W03231

0053932

CASE NARRATIVE

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, Washington 99352

RECEIVED
NOV 28 2000
EDMC

August 4, 2000

Attention: Joan Kessner

Project Number	:	37536
SAF	:	B99-011
SDG	:	W03231
Number of Samples	:	one (1)
Sample Matrix	:	Soil
Data Deliverable	:	Summary
Date SDG Closed	:	7/20/00

RECEIVED

II. Introduction

On July 20, 2000, one (1) "soil" sample was received by Quanterra, Richland and transferred to Quanterra, St. Louis for chemical analysis. The samples were received at the St. Louis lab on 7/22/00 at a temperature of 16 degrees C. See the attached Sample Summary form for the Lab ID's and corresponding Client Ids.

III. Analytical Results/ Methodology

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

Analyses requested: PCB - 8082

Deviation from Request: None

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.

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.

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

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

I certify that this Summary is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Reviewed and approved:

Marti Ward
St. Louis Project Manager

SAMPLE SUMMARY

F0G240192

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
DGPNR	001	B0YNW2	07/14/00	10:12

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

F0G240192

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Percent Moisture	MCAWW 160.3 MOD	MCAWW 160.3 MOD
PCBs by SW-846 8082	SW846 8082	SW846 3550

References:

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

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

PSL20300 SEVERN TRENT LABORATORIES, INC Run Date: 7/24/00
Page 1 CLIENT ANALYSIS SUMMARY Time: 17:32:45
STL St. Louis User Id.: WATSONJ

CLIENT: 127642 BECHTEL HANFORD, INC. QUOTE/SAR #: 37536
PROJECT MANAGER: MARTI WARD LAB ID: F-0G240192-001
PROJECT #: 300FF-1 S.POND WORK ORDER: DGPNR
REPORT TO: Joan Kessner RECEIVING DATE: 7/20/00
P.O. NUMBER: MRC-SBB-A-19981 SAMPLING DATE: 7/14/00
SITE: B99-011 ANALYTICAL DUE DATE: 8/08/00N
AMOUNT REC"D: 250G REPORT DUE DATE: 8/10/00
STORAGE LOC: T3F PRIORITY: 19
LOT COMMENTS: QC is billable SAMPLING TIME: 10:12
MATRIX: SOLID RECEIVING TIME: 9:30
SAMPLE ID: B0YNW2
QC PACKAGE: Special Report - see checklist SDG# : W03231
SAMPLE COMMENTS:
RADIOACTIVE
Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
PCBs (8082)	06	7/24/00	7/28/00	9/06/00
SONICATION w/ACID STRIP (PCB)				
STL: HANFORD PCB GC:LIST-1(7)				
(A-71-QH-01) DGPNR-1-01 Protocol: A QC Program: STANDARD TEST SET				
Moisture, Percent (160.3)	06	7/24/00	0/00/00	10/21/00
NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION				
(A-88-WM-01) DGPNR-1-04 Protocol: A QC Program: STANDARD TEST SET				

PSL20300 SEVERN TRENT LABORATORIES, INC Run Date: 7/24/00
Page 1 CLIENT ANALYSIS SUMMARY Time: 17:32:45
STL St. Louis User Id.: WATSONJ

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 300FF-1 S.POND
REPORT TO: Joan Kessner
P.O. NUMBER: MRC-SBB-A-19981
SITE: B99-011
AMOUNT REC"D: 250G
STORAGE LOC: T3F
LOT COMMENTS: QC is billable
MATRIX: SOLID
SAMPLE ID: B0YNW2
QC PACKAGE: Special Report - see checklist
SAMPLE COMMENTS:
RADIOACTIVE
Beginning Depth: .00 **Ending Depth:** .00

QUOTE/SAR #: 37536
LAB ID: F-0G240192-001-D
WORK ORDER: DGPNR MSD
RECEIVING DATE: 7/20/00
SAMPLING DATE: 7/14/00
ANALYTICAL DUE DATE: 8/08/00N
REPORT DUE DATE: 8/10/00
PRIORITY: 19
SAMPLING TIME: 10:12
RECEIVING TIME: 9:30
SDG# : W03231

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
PCBs (8082)	06	7/24/00	7/28/00	9/06/00

SONICATION w/ACID STRIP (PCB)
STL: HANFORD PCB GC:LIST-1(7)
(A-71-QH-01) DGPNR-1-03 Protocol: A QC Program: STANDARD TEST SET

PSL20300 SEVERN TRENT LABORATORIES, INC Run Date: 7/24/00
Page 1 CLIENT ANALYSIS SUMMARY Time: 17:32:45
STL St. Louis User Id.: WATSONJ

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 300FF-1 S.POND
REPORT TO: Joan Kessner
P.O. NUMBER: MRC-SBB-A-19981
SITE: B99-011
AMOUNT REC"D: 250G
STORAGE LOC: T3F
LOT COMMENTS: QC is billable
MATRIX: SOLID
SAMPLE ID: B0YNW2
QC PACKAGE: Special Report - see checklist
SAMPLE COMMENTS:
RADIOACTIVE
Beginning Depth: .00 **Ending Depth:** .00

QUOTE/SAR #: 37536
LAB ID: F-0G240192-001-S
WORK ORDER: DGPNR MS
RECEIVING DATE: 7/20/00
SAMPLING DATE: 7/14/00
ANALYTICAL DUE DATE: 8/08/00N
REPORT DUE DATE: 8/10/00
PRIORITY: 19
SAMPLING TIME: 10:12
RECEIVING TIME: 9:30
SDG# : W03231

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
PCBs (8082)	06	7/24/00	7/28/00	9/06/00

SONICATION w/ACID STRIP (PCB)
STL: HANFORD PCB GC:LIST-1(7)
(A-71-QH-01) DGPNR-1-02 Protocol: A QC Program: STANDARD TEST SET

LOT #F0G240192

STL St. Louis

Q-27038 15.8° cur 264

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B99-011-07	Page 1 of 1
Collector: Doug Bowers/Tami Johansen	Company Contact: Jeff Lerch	Telephone No.: 373-5904	Project Coordinator: TRENT, SJ	Price Code: 8L; Data Turnaround: 21 Days
Project Designation: 300-FF-1 South Process Pond	Sampling Location: 300 FF-1 (south process pond)		SAF No.: B99-011	Air Quality ☐
Ice Chest No.: ERC 99.023	Field Logbook No.: EL 1395-4	COA: RSPPAC2600	Method of Shipment: Federal Express	
Shipped To: RT 7.14.00 ~~Quanterra Incorporated~~ Severn Trent	Offsite Property No.: NA		Bill of Lading/Air Bill No.: NA	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

W03231

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Ø						
Type of Container	P	aG	P	Ø						
No. of Container(s)	1	1	1	Ø						
Volume	20mL	250mL	1000mL	Ø						
	Isotopic Uranium	PCBs - 8082	Gamma Spectroscopy (Cobalt-60)	Activity scan (see note #1 below)						

SDG W03231 SAMPLE ANALYSIS Due 8-10-00 JOG200164

Sample No.	Matrix *	Sample Date	Sample Time	Isotopic Uranium	PCBs - 8082	Gamma Spectroscopy (Cobalt-60)	Activity scan (see note #1 below)					
~~B0YNW1 RT 7.14.00~~	~~SOIL~~											TIC TO
B0YNW2 DGHQO	SOIL	7-14-00	1012	X	X	X						BOYNVO
					↑							
					100% full							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	7-14-00/1530	R. Thoren	7.14.00 1530
Fehlberg/Moreno	7-16-00 0810	R. Fehlberg	7-16-00 0810
	7-19-00	[illegible]	7-19-00 0915
R. Thoren	7.20.00 1050	[illegible]	7-20-00 1156
[illegible]	7-20-00 1055	R. Fehlberg	7-20-00 1055
R. Fehlberg	7-20-00 1056	[illegible] STL	07.22.00 0930

SPECIAL INSTRUCTIONS

** Contact project personnel prior to shipping samples to off-site lab for analysis.

1) please perform activity scan from 1000ml sample bottle containing matrix for Gamma Spec analysis.

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

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

BHI-EE-011 (10/99)

ERC Radiological Counting Facility Analysis Report

RCF Number RCF8205

Sample Date & Time 7/14/00 1012

Project ID: 300-FF-1 s process po **SAF Number:** B99-011

Date Analyzed 7/18/00 4:20:3

Sample ID: B0YNV0

Gamma Energy Analysis

Nuclide		Activity (pCi/g)		Error (pCi/g)	MDC (pCi/g)
K-40		1.0E+03	+/-	5.1E+02	4.7E+02
Co-60	<	3.2E+01			3.2E+01
Cs-137	<	3.7E+01			3.7E+01
Eu-152	<	1.1E+02			1.1E+02
Eu-154	<	1.5E+02			1.5E+02
Eu-155	<	1.7E+02			1.7E+02
Th-232D		1.7E+02	+/-	9.3E+01	9.4E+01
Th-234		7.6E+02	+/-	4.2E+02	6.3E+02
U-235	<	3.3E+02			3.3E+02
U-238D	<	8.5E+01			8.5E+01
Am-241	<	8.5E+01			8.5E+01

Qualitative Only

TIE TO
~~B~~ 7.20.00
~~B0YNP0~~
B0YNW2

Total GEA (pCi/g)	2.0E+03	+/-	1.0E+03

	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 [signature] 7/19/00
C. W. Landes

Report To	Fax
Jeff Lerch	373-5373
Dave St John	372-9487

Report Printed: Wednesday, July 19, 2000

Figure 1. Sample Check-in List

Date/Time Received: 7-20-00 1055 SDG#: W03231

Work Order Number: JOC-200164 SAF#: B99-011

Shipping Container ID: ERC 99-051 Chain of Custody #: B99-011-07

1. Outermost shipping container damaged? Yes [] No [✓]

2. Custody Seals on shipping container intact? Yes [✓] No []

3. Custody Seals dated and signed? Yes [✓] No []

4. Chain-of-Custody record present? Yes [] No [✓]

5. Chain-of-Custody includes the following information:
   - Client name Yes [✓] No [~~]~~
   - Project name or number Yes [✓] No []
   - Sample date/time for each sample Yes [✓] No []
   - Container types, sizes and number of containers Yes [✓] No []
   - Short description of sample, i.e., matrix Yes [✓] No []
   - Analyses requested Yes [✓] No []
   - Preservation used or "none" or N/A if not applicable Yes [✓] No []
   - Date and time of relinquish and receipt Yes [✓] No []
   - Signatures of those persons relinquishing and receiving Yes [✓] No []

6. Sample numbers on chain of custody match those on sample containers? Yes [✓] No []

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

8. Cooler temperature: 4°C 3 Bottles

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

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

11. Samples are: ✓ in good condition ____ leaking
    ____ broken ____ have air bubbles

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

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

Sample Custodian/Laboratory: L. Lettenberg Date: 7-20-00

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

STL

Committed to *Your* Success

Lot No.: F0G240192
W03231

Condition Upon Receipt Variance Report
St. Louis Laboratory

Client: Bechtel Hanford
Date: 07.22.00 Time: 0930
Quote No: 37536
Initiated by: [illegible]
Shipper/No: Airborne 002663453 645
RFA/COC Numbers: B99-011-07

Condition/Variance (Check all that apply):

1. ☐ Sample received broken/leaking.
2. ☐ Sample received without proper preservative.
   - ☐ Cooler temperature not within 4°C ± 2°C
     Record temperature: 15.8, should be 4° ± 2°
   - ☐ pH _____
   - ☐ other: _____
3. ☐ Sample received in improper container.
4. ☐ Sample received without proper paperwork. Explain: _____
5. ☐ Paperwork received without sample.
6. ☐ No sample ID on sample container.
7. ☐ Custody tape disturbed/broken/missing/not tamper evident type (circle all that apply).
8. ☐ Sample ID on container does not match sample ID on paperwork. Explain: _____
9. ☐ All coolers on airbill not received with shipment.
10. ☐ Sample volume insufficient for analysis
11. ☐ Other (explain below)

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

☐ **Cooler Temperature Upon Receipt in °C:** 15.8

Temperature Variance Does Not Affect the Following Analyses: _____

Notes: Blue ice still cold but melted. 2 Blue ice in a tiny cooler w/ (1) 250 mL jar wrapped in bubble wrap.

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 Review: (or designate) [illegible] Date: 07.22.00

Project Management Review: [illegible] Date: 7.25.00

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

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

BECHTEL HANFORD, INC.

Client Sample ID: B0YNW2

GC ~~Semivolatiles~~ PCBs Dayes 8/8/00

Lot-Sample #...: F0G240192-001 Work Order #...: DGPNR101 Matrix.....: SOLID
Date Sampled...: 07/14/00 Date Received..: 07/20/00
Prep Date.....: 07/25/00 Analysis Date..: 08/01/00
Prep Batch #...: 0207536
Dilution Factor: 1
% Moisture.....: 1.8 Method.....: SW846 8082

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

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	85	(10 - 199)
Decachlorobiphenyl	94	(10 - 200)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

MATRIX SPIKE SAMPLE DATA REPORT

GC ~~Semivolatiles~~ PCBs Daynes 8/8/00

Client Lot #...: F0G240192 **Work Order #...:** DGPNR102-MS **Matrix.....:** SOLID
MS Lot-Sample #: F0G240192-001 DGPNR103-MSD
Date Sampled...: 07/14/00 **Date Received..:** 07/20/00
Prep Date.....: 07/25/00 **Analysis Date..:** 08/01/00
Prep Batch #...: 0207536
Dilution Factor: 1 **% Moisture.....:** 1.8

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Aroclor 1016	ND	170	135	ug/kg	80		SW846 8082
	ND	170	138	ug/kg	81	2.0	SW846 8082
Aroclor 1260	ND	170	150	ug/kg	88		SW846 8082
	ND	170	154	ug/kg	91	2.9	SW846 8082

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	93	(10 - 199)
	94	(10 - 199)
Decachlorobiphenyl	98	(10 - 200)
	92	(10 - 200)

NOTE(S):

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

Bold print denotes control parameters

Results and reporting limits have been adjusted for dry weight.

METHOD BLANK REPORT

GC ~~Semivolatiles~~ PCBs Dayes 8/8/00

Client Lot #...: F0G240192 Work Order #...: DGRKP101 Matrix.....: SOLID
MB Lot-Sample #: F0G250000-536

Prep Date.....: 07/25/00
Analysis Date..: 07/29/00 Prep Batch #...: 0207536
Dilution Factor: 1

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

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	67	(10 - 199)
Decachlorobiphenyl	113	(10 - 200)

NOTE(S):

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

LABORATORY CONTROL SAMPLE DATA REPORT

GC ~~Semivolatiles~~ PCBs Daynes 8/8/00

Client Lot #...: F0G240192 **Work Order #...:** DGRKP102 **Matrix.....:** SOLID
LCS Lot-Sample#: F0G250000-536
Prep Date.....: 07/25/00 **Analysis Date..:** 07/29/00
Prep Batch #...: 0207536
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Aroclor 1016	**167**	**174**	**ug/kg**	**105**	**SW846 8082**
Aroclor 1260	**167**	**171**	**ug/kg**	**102**	**SW846 8082**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	96	(62 - 162)
Decachlorobiphenyl	110	(53 - 145)

NOTE(S):

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

Bold print denotes control parameters

SEVERN TRENT SERVICES

CERTIFICATE OF ANALYSIS

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

August 10, 2000

Attention: Joan Kessner

AUG 2000 RECEIVED

SAF Number	:	B99-011
Date SDG Closed	:	July 20, 2000
Number of Samples	:	One (1)
Sample Type	:	Soil
SDG Number	:	W03231
Data Deliverable	:	21-Day / Summary

I. Introduction

On July 20, 2000, one soil sample was received at STL Richland (STLR) for radiochemical analysis. Upon receipt, the sample was assigned the following laboratory ID number to correspond with the Bechtel Hanford, Inc. (BHI) specific ID:

STLR ID#	BHI ID#	MATRIX	DATE OF RECEIPT
9DGHQ010	B0YNW2	SOIL	7/20/00

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information; analytical results and the appropriate associated statistical errors.

The requested analyses were:

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

III. Quality Control

The analytical results for each analysis performed under SDG W03231 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

IV. Comments

Alpha Spectroscopy
Uranium-234, -235, -238 by method RICH-RC-5079:
The LCS, batch blank, sample duplicate (B0YNW2) and sample results are within contractual requirements.

Gamma Spectroscopy
Gamma Scan by method RICH-RC-5017:
The LCS, batch blank, sample duplicate (B0YNW2) 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:

for Jackie Waddell
Project Manager

SEVERN TRENT SERVICES

SAMPLE RESULTS

LAB NAME:	**STL Richland**		**SDG: /RPT GRP:**	W03231 / 11032
LOT,RPT DB ID:	J0G200164-1	9DGHQ010	**MATRIX:**	SOIL
CLIENT ID:	B0YNW2		**DATE RECEIVED:**	7/20/2000 10:55:00 AM

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	RPT UNIT	YIELD	METHOD NUMBER	WORK ORDE	BAT-CH
U-234	6.53E+00		3.4E-01	1.3E+00	2.92E-02	pCi/g	95.66%	RICHRC5079	DGHQ0	0203374
U-235	3.29E-01	J	7.6E-02	9.8E-02	2.01E-02	pCi/g	95.66%	RICHRC5079	DGHQ0	0203374
U-238	1.04E+01		4.3E-01	2.0E+00	2.72E-02	pCi/g	95.66%	RICHRC5079	DGHQ0	0203374
CO-60	2.53E-03	U	1.1E-02	1.1E-02	1.97E-02	pCi/g		RICHRC5017	DGHQ0	0203375

Number of Results: 4

Result = IDL When Not Detected
(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result <

Severn Trent Laboratories Richland
rptChemRadSample; v3.41

SEVERN TRENT SERVICES

DUPLICATE RESULTS

LAB NAME:	**STL Richland**		**SDG: /RPT GRP:**	W03231 / 11032
LOT,RPT DB ID:	J0G200164-1	DGHQ014R	**MATRIX:**	SOIL
CLIENT ID:	B0YNW2 DUP		**DATE RECEIVED:**	7/20/2000 10:55:00
ORIG LAB ID:	9DGHQ010			

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
U-234	6.06E+00		3.1E-01	1.2E+00	1.85E-02	pCi/g	104.30%	RICHRC5079	6.53E+00	7.41%
U-235	2.95E-01	J	6.9E-02	8.8E-02	1.63E-02	pCi/g	104.30%	RICHRC5079	3.29E-01	10.91%
U-238	1.07E+01		4.1E-01	2.0E+00	1.09E-02	pCi/g	104.30%	RICHRC5079	1.04E+01	2.00%

Number of Results: 3

Result = IDL When Not Detecte

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

Severn Trent Laboratories Richland
rptChemRadDup; v3.41

SEVERN TRENT SERVICES

DUPLICATE RESULTS

LAB NAME:	**STL Richland**		**SDG: /RPT GRP:**	W03231 / 11032
LOT,RPT DB ID:	J0G200164-1	DGHQ015R	**MATRIX:**	SOIL
CLIENT ID:	B0YNW2 DUP		**DATE RECEIVED:**	7/20/2000 10:55:00
ORIG LAB ID:	9DGHQ010			

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
CO-60	1.05E-02	U	1.1E-02	1.1E-02	1.97E-02	pCi/g		RICHRC5017	2.53E-03	122.15%

Number of Results: 1

Result = IDL When Not Detecte

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

Severn Trent Laboratories Richland
rptChemRadDup; v3.41

SEVERN TRENT SERVICES

BLANK RESULTS

LAB NAME: STL Richland **SDG /RPT GRP:** W03231 / 11032

LOT,RPT DB ID: J0G210000-37 DGLFK11B **MATRIX:** SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	RPT UNIT	YIELD	METHOD NUMBER	WORK ORDE	BAT-CH
U-234	1.29E-02	U	1.6E-02	1.6E-02	2.07E-02	pCi/g	94.05%	RICHRC5079	DGLFK	0203374
U-235	3.81E-03	U	9.1E-03	9.1E-03	2.07E-02	pCi/g	94.05%	RICHRC5079	DGLFK	0203374
U-238	-3.63E-04	U	7.3E-04	7.3E-04	1.82E-02	pCi/g	94.05%	RICHRC5079	DGLFK	0203374

Number of Results: 3

Result = IDL When Not Detected

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

SEVERN TRENT SERVICES

BLANK RESULTS

LAB NAME: STL Richland **SDG /RPT GRP:** W03231 / 11032

LOT,RPT DB ID: J0G210000-37 DGLFN11B **MATRIX:** SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	RPT UNIT	YIELD	METHOD NUMBER	WORK ORDE	BAT-CH
CO-60	-6.21E-04	U	6.3E-03	6.3E-03	1.13E-02	pCi/g		RICHRC5017	DGLFN	0203375

Number of Results: 1

Result = IDL When Not Detected

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

Severn Trent Laboratories Richland

rptChemRadBlank; v3.41

SEVERN TRENT SERVICES

LABORATORY CONTROL SAMPLE

LAB NAME:	STL Richland	**SDG: /RPT GRP:**	W03231 / 11032
LAB SAMPLE ID:	DGLFK12S	**MATRIX:**	SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
U-234	8.64E-01	J	1.2E-01	2.0E-01	2.79E-02	pCi/g	104.47%	8.70E-01	99.33%
U-235	2.45E-02	J	2.1E-02	2.1E-02	1.91E-02	pCi/g	104.47%	3.97E-02	61.64%
U-238	9.48E-01	J	1.3E-01	2.2E-01	2.69E-02	pCi/g	104.47%	9.11E-01	104.08%

Number of Results: 3

Result = IDL When Not Detecte

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

Severn Trent Laboratories Richland

rptChemRadLcs; v3.41

SEVERN TRENT SERVICES

LABORATORY CONTROL SAMPLE

LAB NAME:	**STL Richland**	**SDG: /RPT GRP:**	W03231 / 11032
LAB SAMPLE ID:	DGLFN12S	**MATRIX:**	SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
CS-137	3.59E-01		5.8E-02	5.8E-02	3.81E-02	pCi/g		3.04E-01	118.34%

Number of Results: 1

Result = IDL When Not Detecte

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

Severn Trent Laboratories Richland

rptChemRadLcs; v3.41

STL RICHLAND
Data Review Checklist
RADIOCHEMISTRY

Priority

Lot Number: JOG 200164				
Client ID: BHI				
Due Date: 8-4-00				
QC Batch Number: 0203374		SDG Number: WQ3231		
Method Test Parameter: UISO				
Matrix: Soil				
Review Item	Yes (√)	No (√)	N/A (√)	2nd Level Review (√)
A. Calibration 1. Is the calibration documentation included where applicable?			✓	
B. Sample Analysis 1. Are the sample yields within acceptance criteria?	✓			
2. Were all sample holding times met?	✓			
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			
C. QC Samples 1. Is the blank yield within acceptance criteria?	✓			
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			
3. Does the blank result meet the Contract criteria?	✓			
4. Is the blank result < the Contract Detection Limit?	✓			
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓	
6. Is the LCS result within acceptance criteria?	✓			
7. Is the LCS yield within acceptance criteria?	✓			
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓			
9. Do the MS/MSD results and yields meet acceptance criteria?			✓	
10. Do the duplicate sample results and yields meet acceptance criteria?	✓		~~X~~ pk 8-4-00	
D. Other 1. Are all Nonconformances included and noted?			✓	
2. Are all required forms filled out?	✓			
3. Was the correct methodology used?	✓			
4. Was transcription checked?	✓			
5. Were all calculations checked at a minimum frequency?	✓			
6. Were units checked?	✓			

Comments on any "No" response: _____

First Level Review: Pam Kenitzer Date: 8-9-00

Second Level Review: [signature] Date: 8/10/00

LS-038, Rev.6, 5/00

STL RICHLAND
Data Review Checklist
RADIOCHEMISTRY

Lot Number: JAG200164				
Client ID: BHI				
Due Date: 8-9-00				
QC Batch Number: 0203375	SDG Number: W03231			
Method Test Parameter: gamma				
Matrix: soil				
Review Item	Yes (√)	No (√)	N/A (√)	2nd Level Review (√)
A. Calibration 1. Is the calibration documentation included where applicable?			✓	✓
B. Sample Analysis 1. Are the sample yields within acceptance criteria?			✓	
2. Were all sample holding times met?	✓			
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			
C. QC Samples 1. Is the blank yield within acceptance criteria?			✓	
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			
3. Does the blank result meet the Contract criteria?				
4. Is the blank result < the Contract Detection Limit?	✓			
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓	
6. Is the LCS result within acceptance criteria?	✓			
7. Is the LCS yield within acceptance criteria?			✓	
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓			
9. Do the MS/MSD results and yields meet acceptance criteria?			✓	
10. Do the duplicate sample results and yields meet acceptance criteria?	✓			
D. Other 1. Are all Nonconformances included and noted?			✓	
2. Are all required forms filled out?	✓			
3. Was the correct methodology used?	✓			
4. Was transcription checked?	✓			
5. Were all calculations checked at a minimum frequency?	✓			✓
6. Were units checked?	✓			

Comments on any "No" response: _____

First Level Review: Pam Kenitzer Date: 8-4-00

Second Level Review: Jackie Waddell Date: 8/4/00

LS-038, Rev.6, 5/00

CHAIN OF CUSTODY

Q-21030

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B99-011-07	Page 1 of 1
Collector: Doug Bowers/Tami Johansen	Company Contact: Jeff Lerch	Telephone No.: 373-5904	Project Coordinator: TRENT, SJ	Price Code: 8L; Air Quality ☐; Data Turnaround: 21 Days
Project Designation: 300-FF-1 South Process Pond	Sampling Location: 300 FF-1 (south process pond)		SAF No.: B99-011	
Ice Chest No.: ERC 99.023	Field Logbook No.: EL 1395-4	COA: RSPPAC2600	Method of Shipment: Federal Express	
Shipped To: RT 7.14.00 ~~Quanterra Incorporated~~ Severn Trent	Offsite Property No.: NA		Bill of Lading/Air Bill No.: NA	

POSSIBLE SAMPLE HAZARDS/REMARKS
Radioactive

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Ø						
Type of Container	P	aG	P	Ø						
No. of Container(s)	1	1	1	Ø						
Volume	20mL	250mL	1000mL	Ø						
	Isotopic Uranium	PCBs - 8082	Gamma Spectroscopy (Cobalt-60)	Activity Scan (see inst. #1 below)						

SDG W03231 — **SAMPLE ANALYSIS** — Due 8-10-00 — JOG-200164

Sample No.	Matrix *	Sample Date	Sample Time	Isotopic Uranium	PCBs - 8082	Gamma Spectroscopy (Cobalt-60)	Activity Scan (see inst. #1 below)					Tie To
~~B0YNW1 RT 7.14.00~~	~~SOIL~~											
B0YNW2 DGHQO	SOIL	7.14.00	1012	X	X	X						B0YNV0

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers / Doug Bowers — Date/Time: 7.14.00/1530	Received By: R. Thoren / R. Thoren — Date/Time: 7.14.00 1530		
Relinquished By: Fehlberg/Thoren / RF 3B — Date/Time: 7.16.00 0810	Received By: R. Fehlberg / R. Fehlberg — Date/Time: 7.16.00 0810		
Relinquished By: 7.17.00 — Date/Time: [illegible]	Received By: J. Duffey / J. Duffey — Date/Time: 7.17.00 0915		
Relinquished By: R. Thoren / R. Thoren — Date/Time: 7.20.00 1050	Received By: [illegible] — Date/Time: 7-20-00 1056		
Relinquished By: [illegible] — Date/Time: 7-20-00 1055	Received By: K. Fehlberg — Date/Time: 7-20-00 1055		
Relinquished By: — Date/Time:	Received By: — Date/Time:		

SPECIAL INSTRUCTIONS
** Contact project personnel prior to shipping samples to off-site lab for analysis.

1) please perform activity scan from 1000ml sample bottle containing matrix for Gamma Spec analysis.

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

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

BHI-EE-011 (10/99)

ERC Radiological Counting Facility Analysis Report

RCF Number RCF8205

Sample Date & Time 7/14/00 1012

Project ID: 300-FF-1 s process po **SAF Number:** B99-011

Date Analyzed 7/18/00 4:20:3

Sample ID: B0YNV0

Gamma Energy Analysis

Nuclide		Activity (pCi/g)		Error (pCi/g)	MDC (pCi/g)
K-40		1.0E+03	+/-	5.1E+02	4.7E+02
Co-60	<	3.2E+01			3.2E+01
Cs-137	<	3.7E+01			3.7E+01
Eu-152	<	1.1E+02			1.1E+02
Eu-154	<	1.5E+02			1.5E+02
Eu-155	<	1.7E+02			1.7E+02
Th-232D		1.7E+02	+/-	9.3E+01	9.4E+01
Th-234		7.6E+02	+/-	4.2E+02	6.3E+02
U-235	<	3.3E+02			3.3E+02
U-238D	<	8.5E+01			8.5E+01
Am-241	<	8.5E+01			8.5E+01

Qualitative Only

TIE TO
BT 7.20.00
~~B0YNP0~~
B0YNW2

Total GEA (pCi/g)	2.0E+03	+/-	1.0E+03

	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 [signature] 7/19/00
C. W. Landes

Report To	Fax
Jeff Lerch	373-5373
Dave St John	372-9487

Report Printed: Wednesday, July 19, 2000

Figure 1. Sample Check-in List

Date/Time Received: 7-2000 1055 SDG#: W03231

Work Order Number: JOC-200164 SAF#: B99-011

Shipping Container ID: ERC 99-051 Chain of Custody #: B99-011-07

1. Outermost shipping container damaged? Yes [ ] No [✓]

2. Custody Seals on shipping container intact? Yes [✓] No [ ]

3. Custody Seals dated and signed? Yes [✓] No [ ]

4. Chain-of-Custody record present? Yes [ ] No [✓]

5. Chain-of-Custody includes the following information:
   - Client name Yes [✓] No [ ]
   - Project name or number Yes [✓] No [ ]
   - Sample date/time for each sample Yes [✓] No [ ]
   - Container types, sizes and number of containers Yes [✓] No [ ]
   - Short description of sample, i.e., matrix Yes [✓] No [ ]
   - Analyses requested Yes [✓] No [ ]
   - Preservation used or "none" or N/A if not applicable Yes [✓] No [ ]
   - Date and time of relinquish and receipt Yes [✓] No [ ]
   - Signatures of those persons relinquishing and receiving Yes [✓] No [ ]

6. Sample numbers on chain of custody match those on sample containers? Yes [✓] No [ ]

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

8. Cooler temperature: 4°C 3 Bottles

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

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

11. Samples are: ✓ in good condition ____ leaking
    ____ broken ____ have air bubbles

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

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

Sample Custodian/Laboratory: [signature] Date: 7-20-00

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

0016

Client Sample Screening Results

19-Jul-00

(R) 7/20/00

EPS 7/19/00

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
BHI B0XN15DGF8F		7/19/2000 10:17:00 AM	QUAD21C	7/19/2000 10:51:13 AM	B0XN15DGF8F	30	3	0.053333333	50	0.77333333
DGF8F	LIQUID		Bkg:	7/19/2000 2:15:26 AM	BKG	600	28	0.046666667	536	0.89333333
Anl Date: 7/19/00	Tot Sa, Alq: 5.00E-01	, 1.00E+00	Alp;	(Dpm/ 1.32E-01	(uCi/ 2.97E-05	(pCi/ 5.94E+01	+ 1.9E+02	CAT I	4.2E-01	Lab
Ppt mg: 0.1	Units: L	, ml	Bet;	Alq): 1.49E+00	Sa): 3.35E-04	L|g): 6.70E+02	+ 2.1E+02		7.5E-02	Alq L|g
BHI B0XN16DGF8H		7/19/2000 10:17:00 AM	QUAD21D	7/19/2000 10:51:13 AM	B0XN16DGF8H	30	9	0.231666667	106	2.69166667
DGF8H	LIQUID		Bkg:	7/19/2000 2:15:26 AM	BKG	600	41	0.068333333	505	0.84166667
Anl Date: 7/19/00	Tot Sa, Alq: 5.00E-01	, 1.00E+00	Alp;	(Dpm/ 6.34E-01	(uCi/ 1.43E-04	(pCi/ 2.85E+02	+ 2.1E+02	CAT I	8.8E-02	Lab
Ppt mg: 0.1	Units: L	, ml	Bet;	Alq): 5.15E+00	Sa): 1.16E-03	L|g): 2.32E+03	+ 3.0E+02		2.2E-02	Alq L|g
BHI B0Y9V1DGFGF		7/19/2000 1:25:00 PM	QUAD21B	7/19/2000 2:09:26 PM	B0Y9V1DGFGF	30	16	0.476666667	106	2.555
DGFGF	SOIL		Bkg:	7/19/2000 2:15:26 AM	BKG	600	34	0.056666667	587	0.97833333
Anl Date: 7/19/00	Tot Sa, Alq: 1.67E+03	, 1.04E+02	Alp;	(Dpm/ 3.27E+00	(uCi/ 2.37E-02	(pCi/ 1.42E+01	+ 5.7E+00	CAT II	3.5E+00	Lab
Ppt mg: 103.5	Units: g	, mg	Bet;	Alq): 5.48E+00	Sa): 3.97E-02	L|g): 2.38E+01	+ 3.3E+00		4.2E+00	Alq L|g
BHI B0YMK7DGFH6		7/19/2000 2:53:00 PM	QUAD22A	7/19/2000 3:37:52 PM	B0YMK7DGFH6	30	10	0.26	88	1.96333333
DGFH6	SOIL		Bkg:	7/19/2000 2:15:31 AM	BKG	600	44	0.073333333	582	0.97
Anl Date: 7/19/00	Tot Sa, Alq: 1.40E+02	, 7.87E+01	Alp;	(Dpm/ 1.46E+00	(uCi/ 1.17E-03	(pCi/ 8.35E+00	+ 5.8E+00	CAT I	6.0E+00	Lab
Ppt mg: 78.7	Units: G	, MG	Bet;	Alq): 3.99E+00	Sa): 3.21E-03	L|g): 2.29E+01	+ 3.8E+00		4.4E+00	Alq L|g
BHI B0YMK8DGFHC		7/19/2000 2:53:00 PM	QUAD22B	7/19/2000 3:37:52 PM	B0YMK8DGFHC	30	12	0.353333333	125	2.81666667
DGFHC	SOIL		Bkg:	7/19/2000 2:15:31 AM	BKG	600	28	0.046666667	810	1.35
Anl Date: 7/19/00	Tot Sa, Alq: 1.20E+02	, 7.23E+01	Alp;	(Dpm/ 1.90E+00	(uCi/ 1.42E-03	(pCi/ 1.19E+01	+ 7.1E+00	CAT I	4.2E+00	Lab
Ppt mg: 72.3	Units: g	, mg	Bet;	Alq): 5.73E+00	Sa): 4.28E-03	L|g): 3.57E+01	+ 4.9E+00		2.8E+00	Alq L|g
BHI B0YMK9DGFHE		7/19/2000 2:53:00 PM	QUAD22C	7/19/2000 3:37:52 PM	B0YMK9DGFHE	30	10	0.278333333	94	2.3
DGFHE	SOIL		Bkg:	7/19/2000 2:15:31 AM	BKG	600	33	0.055	500	0.83333333
Anl Date: 7/19/00	Tot Sa, Alq: 1.27E+02	, 8.49E+01	Alp;	(Dpm/ 1.59E+00	(uCi/ 1.07E-03	(pCi/ 8.42E+00	+ 5.3E+00	CAT I	5.9E+00	Lab
Ppt mg: 84.9	Units: G	, mg	Bet;	Alq): 4.81E+00	Sa): 3.24E-03	L|g): 2.55E+01	+ 3.7E+00		3.9E+00	Alq L|g

0017

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
BHI B0YML0DGFHG		7/19/2000 2:53:00 PM	QUAD22D	7/19/2000 3:37:52 PM	B0YML0DGFHG	30	9	0.248333333	116	2.645
DGFHG	SOIL		Bkg:	7/19/2000 2:15:31 AM	BKG	600	31	0.051666667	733	1.22166667

Anl Date: 7/19/00 Tot Sa, Alq: 1.27E+02 , 1.08E+02 Alp; (Dpm/ 1.57E+00 (uCi/ 8.38E-04 (pCi/ 6.58E+00 + 5.3E+00 CAT I 7.6E+00 Lab
Ppt mg: 107.6 Units: g , mg Bet; Alq): 5.70E+00 Sa): 3.04E-03 L|g): 2.39E+01 + 3.3E+00 4.2E+00 Alq L|g

BHI B0YML1DGFHJ		7/19/2000 2:53:00 PM	QUAD23A	7/19/2000 3:37:53 PM	B0YML1DGFHJ	30	9	0.238333333	90	2.07666667
DGFHJ	SOIL		Bkg:	7/19/2000 2:15:40 AM	BKG	600	37	0.061666667	554	0.92333333

Anl Date: 7/19/00 Tot Sa, Alq: 1.20E+02 , 1.03E+02 Alp; (Dpm/ 1.52E+00 (uCi/ 7.98E-04 (pCi/ 6.64E+00 + 4.8E+00 CAT I 7.5E+00 Lab
Ppt mg: 103.3 Units: g , mg Bet; Alq): 4.39E+00 Sa): 2.30E-03 L|g): 1.91E+01 + 3.0E+00 5.2E+00 Alq L|g

BHI B0YML2DGFHK		7/19/2000 2:53:00 PM	QUAD23B	7/19/2000 3:37:53 PM	B0YML2DGFHK	30	11	0.31	81	1.77333333
DGFHK	SOIL		Bkg:	7/19/2000 2:15:40 AM	BKG	600	34	0.056666667	556	0.92666667

Anl Date: 7/19/00 Tot Sa, Alq: 9.80E+01 , 9.86E+01 Alp; (Dpm/ 2.00E+00 (uCi/ 8.96E-04 (pCi/ 9.15E+00 + 5.1E+00 CAT I 5.5E+00 Lab
Ppt mg: 98.6 Units: g , mg Bet; Alq): 3.70E+00 Sa): 1.66E-03 L|g): 1.69E+01 + 3.0E+00 5.9E+00 Alq L|g

BHI B0YML3DGFHL		7/19/2000 2:53:00 PM	QUAD23C	7/19/2000 3:37:53 PM	B0YML3DGFHL	30	7	0.193333333	93	2.225
DGFHL	SOIL		Bkg:	7/19/2000 2:15:40 AM	BKG	600	24	0.04	525	0.875

Anl Date: 7/19/00 Tot Sa, Alq: 1.06E+02 , 1.16E+02 Alp; (Dpm/ 1.27E+00 (uCi/ 5.22E-04 (pCi/ 4.93E+00 + 4.3E+00 CAT I 1.0E+01 Lab
Ppt mg: 116.1 Units: g , mg Bet; Alq): 4.81E+00 Sa): 1.97E-03 L|g): 1.87E+01 + 2.8E+00 5.4E+00 Alq L|g

BHI B0YMM3DGFHT		7/19/2000 2:53:00 PM	QUAD21B	7/19/2000 3:25:49 PM	B0YMM3DGFHT	30	1	-0.02333333	30	0.02166667
DGFHT	LIQUID		Bkg:	7/19/2000 2:15:26 AM	BKG	600	34	0.056666667	587	0.97833333

Anl Date: 7/19/00 Tot Sa, Alq: 1.00E+00 , 1.00E+01 Alp; (Dpm/ -7.35E-02 (uCi/ -3.31E-06 (pCi/ -3.31E+00 + 2.0E+01 CAT I 1.0E+00 Lab
Ppt mg: 0.1 Units: L , ML Bet; Alq): 5.63E-02 Sa): 2.54E-06 L|g): 2.54E+00 + 1.7E+01 2.0E+01 Alq L|g

0018

RQC053

Parent Batch:
Associated Batches:
:
:
:
:

PRIORITY
21 day

Severn Trent Laboratories, Inc.
Information Sheet Rad Prep

****
* *
* QC BATCH: 0203374 *
* *
****

W0323I

PRIORITY
21 day

Run Date: 7/21/00
Time: 12:58:25

Page: 1

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

Analytical Due Date: 8/04/00
Project Manager: JW2

Lot# Work Order	Client	Analyt Due Matrix	Client Name Aliquot	Geometry	Count Time	Mid/Ave Date/Time	Tracer ID Spike ID	CRDL	Units	Screen Info - (Ci) Alpha	Beta	PM Bin
J0G200164-001 DGHQ0-1-01 Comments:	SOIL SOIL	8/04/00	Bechtel Hanford, .0000		.000	7/14/00 10:12		1	pCi/g	**NYS 76-07/00	**NYS	JW2
J0G200164-001 X DGHQ0-1-04 Comments:	SOIL SOIL	8/04/00	Bechtel Hanford, .0000		.000	7/14/00 10:12		1	pCi/g	**NYS 76-07/00	**NYS	JW2
J0G210000-374 B DGLFK-1-01 Comments:	SOLID	8/04/00	Bechtel Hanford,			7/14/00 10:12		1	pCi/g	**NA	**NA	JW2
J0G210000-374 C DGLFK-1-02 Comments:	SOLID	8/04/00	Bechtel Hanford,			7/14/00 10:12		0.2	pCi/g	**NA	**NA	JW2

Total Number of Samples In Batch: 00004

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

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

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

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

0019

COC Signature Page

W03231

Lot or Batch #: 0203374

	Initials/Date	Procedure #
Released By	KL 7-21-00	RICHRC0009
Received	KY 7-21-00	RichRC5013/5017
Released By	KY 7-24-00	n/a
Received	SK 7/24/00 8/3/00 P.D.	RC5019-1
Released By	SK 8/3/00	n/a
Received	Em 8-03-00	RC 5079
Released By	Em 8-04-00	n/a
Received	SD 8/4/00	RC5039
Released By	SD 8/7/00	n/a
Received	(R) 8/7/00	RICHRD0008 R1
Released By	(R) 8/8/00	n/a
Received	JM 8-8-00	Radcalc V3.1
Released By	JM 8-8-00	n/a
Received	PK 8 8 00 PK 8-9-00	RICHRC0002

RC-131, Rev 1, 6/99

RQC053

Parent Batch:
Associated Batches:
:
:
:
:

Severn Trent Laboratories, Inc.
Information Sheet Rad Prep

****
* *
* QC BATCH: 0203375 *
* *
****

403231

PRIORITY
7 day

Run Date: 7/21/00
Time: 12:58:54

Page: 1

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

Analytical Due Date: 8/09/00

Project Manager: JW2

Lot# Work Order	Client Matrix	Analyt Due	Client Name Aliquot	Geometry	Count Time	Mid/Ave Date/Time	Tracer ID Spike ID	CRDL	Units	Screen Info - (Ci) Alpha	Beta	PM Bin
J0G200164-001 DGHQ0-1-03 Comments:	SOIL SOIL	8/09/00	Bechtel Hanford, .0000		.000	7/14/00 10:12		1.00E-01	pCi/g	**NYS 76-07/00	**NYS	JW2
J0G200164-001 X DGHQ0-1-05 Comments:	SOIL SOIL	8/09/00	Bechtel Hanford, .0000		.000	7/14/00 10:12		1.00E-01	pCi/g	**NYS 76-07/00	**NYS	JW2
J0G210000-375 B DGLFN-1-01 Comments:	SOLID	8/09/00	Bechtel Hanford,			7/14/00 10:12		5.00E-02	pCi/g	**NA	**NA	JW2
J0G210000-375 C DGLFN-1-02 Comments:	SOLID	8/09/00	Bechtel Hanford,			7/14/00 10:12		0.2	pCi/g	**NA	**NA	JW2

Total Number of Samples In Batch: 00004

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

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

BLANK CRDL	
Cobalt 60	5.00E-02
Cesium 137	1.00E-01
Europium 152	1.00E-01
Europium 154	1.00E-01
Europium 155	1.00E-01

Tracer Yield

Type	QC Control Limits
RPD	
RPD	
RPD	
RPD	
RPD	

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

0021

COC Signature Page

W03231

Lot or Batch #: 0203375

	Initials/Date	Procedure #
Released By	KV 7-21-00	RichRc0009
Received	[illegible] 7-21-00	RichRc5013/5017
Released By	[illegible] 7-24-00	n/a
Received	[illegible] 7/24/00	RichR00007
Released By	CD 8/1/00	n/a
Received	PK 8-1-00	RichRc0002
Released By	PK 8-4-00	n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		

RC-131, Rev 1, 6/99