Percent Difference.

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 Method, Batch No, QC Type,.

Date: 13-Feb-03

Report No. : 21770

SDG No.: W03948

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	Recovery	Bias	MDC|MDA
GAMMA_GS								
3018104 BLANK QC								
FGALH2AA	CO-60	-3.99E-03 +- 8.1E-03	U	pCi/g				1.36E-02
	CS-137	-3.54E-03 +- 8.4E-03	U	pCi/g				1.41E-02
	EU-152	-3.52E-02 +- 2.8E-02	U	pCi/g				3.94E-02
	EU-154	8.02E-03 +- 2.2E-02	U	pCi/g				3.94E-02
	EU-155	4.64E-03 +- 3.1E-02	U	pCi/g				5.23E-02
3018104 LCS								
FGALH2AC	CS-137	2.97E-01 +- 5.4E-02		pCi/g		102.87%	0.0	3.87E-02
	K-40	1.87E+01 +- 2.4E+00		pCi/g		95.81%	0.0	2.76E-01
	RA-226	9.70E-01 +- 1.6E-01		pCi/g		84.23%	-0.2	6.69E-02
	RA-228	2.14E+00 +- 3.1E-01		pCi/g		114.44%	0.1	1.19E-01
	U-238DHP	1.51E+00 +- 6.0E-01		pCi/g		143.42%	0.4	6.02E-01
SRTOT_SEP_PRECIP_GPC								
3018105 BLANK QC								
FGALJ1AA	STRONTIUM	-1.96E-02 +- 4.7E-02	U	pCi/g	85.20%			1.19E-01
3018105 LCS								
FGALJ1AC	STRONTIUM	9.45E-01 +- 2.8E-01		pCi/g	83.10%	82.34%	-0.2	1.18E-01
C14_LSC								
3018103 BLANK QC								
FGALG1AA	C-14	2.02E-02 +- 1.5E-01	U	pCi/g	100.00%			3.33E-01
3018103 LCS								
FGALG1AC	C-14	7.22E+00 +- 3.9E-01		pCi/g	100.00%	99.22%	0.0	3.33E-01
NI63LSC								
3018106 BLANK QC								
FGALL1AA	NI-63	9.39E+00 +- 5.8E+00		pCi/g	88.95%			6.40E+00
3018106 LCS								
FGALL1AC	NI-63	4.88E+02 +- 4.4E+01		pCi/g	78.29%	96.50%	0.0	7.61E+00
EPA7196								
3018109 MATRIX SPIKE								
FF6J11AK	HEXCHROME	3.50E+01 +- 0.0E+00		mg/kg	N/A	79.73%	-0.2	8.00E-02
3018109 LCS								
FGALR1AS	HEXCHROME	3.87E+01 +- 0.0E+00		mg/kg	N/A	96.70%	0.0	8.00E-02
3018109 BLANK QC								
FGALR1AA	HEXCHROME	3.50E-01 +- 0.0E+00	U	mg/kg	N/A			8.00E-02

No. of Results: 19

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: 13-Feb-03

Lab Name:	STL Richland	**SDG:**	W03948	**Collection Date:**	1/15/2003 8:45:00 AM
Lot-Sample No.:	J3A160144-1	**Report No. :**	21770	**Received Date:**	1/16/2003 8:45:00 AM
Client Sample ID:	J00FV1	**COC No. :**	B00-030-090	**Matrix:**	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3018103	C14_LSC			**Work Order:** FF6J11AG			**Report DB ID:** 9FF6J110					
C-14	-1.90E-01	U	3.3E-01	3.7E-01	8.28E-01	pCi/g	100.00%	*-0.23*	1/21/03 03:44 a		2.012	LSC3
						3.97E-01	5.00E+01	*-(1.)*			G	
Batch: 3018104	GAMMA_GS			**Work Order:** FF6J11AF			**Report DB ID:** 9FF6J110					
CO-60	-3.99E-03	U	1.1E-02	1.1E-02	1.83E-02	pCi/g		*-0.22*	1/22/03 07:03 p		367.4	GER8$1
							5.00E-02	*-0.73*			g	
CS-137	1.02E-02	U	1.1E-02	1.1E-02	1.92E-02	pCi/g		*0.53*	1/22/03 07:03 p		367.4	GER8$1
							1.00E-01	*(1.9)*			g	
EU-152	-6.51E-03	U	2.7E-02	2.7E-02	4.47E-02	pCi/g		*-0.15*	1/22/03 07:03 p		367.4	GER8$1
							1.00E-01	*-0.49*			g	
EU-154	4.52E-03	U	3.2E-02	3.2E-02	5.53E-02	pCi/g		*0.08*	1/22/03 07:03 p		367.4	GER8$1
							1.00E-01	*0.28*			g	
EU-155	-1.05E-03	U	2.6E-02	2.6E-02	4.47E-02	pCi/g		*-0.02*	1/22/03 07:03 p		367.4	GER8$1
							1.00E-01	*-0.08*			g	
Batch: 3018105	SRTOT_SEP_PRECIP_GPC			**Work Order:** FF6J11AC			**Report DB ID:** 9FF6J110					
STRONTIUM	0.00E+00	U	0.0E+00	5.0E-02	1.21E-01	pCi/g	82.60%	*0.*	2/1/03 06:34 p		6.05	GPC31A
						5.59E-02		*0.*			G	
Batch: 3018106	NI63LSC			**Work Order:** FF6J11AD			**Report DB ID:** 9FF6J110					
NI-63	-1.82E+00	U	2.5E+00	4.9E+00	6.31E+00	pCi/g	92.21%	*-0.29*	2/6/03 07:27 p		0.253	LSC4
						3.08E+00	3.00E+01	*-0.75*			G	
Batch: 3018109	EPA7196			**Work Order:** FF6J11AA			**Report DB ID:** 9FF6J110					

STL Richland
rptSTLRchSample
V3.98 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: 13-Feb-03

Lab Name: STL Richland
Lot-Sample No.: J3A160144-1
Client Sample ID: J00FV1

SDG: W03948
Report No. : 21770
COC No. : B00-030-090

Collection Date: 1/15/2003 8:45:00 AM
Received Date: 1/16/2003 8:45:00 AM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2 s)	MDC | MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
HEXCHROME	3.50E-01	U		0.0E+00	8.00E-02	mg/kg	N/A	*(4.4)*	1/22/03		2.5	
							3.50E-01	*N/A*			G	

No. of Results: 9 **Comments:**

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: 13-Feb-03

Lab Name:	**STL Richland**	**SDG:**	W03948	**Collection Date:**	1/13/2003 9:00:00 AM
Lot-Sample No.:	**J3A160144-2**	**Report No. :**	21770	**Received Date:**	1/16/2003 8:45:00 AM
Client Sample ID:	**J00FV2**	**COC No. :**	B00-030-091	**Matrix:**	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3018103	C14_LSC			**Work Order:** FF6J61AG			**Report DB ID:** 9FF6J610					
C-14	-9.04E-02	U	3.4E-01	3.8E-01	8.32E-01	pCi/g	100.00%	*-0.11*	1/21/03 05:08 a		2.002	LSC3
						3.99E-01	5.00E+01	*-0.48*			G	
Batch: 3018104	GAMMA_GS			**Work Order:** FF6J61AF			**Report DB ID:** 9FF6J610					
CO-60	1.88E-03	U	1.2E-02	1.2E-02	2.06E-02	pCi/g		*0.09*	1/28/03 07:54 a		381.1	GER1$1
							5.00E-02	*0.32*			g	
CS-137	1.97E-02	U	1.3E-02	1.3E-02	2.24E-02	pCi/g		*0.88*	1/28/03 07:54 a		381.1	GER1$1
							1.00E-01	*(3.1)*			g	
EU-152	-1.54E-02	U	4.9E-02	4.9E-02	5.32E-02	pCi/g		*-0.29*	1/28/03 07:54 a		381.1	GER1$1
							1.00E-01	*-0.63*			g	
EU-154	-1.13E-02	U	4.1E-02	4.1E-02	6.98E-02	pCi/g		*-0.16*	1/28/03 07:54 a		381.1	GER1$1
							1.00E-01	*-0.55*			g	
EU-155	1.33E-02	U	3.8E-02	3.8E-02	6.34E-02	pCi/g		*0.21*	1/28/03 07:54 a		381.1	GER1$1
							1.00E-01	*0.69*			g	
Batch: 3018105	SRTOT_SEP_PRECIP_GPC			**Work Order:** FF6J61AC			**Report DB ID:** 9FF6J610					
STRONTIUM	2.70E-02	U	5.6E-02	5.7E-02	1.27E-01	pCi/g	78.30%	*0.21*	2/1/03 06:34 p		6.03	GPC31B
						5.88E-02		*0.95*			G	
Batch: 3018106	NI63LSC			**Work Order:** FF6J61AD			**Report DB ID:** 9FF6J610					
NI-63	2.43E+00	U	2.7E+00	5.2E+00	6.41E+00	pCi/g	90.53%	*0.38*	2/6/03 09:08 p		0.254	LSC4
						3.13E+00	3.00E+01	*0.93*			G	
Batch: 3018109	EPA7196			**Work Order:** FF6J61AA			**Report DB ID:** 9FF6J610					

STL Richland
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V3.98 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: 13-Feb-03

Lab Name:	**STL Richland**	**SDG:**	W03948	**Collection Date:**	1/13/2003 9:00:00 AM
Lot-Sample No.:	**J3A160144-2**	**Report No. :**	21770	**Received Date:**	1/16/2003 8:45:00 AM
Client Sample ID:	**J00FV2**	**COC No. :**	B00-030-091	**Matrix:**	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2 s)	MDC | MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
HEXCHROME	3.50E-01	U		1.6E-02	3.50E-01	mg/kg	N/A	*(1.)*	1/22/03		2.5	
							3.50E-01	*(43.7)*			G	

No. of Results: 9 **Comments:**

STL Richland
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V3.98 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: 13-Feb-03

Lab Name: STL Richland
Lot-Sample No.: J3A160144-3
Client Sample ID: J00FV3

SDG: W03948
Report No. : 21770
COC No. : B00-030-091

Collection Date: 1/14/2003 11:00:00 AM
Received Date: 1/16/2003 8:45:00 AM
Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC | MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3018103	C14_LSC			**Work Order:** FF6J71AG			**Report DB ID:** 9FF6J710					
C-14	-3.40E-01	U	3.3E-01	3.6E-01	8.26E-01	pCi/g	100.00%	*-0.41*	1/21/03 05:50 a		2.018	LSC3
						3.96E-01	5.00E+01	*-(1.9)*			G	
Batch: 3018104	GAMMA_GS			**Work Order:** FF6J71AF			**Report DB ID:** 9FF6J710					
CO-60	3.85E-04	U	1.2E-02	1.2E-02	1.99E-02	pCi/g		*0.02*	1/28/03 07:52 a		373.7	GER2$1
							5.00E-02	*0.07*			g	
CS-137	2.24E-03	U	1.3E-02	1.3E-02	2.14E-02	pCi/g		*0.1*	1/28/03 07:52 a		373.7	GER2$1
							1.00E-01	*0.36*			g	
EU-152	2.87E-02	U	4.4E-02	4.4E-02	5.61E-02	pCi/g		*0.51*	1/28/03 07:52 a		373.7	GER2$1
							1.00E-01	*(1.3)*			g	
EU-154	-3.50E-02	U	3.8E-02	3.8E-02	6.20E-02	pCi/g		*-0.57*	1/28/03 07:52 a		373.7	GER2$1
							1.00E-01	*-(1.8)*			g	
EU-155	2.47E-02	U	4.9E-02	4.9E-02	8.19E-02	pCi/g		*0.3*	1/28/03 07:52 a		373.7	GER2$1
							1.00E-01	*(1.)*			g	
Batch: 3018105	SRTOT_SEP_PRECIP_GPC			**Work Order:** FF6J71AC			**Report DB ID:** 9FF6J710					
STRONTIUM	4.34E-02	U	5.7E-02	5.8E-02	1.24E-01	pCi/g	83.20%	*0.35*	2/1/03 06:34 p		6.01	GPC32A
						5.75E-02		*(1.5)*			G	
Batch: 3018106	NI63LSC			**Work Order:** FF6J71AD			**Report DB ID:** 9FF6J710					
NI-63	7.67E+00		2.6E+00	5.3E+00	5.85E+00	pCi/g	97.08%	*(1.3)*	2/7/03 12:32 a		0.251	LSC4
						2.85E+00	3.00E+01	*(2.9)*			G	
Batch: 3018109	EPA7196			**Work Order:** FF6J71AA			**Report DB ID:** 9FF6J710					

STL Richland
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V3.98 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: 13-Feb-03

Lab Name:	STL Richland	**SDG:**	W03948	**Collection Date:**	1/14/2003 11:00:00 AM
Lot-Sample No.:	J3A160144-3	**Report No. :**	21770	**Received Date:**	1/16/2003 8:45:00 AM
Client Sample ID:	J00FV3	**COC No. :**	B00-030-091	**Matrix:**	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2 s)	MDC | MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
HEXCHROME	3.50E-01	U		0.0E+00	8.00E-02	mg/kg	N/A	*(4.4)*	1/22/03		2.5	
							3.50E-01	*N/A*			G	

No. of Results: 9 **Comments:**

STL Richland
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V3.98 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: 13-Feb-03

DUPLICATE RESULTS

Lab Name:	STL Richland	**SDG:**	W03948	**Collection Date:**	1/15/2003 8:45:00 AM
Lot-Sample No.:	J3A160144-1	**Report No. :**	21770	**Received Date:**	1/16/2003 8:45:00 AM
Client Sample ID:	J00FV1 DUP	**COC No. :**	B00-030-090	**Matrix:**	SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3018103	C14_LSC			**Work Order:** FF6J11AH		**Report DB ID:** FF6J11HR			**Orig Sa DB ID:** 9FF6J110			
C-14	-3.90E-01	U	3.3E-01	3.6E-01	8.28E-01	pCi/g	100.00%	-0.47	1/21/03 04:26 a		2.013	LSC3
	-1.90E-01	U	RPD -69.0			5.00E+01		-(2.2)			G	
Batch: 3018104	GAMMA_GS			**Work Order:** FF6J11AJ		**Report DB ID:** FF6J11JR			**Orig Sa DB ID:** 9FF6J110			
CO-60	5.34E-03	U	1.2E-02	1.2E-02	2.14E-02	pCi/g		0.25	1/27/03 09:01 p		366.7	GER6$1
	-3.99E-03	U	RPD 1382.1			5.00E-02		0.88			g	
CS-137	1.85E-02	U	1.2E-02	1.2E-02	2.14E-02	pCi/g		0.86	1/27/03 09:01 p		366.7	GER6$1
	1.02E-02	U	RPD 57.6			1.00E-01		(3.)			g	
EU-152	1.10E-02	U	3.1E-02	3.1E-02	4.83E-02	pCi/g		0.23	1/27/03 09:01 p		366.7	GER6$1
	-6.51E-03	U	RPD 782.4			1.00E-01		0.71			g	
EU-154	-7.18E-03	U	3.8E-02	3.8E-02	6.57E-02	pCi/g		-0.11	1/27/03 09:01 p		366.7	GER6$1
	4.52E-03	U	RPD -880.1			1.00E-01		-0.37			g	
EU-155	4.11E-02	U	2.8E-02	2.8E-02	4.71E-02	pCi/g		0.87	1/27/03 09:01 p		366.7	GER6$1
	-1.05E-03	U	RPD 210.5			1.00E-01		(2.9)			g	
Batch: 3018109	EPA7196			**Work Order:** FF6J11AL		**Report DB ID:** FF6J1ALR			**Orig Sa DB ID:** 9FF6J110			
HEXCHROME	3.50E-01	U		0.0E+00	8.00E-02	mg/kg	N/A	(4.4)	1/22/03		2.5	
	3.50E-01	U	RPD 0.0			3.50E-01		N/A			G	

No. of Results: 7 **Comments:**

STL Richland

rptSTLRchDupV3.98 A97

RPD - Relative Percent Difference.

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: 13-Feb-03

DUPLICATE RESULTS

Lab Name:	STL Richland	**SDG:**	W03948	**Collection Date:**	1/13/2003 9:00:00 AM
Lot-Sample No.:	J3A160144-2	**Report No. :**	21770	**Received Date:**	1/16/2003 8:45:00 AM
Client Sample ID:	J00FV2 DUP	**COC No. :**	B00-030-091	**Matrix:**	SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC | MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3018105	SRTOT_SEP_PRECIP_GPC			**Work Order:** FF6J61AH		**Report DB ID:** FF6J61HR			**Orig Sa DB ID:** 9FF6J610			
STRONTIUM	4.92E-02	U	6.2E-02	6.3E-02	1.34E-01	pCi/g	74.50%	0.37	2/1/03 06:34 p		6.04	GPC31D
	2.70E-02	U	RPD	58.2				(1.6)			G	
Batch: 3018106	NI63LSC			**Work Order:** FF6J61AJ		**Report DB ID:** FF6J61JR			**Orig Sa DB ID:** 9FF6J610			
NI-63	5.01E+00	U	2.9E+00	5.8E+00	6.79E+00	pCi/g	84.15%	0.74	2/6/03 10:50 p		0.254	LSC4
	2.43E+00	U	RPD	69.6		3.00E+01		(1.7)			G	

No. of Results: 2 **Comments:**

RPD - Relative Percent Difference.

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: 13-Feb-03

Lab Name: STL Richland

Matrix: SOIL

SDG: W03948

Report No. : 21770

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA,	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3018109	EPA7196			**Work Order:**	FGALR1AA		**Report DB ID:**	FGALR1AB				
HEXCHROME	3.50E-01	U		0.0E+00	8.00E-02	mg/kg	N/A	(4.4)	1/22/03		2.5	
						3.50E-01		N/A			G	
Batch: 3018103	C14_LSC			**Work Order:**	FGALG1AA		**Report DB ID:**	FGALG1AB				
C-14	2.02E-02	U	1.4E-01	1.5E-01	3.33E-01	pCi/g	100.00%	0.06	1/21/03 02:20 a		5.0	LSC3
					1.60E-01	5.00E+01		0.27			G	
Batch: 3018106	NI63LSC			**Work Order:**	FGALL1AA		**Report DB ID:**	FGALL1AB				
NI-63	9.39E+00		2.9E+00	5.8E+00	6.40E+00	pCi/g	88.95%	(1.5)	2/7/03 02:14 a		0.25	LSC4
					3.12E+00	3.00E+01		(3.2)			G	
Batch: 3018104	GAMMA_GS			**Work Order:**	FGALH2AA		**Report DB ID:**	FGALH2AX				
CO-60	-3.99E-03	U	8.1E-03	8.1E-03	1.36E-02	pCi/g		-0.29	1/29/03 07:47 p		348.0	GER2$1
						5.00E-02		-0.98			g	
CS-137	-3.54E-03	U	8.4E-03	8.4E-03	1.41E-02	pCi/g		-0.25	1/29/03 07:47 p		348.0	GER2$1
						1.00E-01		-0.85			g	
EU-152	-3.52E-02	U	2.8E-02	2.8E-02	3.94E-02	pCi/g		-0.89	1/29/03 07:47 p		348.0	GER2$1
						1.00E-01		-(2.5)			g	
EU-154	8.02E-03	U	2.2E-02	2.2E-02	3.94E-02	pCi/g		0.2	1/29/03 07:47 p		348.0	GER2$1
						1.00E-01		0.74			g	
EU-155	4.64E-03	U	3.1E-02	3.1E-02	5.23E-02	pCi/g		0.09	1/29/03 07:47 p		348.0	GER2$1
						1.00E-01		0.3			g	
Batch: 3018105	SRTOT_SEP_PRECIP_GPC			**Work Order:**	FGALJ1AA		**Report DB ID:**	FGALJ1AB				
STRONTIUM	-1.96E-02	U	4.7E-02	4.7E-02	1.19E-01	pCi/g	85.20%	-0.16	2/1/03 06:34 p		6.0	GPC32B
					5.52E-02			-0.82			G	

STL Richland
rptSTLRchBlank
V3.98 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: 13-Feb-03

Lab Name: STL Richland

Matrix: SOIL

SDG: W03948

Report No. : 21770

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC | MDA,	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector

No. of Results: 9 Comments:

STL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

rptSTLRchBlank
V3.98 A97

FORM II

LCS RESULTS

Date: 13-Feb-03

Lab Name: STL Richland **SDG:** W03948

Matrix: SOIL **Report No. :** 21770

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2 s)	MDC|MD	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 3018109	EPA7196			**Work Order:**			**Report DB ID:**	FGALR1AS					
HEXCHROME	3.87E+01			0.0E+00	8.00E-02	mg/kg	N/A	4.00E+01		96.70%	1/22/03	2.5	
							Rec Limits:			0.0		G	
Batch: 3018103	C14_LSC			**Work Order:**	FGALG1AC		**Report DB ID:**	FGALG1CS					
C-14	7.22E+00		3.0E-01	3.9E-01	3.33E-01	pCi/g	100.00%	7.27E+00	2.4E-01	99.22%	1/21/03 03:02 a	5.0	LSC3
							Rec Limits:	70	130	0.0		G	
Batch: 3018106	NI63LSC			**Work Order:**	FGALL1AC		**Report DB ID:**	FGALL1CS					
NI-63	4.88E+02		9.3E+00	4.4E+01	7.61E+00	pCi/g	78.29%	5.06E+02	1.7E+01	96.50%	2/7/03 03:55 a	0.25	LSC4
							Rec Limits:	70	130	0.0		G	
Batch: 3018104	GAMMA_GS			**Work Order:**	FGALH2AC		**Report DB ID:**	FGALH2CM					
CS-137	2.97E-01		5.4E-02	5.4E-02	3.87E-02	pCi/g		2.88E-01	1.3E-02	102.87%	1/29/03 07:48 p	200.01	GER5$1
							Rec Limits:	70	130	0.0		g	
K-40	1.87E+01		2.4E+00	2.4E+00	2.76E-01	pCi/g		1.95E+01	1.9E+00	95.81%	1/29/03 07:48 p	200.01	GER5$1
							Rec Limits:	70	130	0.0		g	
RA-226	9.70E-01		1.6E-01	1.6E-01	6.69E-02	pCi/g		1.15E+00	5.2E-02	84.23%	1/29/03 07:48 p	200.01	GER5$1
							Rec Limits:			-0.2		g	
RA-228	2.14E+00		3.1E-01	3.1E-01	1.19E-01	pCi/g		1.87E+00	9.6E-02	114.44%	1/29/03 07:48 p	200.01	GER5$1
							Rec Limits:	70	130	0.1		g	
U-238DHP	1.51E+00		6.0E-01	6.0E-01	6.02E-01	pCi/g		1.05E+00	5.4E-02	143.42%	1/29/03 07:48 p	200.01	GER5$1
							Rec Limits:			0.4		g	
Batch: 3018105	SRTOT_SEP_PRECIP_GPC			**Work Order:**	FGALJ1AC		**Report DB ID:**	FGALJ1CS					
STRONTIUM	9.45E-01		1.2E-01	2.8E-01	1.18E-01	pCi/g	83.10%	1.15E+00	2.2E-02	82.34%	2/1/03 06:34 p	6.0	GPC32C
							Rec Limits:			-0.2		G	

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

rptSTLRchLcs
V3.98 A97

FORM II

LCS RESULTS

Date: 13-Feb-03

Lab Name: STL Richland

Matrix: SOIL

SDG: W03948

Report No. : 21770

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2 s)	MDC|MD	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector

No. of Results: 9 Comments:

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

rptSTLRchLcs
V3.98 A97

FORM II

Date: 13-Feb-03

MATRIX SPIKE RESULTS

Lab Name: STL Richland **SDG:** W03948

Lot-Sample No.: J3A160144-1 **Report No. :** 21770 **Matrix:** SOIL

Parameter	SpikeResult, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC | MD	Rpt Unit, CRDL	Yield	Rec-overy	Exp-ected	Exp Uncert	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 3018109	EPA7196			**Work Order:** FF6J11AK			**Report DB ID:** FF6J1AKW				**Orig Sa DB ID:** 9FF6J110		
HEXCHROME	3.50E+01			0.0E+00	8.00E-02	mg/kg	N/A	79.73%	4.39E+01		1/22/03	2.5	
	3.50E-01	RPD	196.0									G	

No. of Results: 1 **Comments:**

STL Richland
rptSTLRchMs
V3.98 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: J3A160144
Client ID: BHI
Due Date: 2-6-03
QC Batch Number: 3018104
Method Test Parameter: Gamma
Matrix: Soil
SDG Number: WO 3948

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? J07189	✓		
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: 1-30-03

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

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 3018104

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: [signature] Date: 1/30/03

Clouseau
Nonconformance Memo

SEVERN TRENT SERVICES

NCM #:	J07189	Classification:	**Anomaly**
NCM Initiated By:	Dale OConnell	Status:	**PMREVIEW**
Date Opened:	01/30/03	Production Area:	Counting
Date Closed:	N/A	Tests:	Gamma by GER
		Lot #'s (Sample #'s):	J3A160144 (1,2,3); J3A180000 (104)
		QC Batch:	3018104
Nonconformance:	Batch Result Out of Limits		
Subcategory:	Blank activity exceeds RDL		

Problem Description / Root Cause

Name	Date	Description
Dale OConnell	01/30/03	Obvious blank, LCS switch. Client requested U-238DHP at lower abundance, therefor erratic recoveries and higher MDA.

Corrective Action

Name	Date	Corrective Action
Dale OConnell	01/30/03	Recount blank and LCS. Report results with recoveries achieved.

Approval History

Name	Date Approved:	Position
Dale OConnell	01/30/03	Group Leader

SEVERN TRENT STL

P

Data Review Checklist
RADIOCHEMISTRY
First Level Review

Lot Number: J3A160144
Client ID: BHI
Due Date: 2/6/2003
QC Batch Number: 3018105
Method Test Parameter: TH TOTAL STRONTIUM
Matrix: SOIL
SDG Number: W03948

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: 2-3-03

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

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 30/8105

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: [signature] Date: 2/4/03

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

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
First Level Review

Lot Number: J3A160144
Client ID: BHI
Due Date: 8/16/03
QC Batch Number: 301803
Method Test Parameter: S3C14
Matrix: SOIL
SDG Number: WD3948

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: 1-22-03

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

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 3018103

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: [signature] Date: 1-27-03

SEVERN TRENT STL

P

Data Review Checklist
RADIOCHEMISTRY
First Level Review

Lot Number: J3A160144
Client ID: BHI
Due Date: 2/6/2003
QC Batch Number: 3018106
Method Test Parameter: S4 NICKEL-63
Matrix: SOIL
SDG Number: W03948

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: 2-11-03

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

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 3018106

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: [signature] Date: 2/12/03

SEVERN TRENT SERVICES

Richland Laboratory
Data Review Check List
METALS

W03948

Work Order Number(s): WO 3948

Lab Sample Numbers or SDG: FF6J1, FF6J6, FF6J7 Batch # 3018109

Method/Test/Parameter: RICHWC. SOOS R6

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

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

Comments on any "No" response:

Analyst: [signature] Date: 1-22-03

Second-Level Review: [signature] Date: 1-24-03

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

33

SEVERN TRENT STL

Data Review Checklist
~~RADIO~~CHEMISTRY
Second Level Review

QC Batch Number: 3018109

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: [signature] Date: 2/13/03

CHAIN OF CUSTODY

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-030-090	Page 1 of 1

Collector: 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: 100-F-19 Deep	SAF No.: B00-030	
Ice Chest No.: GRC 01 063	Field Logbook No.: EL-1535-	COA: R10F192600	Method of Shipment: GOV. VEHICLE
Shipped To: Severn Trent Incorporated, Richland	Offsite Property No.: N/A		Bill of Lading/Air Bill No.: N/A

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

SDG W03948

SAMPLE ANALYSIS Due 26 J3A160144

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

Sample No.	Matrix *	Sample Date	Sample Time				
J00FV1 FF6J1	SOIL	1-15-3	0845	✓	✓	✓	✓

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: mstankovich	1130 1-15-03	Received By/Stored In: SB/3725	1-15-02 1130
Relinquished By/Removed From: 3B/3728	11603 0800	Received By/Stored In: S.JGALE	11603 0800
Relinquished By/Removed From: GRC SJGALE	11603 0845	Received By/Stored In: STL T. Heidelberg	11-6-03 0845
Relinquished By/Removed From		Received By/Stored In: L100	
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

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

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	B00-030-091	Page 1 of 1

Collector 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 100-F-19 Overburden		SAF No. B00-030		
Ice Chest No. ERC 01 063	Field Logbook No. EL-1535- 8	COA R10F192600	Method of Shipment GOV. VEHICLE		
Shipped To Severn Trent Incorporated, Richland	Offsite Property No. N/A		Bill of Lading/Air Bill No. N/A		

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

Preservation	Cool 4C	None	None	None							
Type of Container	aG	P	aG	P							
No. of Container(s)	1	1	1	1							
Volume	60mL	1000mL	60mL	20mL							
SAMPLE ANALYSIS	Chromium Hex - 7196	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Nickel-63; Carbon-14	Activity Scan							
Sample No.	Matrix *	Sample Date	Sample Time								
J00FV2 FFGJG	SOIL	1-13-02	0900	✓	✓	✓	✓				
~~J00FV3~~	~~SOIL~~	1-13-03	~~0900~~	✓	✓	✓	✓				

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From MS Stankovich	1500 1-13-3	Received By/Stored In 3B/3728	1-13-3 1500
Relinquished By/Removed From 3B/3728	1/6/03 0800	Received By/Stored In SJ Gale	1/6/03 0800
Relinquished By/Removed From ERC SJ Gale	1/6/03 0845	Received By/Stored In T. Heidelberg	1/6/03 0845
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) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

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	B00-030-091	Page 1 of 1

Collector: 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: 100-F-19 Overburden	SAF No.: B00-030	
Ice Chest No.: ERC 01 063	Field Logbook No.: EL-1535-	COA: R10F192600	Method of Shipment: GOV. VEHICLE
Shipped To: Severn Trent Incorporated, Richland	Offsite Property No.: N/A		Bill of Lading/Air Bill No.: N/A

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

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

Sample No.	Matrix *	Sample Date	Sample Time										
~~J00FV2~~	~~SOIL~~	1-14-03											
J00FV3 FF6J7	SOIL	01-14-03	1100	✓	✓	✓	✓						

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: MD Stankovich	1-14-03 1500	Received By/Stored In: 3B/3728	1-14-03 1500
Relinquished By/Removed From: 3B/3728	11603 0800	Received By/Stored In: SJ Gales	11603 0800
Relinquished By/Removed From: ERC SJ Gales	11603 0845	Received By/Stored In: T. Heidelberg	1-16-03 0845
Relinquished By/Removed From		Received By/Stored In: L100CPM	
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

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)

36-inch Plume

ERC Radiological Counting Facility Analysis Report

RCF Number RCF9298 **Sample Date & Time** 5/16/01 1245

Project ID: 100-F-19 **SAF Number:** B00-029 **Date Analyzed** 5/18/01 10:41:

Sample ID: B121R5

Gamma Energy Analysis

Nuclide		Activity (pCi/g)		Error (pCi/g)	MDC (pCi/g)
K-40		2.1E+01	+/-	2.5E+00	4.0E-01
Co-60		4.6E-02	+/-	1.5E-02	4.3E-02
Cs-137		5.4E-02	+/-	1.8E-02	2.6E-02
Eu-152		3.0E-01	+/-	6.2E-02	1.2E-01
Eu-154	<	1.3E-01			1.3E-01
Eu-155	<	1.4E-01			1.4E-01
Am-241	<	8.9E-02			8.9E-02

Total GEA (pCi/g)	2.2E+01	+/-	2.6E+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 5/18/01

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

Report Printed: Friday, May 18, 2001

SEVERN TRENT SERVICES

Sample Check-in List

Date/Time Received: 1-16 0845

Client: BHI SDG #: W03948 NA [ ] SAF #: B00-030 NA [ ]

Work Order Number: J3A160144 Chain of Custody # B00-030-091+090

Shipping Container ID: ERC 01-063 Air Bill # Una

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: 40 NA [ ] 5.Vermiculite/packing materials is NA [ ] Wet [ ] Dry [ ]
6. Number of samples in shipping container: 12
7. Sample holding times exceeded? NA [ ] Yes [ ] No [X]
8. Samples have:
   - ✓ tape
   - ✓ custody seals
   - ✓ hazard labels
   - ✓ appropriate samples labels
9. Samples are:
   - ✓ 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 [ ] No [✓]
    *For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [ ] No [✓]
13. Description of anomalies (include sample numbers): _____

Sample Custodian: J Heidelberg Date: 1-16-03

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

PRIORITY

SEVERN TRENT SERVICES

*** RE-COUNT REQUEST ***

DUE DATE 2-6-03

CUSTOMER BHI

ANALYSIS Gamma

MATRIX Soil

LOT NUMBER J2A160144

SAMPLE DELIVERY GROUP W03948

OLD BATCH NUMBER 3018104

LAB SAMPLE ID	REASON FOR REQUEST & ANALYSIS COMMENTS
1) FGALH-1-AA-BX	CAL STANDARD COUNTED AS BLANK, Q
2) FGALH-1-AC-CM	VICE VERSA 1-29-03
3)	
4)	
5)	
6)	
7)	
8)	
9)	
10)	
11)	
12)	
13)	
14)	
15)	
16)	
17)	
18)	
19)	
20)	

RC-126 05/01 REV 3

1/29/03 5:29:49 PM

Sample Preparation/Analysis

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

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: 02/06/2003 W03948

Batch: 3018104 SOIL pCi/g **PM, Quote: BG2, 27038**

SEQ Batch, Test: None All Tests: 3018103 5SS3, 3018104 AXTA, 3018105 CHTH, 3018106 AFS4, 3018109 DWEA, 3018110 88OV,

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 FF6J1-1-AF J3A160144-1-SAMP										
01/15/2003 08:45		AmtRec: LP,2X60G,20ML		#Containers: 4		Scr Rst:	Alpha: 7.55E+01 pCi/g		Beta: 2.16E+01 pCi/g	
2 FF6J1-1-AJ-X J3A160144-1-DUP										
01/15/2003 08:45		AmtRec: LP,2X60G,20ML		#Containers: 4		Scr Rst:	Alpha: 7.55E+01 pCi/g		Beta: 2.16E+01 pCi/g	
3 FF6J6-1-AF J3A160144-2-SAMP										
01/13/2003 09:00		AmtRec: LP,2X60G,20ML		#Containers: 4		Scr Rst:	Alpha: 3.60E+01 pCi/g		Beta: 1.35E+01 pCi/g	
4 FF6J7-1-AF J3A160144-3-SAMP										
01/14/2003 11:00		AmtRec: LP,2X60G,20ML		#Containers: 4		Scr Rst:	Alpha: 3.90E+01 pCi/g		Beta: 1.66E+01 pCi/g	
5 FGALH-1-AA-BX J3A180000-104-MBLK										
01/15/2003 08:45		AmtRec:		#Containers: 1		Scr Rst:	Alpha:		Beta:	
6 FGALH-1-AC-CM J3A180000-104-MLCS										
01/15/2003 08:45		AmtRec:		#Containers: 1		Scr Rst:	Alpha:		Beta:	
7 FGALH-2-AA-BX J3A180000-104-MBLK	348g	OSBK			2500	600		G2	1/30 0547	1/29/2003 8:19
01/15/2003 08:45		AmtRec:		#Containers: 1		Scr Rst:	Alpha:		Beta:	

STA Richland
Richland Wa.

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

WO Cnt: 7
ICOC v4.5.3.2

1/29/03 5:29:49 PM

Sample Preparation/Analysis

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

Balance Id:

Pipet #:

Report Due: 02/06/2003

Sep1 DT/Tm Tech:

Batch: 3018104 pCi/g

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

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

```
FF6J11AF-SAMP Calc Info:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
FGALH1AA-MBLK:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
FGALH1AC-MLCS:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
FGALH2AA-MBLK:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
FGALH2AC-LCS:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
```

1/29/03 5:29:49 PM

Sample Preparation/Analysis

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

Balance Id:

Pipet #:

Report Due: 02/06/2003

Sep1 DT/Tm Tech:

Batch: 3018104 pCi/g

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

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
8 FGALH-2-AC-C										
J3A180000-104-LCS		200.01g	CAL491			S 200	600	G5	1/30 0548	1/30/2003-OD
01/01/03 01/15/2003 08:45 ← 1-29-03		AmtRec:		#Containers: 1		Scr Rst:		Alpha:		Beta:

Comments:

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

FF6J11AF-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:
Cs-137DA	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:

FGALH1AA-MBLK:

Co-60	RDL:5.00E-02	pCi/g	LCL:	UCL:	RPD:	Cs-137	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Cs-137DA	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:
K-40	RDL:--	pCi/g	LCL:	UCL:	RPD:	Ra-226	RDL:0.1	pCi/g	LCL:	UCL:	RPD:
RA-228	RDL:0.2	pCi/g	LCL:	UCL:	RPD:	RA-228DA	RDL:0.2	pCi/g	LCL:	UCL:	RPD:
U-238	RDL:	pCi/g	LCL:	UCL:	RPD:						

FGALH1AC-MLCS:

Cs-137	RDL:0.1	pCi/g	LCL:70	UCL:130	RPD:35	Cs-137DA	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						

FGALH2AA-MBLK:

Co-60	RDL:0.05	pCi/g	LCL:	UCL:	RPD:	Cs-137	RDL:0.1	pCi/g	LCL:	UCL:	RPD:
Cs-137DA	RDL:0.1	pCi/g	LCL:	UCL:	RPD:	Eu-152	RDL:0.1	pCi/g	LCL:	UCL:	RPD:
Eu-154	RDL:0.1	pCi/g	LCL:	UCL:	RPD:	Eu-155	RDL:0.1	pCi/g	LCL:	UCL:	RPD:

FGALH2AC-LCS:

Cs-137	RDL:0.1	pCi/g	LCL:70	UCL:130	RPD:35	Cs-137DA	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						

1/30/03 2:17:49 PM

ICOC Fraction Transfer/Status Report

ByDate: 12/31/02, 1/31/03, Batch: '3018104', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
3018104						
AC		**CalcC**	**BELSITOB**	1/20/03 11:24:37 AM		
SC			WagarR	IsBatched	1/18/03 7:40:16 AM	ICOC_RADCALC v4.5.3.2
SC			BELSITOB	InPrep	1/20/03 11:24:37 AM	RICH-RC-5013 REVISION 4
SC			BELSITOB	Prep1C	1/20/03 11:25:15 AM	RICH-RC-5013 REVISION 4
SC			BELSITOB	Prep1C	1/20/03 11:25:19 AM	RICH-RC-5017 REVISION 3
SC			BlackCL	InCnt1	1/20/03 11:38:06 AM	RICH-RD-0007 REVISION 3
SC			DAWKINSO	CalcC	1/28/03 9:56:56 PM	RICH-RD-0007 REVISION 3
SC			DAWKINSO	InCnt1	1/29/03 5:36:57 PM	RICH-RD-0007 REVISION 3
SC			BlackCL	CalcC	1/30/03 9:12:35 AM	RICH-RD-0007 REVISION 3
AC			**BELSITOB**	1/20/03 11:25:15 AM		
AC			**BELSITOB**	1/20/03 11:25:19 AM		
AC			**BlackCL**	1/20/03 11:38:06 AM		
AC			**DAWKINSO**	1/28/03 9:56:56 PM		
AC			**DAWKINSO**	1/29/03 5:36:57 PM		
AC			**BlackCL**	1/30/03 9:12:35 AM		

AC: Accepting Entry; SC: Status Change

1/18/2003 7:40:31 AM

Sample Preparation/Analysis

PRIORITY

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

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

Report Due: 02/06/2003 W03948

Batch: 3018104 SOIL pCi/g

PM, Quote: BG2, 27038

SEQ Batch, Test: None

Balance Id: PB 3001-5
Pipet #: N/A
Sep1 DT/Tm Tech:
Sep2 DT/Tm Tech:
Prep Tech: MB

(9)

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 FF6J1-1-AF J3A160144-1-SAMP		367.4				S200	600	G8	1/29 0503	1/22/2003
01/15/2003 08:45		AmtRec: LP,2X60G,20ML		#Containers: 4		Scr Rst:	Alpha: 7.55E+01 pCi/g		Beta: 2.16E+01 pCi/g	
2 FF6J1-1-AJ-X J3A160144-1-DUP		366.7						G6	1/28 0701	1/27/2003
01/15/2003 08:45		AmtRec: LP,2X60G,20ML		#Containers: 4		Scr Rst:	Alpha: 7.55E+01 pCi/g		Beta: 2.16E+01 pCi/g	
3 FF6J6-1-AF J3A160144-2-SAMP		381.1						G1	1754	1/28/03
01/13/2003 09:00		AmtRec: LP,2X60G,20ML		#Containers: 4		Scr Rst:	Alpha: 3.60E+01 pCi/g		Beta: 1.35E+01 pCi/g	
4 FF6J7-1-AF J3A160144-3-SAMP		373.7						G2	1752	
01/14/2003 11:00		AmtRec: LP,2X60G,20ML		#Containers: 4		Scr Rst:	Alpha: 3.90E+01 pCi/g		Beta: 1.66E+01 pCi/g	
5 FGALH-1-AA-BX J3A180000-104-MBLK		348.0	OSBK					G4	1755	
1/20/03 ~~01/15/2003 08:45~~ 1/21/03		AmtRec:		#Containers: 1		Scr Rst:	Alpha:		Beta:	
6 FGALH-1-AC-CM J3A180000-104-MLCS		200.01	CAL491					G7	1753	
1/1/03 ~~01/15/2003 08:45~~ 1/21/03		AmtRec:		#Containers: 1		Scr Rst:	Alpha:		Beta:	

1/18/2003 7:40:31 AM

Sample Preparation/Analysis

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

PRIORITY

Report Due: 02/06/2003

Batch: 3018104 pCi/g

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

FF6J11AF-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:						

FGALH1AA-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:						

FGALH1AC-MLCS:

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

FF6J11AF-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

FGALH1AA-MBLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

FGALH1AC-MLCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

1/29/03 5:32:40 PM

ICOC Fraction Transfer/Status Report

ByDate: 12/30/02, 1/30/03, Batch: '3018104', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
3018104						
AC		**CalcC**	**BELSITOB**	1/20/03 11:24:37 AM		
SC			WagarR	IsBatched	1/18/03 7:40:16 AM	ICOC_RADCALC v4.5.3.2
SC			BELSITOB	InPrep	1/20/03 11:24:37 AM	RICH-RC-5013 REVISION 4
SC			BELSITOB	Prep1C	1/20/03 11:25:15 AM	RICH-RC-5013 REVISION 4
SC			BELSITOB	Prep1C	1/20/03 11:25:19 AM	RICH-RC-5017 REVISION 3
SC			BlackCL	InCnt1	1/20/03 11:38:06 AM	RICH-RD-0007 REVISION 3
SC			DAWKINSO	CalcC	1/28/03 9:56:56 PM	RICH-RD-0007 REVISION 3
AC			**BELSITOB**	1/20/03 11:25:15 AM		
AC			**BELSITOB**	1/20/03 11:25:19 AM		
AC			**BlackCL**	1/20/03 11:38:06 AM		
AC			**DAWKINSO**	1/28/03 9:56:56 PM		

AC: Accepting Entry; SC: Status Change

1/29/03 4:47:57 PM

Sample Preparation/Analysis

PRIORITY

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

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

Balance Id:1120373922 /#02.04 2-1-03

Pipet #: NA

Report Due: 02/06/2003 WO 3948

Sep1 DT/Tm Tech: 1/31/03 6:19 PM MG

Batch: 3018105 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 FF6J1-1-AC J3A160144-1-SAMP		6.05g,in	SRTA8570 12/06/02 09/19/02,r			82.6	50	2/1/2003,00 32A 31	1858	2/1/2003,00
01/15/2003 08:45		AmtRec: LP,2X60G,20ML	#Containers: 4					Scr Rst: Alpha: 7.55E+01 pCi/g	Beta: 2.16E+01 pCi/g	
2 FF6J6-1-AC J3A160144-2-SAMP		6.03g,in	SRTA8571 12/06/02 09/19/02,r			78.3		31 32B 2/1/2003,00	1858	2/1/2003,00
01/13/2003 09:00		AmtRec: LP,2X60G,20ML	#Containers: 4					Scr Rst: Alpha: 3.60E+01 pCi/g	Beta: 1.35E+01 pCi/g	
3 FF6J6-1-AH-X J3A160144-2-DUP		6.04g,in	SRTA8572 12/06/02 09/19/02,r			74.5		31 32D 2/1/2003,00	1858	2/1/2003,00
01/13/2003 09:00		AmtRec: LP,2X60G,20ML	#Containers: 4					Scr Rst: Alpha: 3.60E+01 pCi/g	Beta: 1.35E+01 pCi/g	
4 FF6J7-1-AC J3A160144-3-SAMP		6.01g,in	SRTA8573 12/06/02 09/19/02,r			83.2		32A	1858	2/1/2003,00
01/14/2003 11:00		AmtRec: LP,2X60G,20ML	#Containers: 4					Scr Rst: Alpha: 3.90E+01 pCi/g	Beta: 1.66E+01 pCi/g	
5 FGALJ-1-AA-B J3A180000-105-BLK		6.0g,in	SRTA8574 12/06/02 09/19/02,r			85.2		32B	1858	2/1/2003,00
01/13/2003 09:00		AmtRec:	#Containers: 1					Scr Rst: 2/1/2003,00 Alpha:	Beta:	
6 FGALJ-1-AC-C J3A180000-105-LCS		6.0g,in	STSB0691 01/15/03 11/25/02,r			83.1		32C	1858	2/1/2003,00
01/13/2003 09:00		AmtRec:	#Containers: 1					Scr Rst: Alpha:	Beta:	

1/29/03 4:47:59 PM

Sample Preparation/Analysis

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

Balance Id:1120373922

Pipet #: _____

PRIORITY

Report Due: 02/06/2003

Sep1 DT/Tm Tech:

Batch: 3018105 pCi/g

Sep2 DT/Tm Tech:

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	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

FF6J11AC-SAMP Constituent List:
Sr-90 RDL:1 pCi/g LCL:70 UCL:130 RPD:35
FGALJ1AA-BLK:
Sr-90 RDL:1 pCi/g LCL: UCL: RPD:
FGALJ1AC-LCS:
Sr-90 RDL:1 pCi/g LCL:70 UCL:130 RPD:35

FF6J11AC-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FGALJ1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FGALJ1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

2/4/03 9:35:10 AM

ICOC Fraction Transfer/Status Report

ByDate: 1/5/03, 2/5/03, Batch: '3018105', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
3018105						
AC		**CalcC**	**BELSITOB**	1/20/03 11:24:57 AM		
SC			WagarR	IsBatched	1/18/03 7:40:16 AM	ICOC_RADCALC v4.5.3.2
SC			BELSITOB	InPrep	1/20/03 11:24:57 AM	RICH-RC-5013 REVISION 4
SC			BELSITOB	Prep1C	1/20/03 11:25:32 AM	RICH-RC-5013 REVISION 4
SC			WAGNERJ	InPrep2	1/22/03 1:15:31 PM	RICH-RC-5013 REVISION 4
SC			WAGNERJ	InPrep2	1/29/03 4:46:23 PM	RICH-RC-5013 REVISION 4
SC			WAGNERJ	Prep2C	1/30/03 9:00:52 AM	RICH-RC-5013 REVISION 4
SC			FABREM	InSep1	1/30/03 9:11:36 AM	RICH-RC-5006 REVISION 5
SC			FABREM	Sep1C	2/1/03 9:31:18 AM	RICH-RC-5006 REVISION 5
SC			DAWKINSO	InCnt1	2/1/03 1:05:46 PM	RICH-RD-0003 REVISION 3
SC			DAWKINSO	CalcC	2/2/03 12:45:31 PM	RICH-RD-0003 REVISION 3
AC			**BELSITOB**	1/20/03 11:25:32 AM		
AC			**WAGNERJ**	1/22/03 1:15:31 PM		
AC			**WAGNERJ**	1/29/03 4:46:23 PM		
AC			**WAGNERJ**	1/30/03 9:00:52 AM		
AC			**FABREM**	1/30/03 9:11:36 AM		
AC			**FABREM**	2/1/03 9:31:18 AM		
AC			**DAWKINSO**	2/1/03 1:05:46 PM		
AC			**DAWKINSO**	2/1/03 1:06:26 PM		
AC			**DAWKINSO**	2/2/03 12:45:31 PM		

51

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 10

ICOCFractions

1/18/2003 7:40:28 AM

Sample Preparation/Analysis

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

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

PRIORITY

Report Due: 02/06/2003 W03948

Batch: 3018103 SOIL pCi/g PM, Quote: BG2, 27038

SEQ Batch, Test: None All Tests: 5SS3, 88OV, AFS4, AXTA, CHTH, DWEA, 3018103 5SS3, 3018104 AXTA, 3018105 CHTH, 3018106 AFS4, 3018109 DWEA, 3018110 88OV,

Balance Id: 029
Pipet #: NA
Sep1 DT/Tm Tech: 1-20-03 sm
Sep2 DT/Tm Tech: NA
Prep Tech:

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 FF6J1-1-AG J3A160144-1-SAMP								
01/15/2003 08:45		AmtRec: LP,2X60G,20ML	#Containers: 4		Scr Rst:	Alpha: 7.55E+01 pCi/g	Beta: 2.16E+01 pCi/g	
2 FF6J1-1-AH-X J3A160144-1-DUP								
01/15/2003 08:45		AmtRec: LP,2X60G,20ML	#Containers: 4		Scr Rst:	Alpha: 7.55E+01 pCi/g	Beta: 2.16E+01 pCi/g	
3 FF6J6-1-AG J3A160144-2-SAMP								
01/13/2003 09:00		AmtRec: LP,2X60G,20ML	#Containers: 4		Scr Rst:	Alpha: 3.60E+01 pCi/g	Beta: 1.35E+01 pCi/g	
4 FF6J7-1-AG J3A160144-3-SAMP								
01/14/2003 11:00		AmtRec: LP,2X60G,20ML	#Containers: 4		Scr Rst:	Alpha: 3.90E+01 pCi/g	Beta: 1.66E+01 pCi/g	
5 FGALG-1-AA-B J3A180000-103-BLK								
01/15/2003 08:45		AmtRec:	#Containers: 1		Scr Rst:	Alpha:	Beta:	
6 FGALG-1-AC-C J3A180000-103-LCS								
01/15/2003 08:45		AmtRec:	#Containers: 1		Scr Rst:	Alpha:	Beta:	
7 FGALG-1-AD-BN J3A180000-103-IBLK								
01/15/2003 08:45		AmtRec:	#Containers: 1		Scr Rst:	Alpha:	Beta:	

CT

1/18/2003 7:40:30 AM

Sample Preparation/Analysis

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

PRIORITY

Balance Id: 029
Pipet #: NA
Sep1 DT/Tm Tech: 1-20-03 DM
Sep2 DT/Tm Tech: NA
Prep Tech:

Report Due: 02/06/2003

Batch: 3018103 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
8 FGALG-1-AE-BN J3A180000-103-IBLK								

01/15/2003 08:45 AmtRec: #Containers: 1 Scr Rst: Alpha: Beta:

Comments:

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

FF6J11AG-SAMP Constituent List:
C-14 RDL:50 pCi/g LCL:70 UCL:130 RPD:35
FGALG1AA-BLK:
C-14 RDL:50 pCi/g LCL: UCL: RPD:
FGALG1AC-LCS:
C-14 RDL:50 pCi/g LCL:70 UCL:130 RPD:35
FGALG1AD-IBLK:
C-14 RDL:50 pCi/g LCL: UCL: RPD:
FGALG1AE-IBLK:
C-14 RDL:50 pCi/g LCL: UCL: RPD:

FF6J11AG-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FGALG1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FGALG1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FGALG1AD-IBLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FGALG1AE-IBLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

1/23/03 8:40:49 AM

ICOC Fraction Transfer/Status Report

ByDate: 12/24/02, 1/24/03, Batch: '3018103', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
3018103						
AC		**CalcC**	**McDowellD**	1/20/03 12:50:41 PM		
SC			WagarR	IsBatched	1/18/03 7:40:16 AM	ICOC_RADCALC v4.5.3.2
SC			McDowellD	InSep1	1/20/03 12:50:41 PM	RICH-RC-5022 REVISION 3
SC			McDowellD	Sep1C	1/20/03 2:17:26 PM	RICH-RC-5022 REVISION 3
SC			BlackCL	InCnt1	1/20/03 2:24:56 PM	RICH-RD-0001 REVISION 2
SC			BlackCL	CalcC	1/21/03 10:26:13 AM	RICH-RD-0001 REVISION 2
AC			**McDowellD**	1/20/03 2:17:26 PM		
AC			**BlackCL**	1/20/03 2:24:56 PM		
AC			**BlackCL**	1/21/03 10:26:13 AM		

AC: Accepting Entry; SC: Status Change

2/3/03 7:41:08 AM

Sample Preparation/Analysis

Balance Id:1120373922 /ABS4-S

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

AF Ni-63 PrpRC5013/5019, SepRC5069
S4 Nickel by ICP and Nickel-63 by Liquid Scint
5I CLIENT: HANFORD

PRIORITY

Pipet #: NA

Report Due: 02/06/2003 W03948

Sep1 DT/Tm Tech:

Batch: 3018106 SOIL pCi/g PM, Quote: BG2, 27038

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: ,WAGNERJ

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	QC Vial 2 Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date
1 FF6J1-1-AD J3A160144-1-SAMP			0.2534g,in	0.253g	NITA1234 01/29/03		100			
01/15/2003 08:45		AmtRec: LP,2X60G,20ML		#Containers: 4				Scr Rst:	Alpha: 7.55E+01 pCi/g	Beta: 2.16E+01 pCi/g
2 FF6J6-1-AD J3A160144-2-SAMP			0.2535g,in	0.254g	NITA1235 01/29/03					
01/13/2003 09:00		AmtRec: LP,2X60G,20ML		#Containers: 4				Scr Rst:	Alpha: 3.60E+01 pCi/g	Beta: 1.35E+01 pCi/g
3 FF6J6-1-AJ-X J3A160144-2-DUP			0.2538g,in	0.254g	NITA1236 01/29/03					
01/13/2003 09:00		AmtRec: LP,2X60G,20ML		#Containers: 4				Scr Rst:	Alpha: 3.60E+01 pCi/g	Beta: 1.35E+01 pCi/g
4 FF6J7-1-AD J3A160144-3-SAMP			0.251g,in	0.251g	NITA1237 01/29/03					
01/14/2003 11:00		AmtRec: LP,2X60G,20ML		#Containers: 4				Scr Rst:	Alpha: 3.90E+01 pCi/g	Beta: 1.66E+01 pCi/g
5 FF6J7-1-AH-S J3A160144-3-MS										
01/14/2003 11:00		AmtRec: LP,2X60G,20ML		#Containers: 4				Scr Rst:	Alpha: 3.90E+01 pCi/g	Beta: 1.66E+01 pCi/g
6 FGALL-1-AA-B J3A180000-106-BLK			0.25g,in	0.25g	NITA1238 01/29/03					
01/13/2003 09:00		AmtRec:		#Containers: 1				Scr Rst:	Alpha:	Beta:
7 FGALL-1-AC-C J3A180000-106-LCS			0.25g,in	0.25g	NISA0468 12/17/02					
01/13/2003 09:00		AmtRec:		#Containers: 1				Scr Rst:	Alpha:	Beta:

2/3/03 7:41:10 AM

Sample Preparation/Analysis

AF Ni-63 PrpRC5013/5019, SepRC5069
S4 Nickel by ICP and Nickel-63 by Liquid Scint
5I CLIENT: HANFORD

PRIORITY

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

Report Due: 02/06/2003

Batch: 3018106 pCi/g

SEQ Batch, Test: None

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	QC Vial 2 Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date
8 FGALL-1-AD-B J3A180000-106-BLK							100			

01/13/2003 09:00 AmtRec: #Containers: 1 Scr Rst: Alpha: Beta:

Comments:

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

FF6J11AD-SAMP Constituent List:
Ni-63 RDL:30 pCi/g LCL:70 UCL:130 RPD:35
FF6J71AH-MS:
Ni-63 RDL:30 pCi/g LCL:70 UCL:130 RPD:35
FGALL1AA-BLK:
Ni-63 RDL:30 pCi/g LCL: UCL: RPD:
FGALL1AC-LCS:
Ni-63 RDL:30 pCi/g LCL:70 UCL:130 RPD:35
FGALL1AD-BLK:
Ni-63 RDL:30 pCi/g LCL: UCL: RPD:

FF6J11AD-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FF6J71AH-MS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FGALL1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FGALL1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FGALL1AD-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

2/12/03 8:31:03 AM

ICOC Fraction Transfer/Status Report

ByDate: 1/13/03, 2/13/03, Batch: '3018106', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
3018106						
AC		**CalcC**	**BELSITOB**	1/20/03 11:25:00 AM		
SC			WagarR	IsBatched	1/18/03 7:40:16 AM	ICOC_RADCALC v4.5.3.2
SC			BELSITOB	InPrep	1/20/03 11:25:00 AM	RICH-RC-5013 REVISION 4
SC			BELSITOB	Prep1C	1/20/03 11:25:36 AM	RICH-RC-5013 REVISION 4
SC			WAGNERJ	InPrep2	2/3/03 7:25:09 AM	RICH-RC-5013 REVISION 4
SC			WAGNERJ	Prep2C	2/4/03 8:12:24 AM	RICH-RC-5013 REVISION 4
SC			ManisD	InSep1	2/4/03 8:50:39 AM	RICH-RC-5069 REVISION 4
SC			ManisD	Sep1C	2/5/03 1:52:13 PM	RICH-RC-5069 REVISION 4
SC			DAWKINSO	InCnt1	2/5/03 3:41:34 PM	RICH-RD-0001 REVISION 2
SC			BlackCL	CalcC	2/11/03 10:10:17 AM	RICH-RD-0001 REVISION 2
AC			**BELSITOB**	1/20/03 11:25:36 AM		
AC			**WAGNERJ**	2/3/03 7:25:09 AM		
AC			**WAGNERJ**	2/4/03 8:12:24 AM		
AC			**ManisD**	2/4/03 8:50:39 AM		
AC			**ManisD**	2/5/03 1:52:13 PM		
AC			**DAWKINSO**	2/5/03 3:41:34 PM		
AC			**BlackCL**	2/11/03 10:10:17 AM		

5

AC: Accepting Entry; SC: Status Change

1/18/2003 7:40:33 AM

Sample Preparation/Analysis

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

Report Due: 02/06/2003 W03948

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: 3018109 **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 FF6J1-1-AA										
J3A160144-1-SAMP										
01/15/2003 08:45		AmtRec: LP,2X60G,20ML		#Containers: 4		Scr Rst:	Alpha: 7.55E+01 pCi/g		Beta: 2.16E+01 pCi/g	
2 FF6J1-1-AK-S										
J3A160144-1-MS										
01/15/2003 08:45		AmtRec: LP,2X60G,20ML		#Containers: 4		Scr Rst:	Alpha: 7.55E+01 pCi/g		Beta: 2.16E+01 pCi/g	
3 FF6J1-1-AL-X										
J3A160144-1-DUP										
01/15/2003 08:45		AmtRec: LP,2X60G,20ML		#Containers: 4		Scr Rst:	Alpha: 7.55E+01 pCi/g		Beta: 2.16E+01 pCi/g	
4 FF6J1-1-AM-S										
J3A160144-1-MS										
01/15/2003 08:45		AmtRec: LP,2X60G,20ML		#Containers: 4		Scr Rst:	Alpha: 7.55E+01 pCi/g		Beta: 2.16E+01 pCi/g	
5 FF6J6-1-AA										
J3A160144-2-SAMP										
01/13/2003 09:00		AmtRec: LP,2X60G,20ML		#Containers: 4		Scr Rst:	Alpha: 3.60E+01 pCi/g		Beta: 1.35E+01 pCi/g	
6 FF6J7-1-AA										
J3A160144-3-SAMP										
01/14/2003 11:00		AmtRec: LP,2X60G,20ML		#Containers: 4		Scr Rst:	Alpha: 3.90E+01 pCi/g		Beta: 1.66E+01 pCi/g	
7 FGALR-1-AA-B										
J3A180000-109-BLK										
01/15/2003 08:45		AmtRec:		#Containers: 1		Scr Rst:	Alpha:		Beta:	

1/18/2003 7:40:33 AM

Sample Preparation/Analysis

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

PRIORITY

Balance Id:

Pipet #:

Report Due: 02/06/2003

Sep1 DT/Tm Tech:

Batch: 3018109 mg/kg

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

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
8 FGALR-1-AC-C J3A180000-109-LCS										

01/15/2003 08:45 AmtRec: #Containers: 1 Scr Rst: Alpha: Beta:

Comments:

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

FF6J11AA-SAMP Constituent List:

FF6J11AK-MS Constituent List:

FF6J11AM-MS:

FGALR1AA-BLK:

FGALR1AC-LCS:

FF6J11AA-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FF6J11AK-MS Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FF6J11AM-MS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FGALR1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FGALR1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B