W01886

Quanterra
Environmental Services
0048833

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

314 298-8566 Telephone
314 298-8757 Fax

CASE NARRATIVE

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, Washington 99352

October 10, 1997

Attention: Joan Kessner

Project number	:	550.232
Date Received by Lab	:	August 29, 1997
Number of Samples	:	Two (2)
Sample Type	:	Soil
SDG Number	:	W01886
Data Deliverable	:	Summary

I. Introduction

On August 29, 1997, two (2) soil samples were received by Quanterra, Richland and were transferred to Quanterra, St. Louis for chemical analysis. Upon receipt, the sample were given the following laboratory ID number to correspond with the specific client ID:

St. Louis ID	BHI ID	Richland ID	Matrix	Date of Receipt
15757-001	B0L945	70901001	Soil	08/29/97
15757-002	B0L944	70901002	Soil	08/29/97

II. 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: Semivolatiles by EPA Method 8270. PCBs by EPA Method 8080. ICP Metals (As,Tl) by EPA Method 6010.

III. Quality Control

A Laboratory Control Sample and Method Blank were analyzed with each preparation batch. A Matrix Spike and Matrix Spike Duplicate were performed per the protocol for each analyte in this SDG.

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

V. Comments

Shipping and Receiving
The above samples were received a Quanterra, Richland with out a temperature blank in the cooler.

Semivolatiles
There are no comments or nonconformances associated with this analysis.

Pesticide/PCBs
There are no comments or nonconformances associated with this analysis.

Metals
There are no comments or nonconformances associated with this analysis.

I certify that this data package 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:

Wade H. Price
Project Manager
e:\\price$\hanford\hanw11886ar

Sample Disposition Record

Control #: B97-050
Revision#: 0
Date Initiated: 7/1/97

Section 1 - BACKGROUND

SAF#: B97-120, B97-129, B97-133, B97-136
OU: 300-FF-1
Project ID: 300-FF-1 RD
Task ID: 1
Sampling Event: 300-FF-1 Process Trenches Verification Sampli, 300FF-1 SOUTH PROCESS POND, 300FF-1 NORTH PROCESS POND, AND 300FF-1 ASHPITS/CLEAN SOIL.
Laboratory: Quanterra, TMA
Project Coordinator: Koerner, CC
Task Manager: Johnson, CR

Section 2 - SAMPLE INFORMATION

Number of Samples:
ID Numbers: ALL OFF-SITE SAMPLES.
MATRIX: Soil
Collection Date:

Section 3 - ISSUE

Class: Lab Direction
NCR Number: N/A
Type: Clarification of Direction
Description: Chain of Custody (COC) for off-site analysis requests SemiVOA (8270A) TCL list with benzo(a)pyrene and chrysene. COC also requests ICP metals (6010A) with add-ons for arsenic and thallium.

N/A
NCR Validation (Print/Sign) Date

Section 4 - DISPOSITION

Type: Repair
Description: All off-site samples requesting SemiVOA or ICP metals analysis for SAF's B97-120, B97-129, B97-133, and B97-136 should be specifically analyzed for the mentioned tests as follows: Perform SemiVOA (8270A) analysis for benzo(a)pyrene and chrysene only. Perform ICP metals (6010A) analysis for arsenic and thallium only. Other requested analysis shall be performed according to COC directions.

Koerner, CC C L Tpl C. Koerner 7-8-97
Project Coordinator (Print/Sign) Date

Johnson, CR Charlie Johnson 7/16/97
Task Manager (Print/Sign) Date

N/A
QA (Print/Sign) Date

Section 5 - INSPECTION (Issue Class: Nonconformance Only)

Inspection Number: N/A
Inspection Results: N/A

N/A
Inspector (Print/Sign) Date

Quanterra September 09, 1997 04:00 pm

Account: 10722 Project: 550.232 Quanterra-Richland QAS No. 550.232 Rev. 0

Master Sample Login: 15757

Project Manager: W. Price

Draft: Final: Entered and Reviewed by: S. Lane PM Review:

Sample Header Template:

Sample No. / #	Client ID / Container Type	C-Matrix / Analysis	Class	Preservative	Date: Collected / Anal. Due Date	Received / Hold Date	Due / Site	Shipper	Rad Category / (Container Numbers:% Filled)	Rad Sample No.
Comments:										
15757-001	B0L945	Soil			26-AUG-97 16:02	29-AUG-97 14:25	12-SEP-97	AIR BORNE	1	Screening not Required
Data:	RICHLAND I.D. 70901001//SEE QAS FOR TARGET LISTS.									
1	AN - Amber Glass-120ML	BNA/8270/Q4	S	COLD	11-SEP-97	09-SEP-97	R5F		(329614:99)	
1		PCB/8080/Q4	S	COLD	11-SEP-97	09-SEP-97	R5F		(329613:98)	
1		PM/IT/Q4	S	COLD	11-SEP-97	22-FEB-98	R5F		(329613:98)	
1	AN - Amber Glass-60ML	ICAP/6010/Q4	S	COLD	11-SEP-97	22-FEB-98	R5F		(329612:100)	
15757-001MS	B0L945	Soil			26-AUG-97 16:02	29-AUG-97 14:25	12-SEP-97	AIR BORNE	1	Screening not Required
	RICHLAND I.D. 70901001//SEE QAS FOR TARGET LISTS.									
1	AN - Amber Glass-120ML	BNA/8270/Q4	S	COLD	11-SEP-97	09-SEP-97	R5F		(329614:99)	
1		PCB/8080/Q4	S	COLD	11-SEP-97	09-SEP-97	R5F		(329613:98)	
1	AN - Amber Glass-60ML	ICAP/6010/Q4	S	COLD	11-SEP-97	22-FEB-98	R5F		(329612:100)	
15757-001MSD	B0L945	Soil			26-AUG-97 16:02	29-AUG-97 14:25	12-SEP-97	AIR BORNE	1	Screening not Required
	RICHLAND I.D. 70901001//SEE QAS FOR TARGET LISTS.									
1	AN - Amber Glass-120ML	BNA/8270/Q4	S	COLD	11-SEP-97	09-SEP-97	R5F		(329614:99)	
1		PCB/8080/Q4	S	COLD	11-SEP-97	09-SEP-97	R5F		(329613:98)	
1	AN - Amber Glass-60ML	ICAP/6010/Q4	S	COLD	11-SEP-97	22-FEB-98	R5F		(329612:100)	
15757-002	B0L944	Soil			26-AUG-97 16:14	29-AUG-97 14:25	12-SEP-97	AIR BORNE	1	Screening not Required
	RICHLAND I.D. 70901002//SEE QAS FOR TARGET LISTS.									
1	AN - Amber Glass-120ML	BNA/8270/Q4	S	COLD	11-SEP-97	09-SEP-97	R5F		(329617:99)	
1		PCB/8080/Q4	S	COLD	11-SEP-97	09-SEP-97	R5F		(329616:98)	
1		PM/IT/Q4	S	COLD	11-SEP-97	22-FEB-98	R5F		(329616:98)	
1	AN - Amber Glass-60ML	ICAP/6010/Q4	S	COLD	11-SEP-97	22-FEB-98	R5F		(329615:100)	

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3*=Sample has not been rad screened.

Chain of Custody Record

TO: St. Louis

Quanterra Environmental Services

QUA-4124-1

Client	Project Manager	Date	Chain Of Custody Number
BHP	Jodi Carnes	9-2-97	64820
Address	Telephone Number (Area Code)/Fax Number	Lab Number	Page 1 of 1
City / State / Zip Code	Site Contact	Lab Contact	
Project Name: SAF B97-120	Carrier/Waybill Number		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Aqueous	Sed	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed)	Special Instructions/ Conditions of Receipt
70901001 B02945	Chm Bottles only											See COC	
✓ 02 B02944													

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal: ☒ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☒ Other _____

QC Requirements (Specify): SDG WO 1886

		Date	Time
1 Relinquished By	Kevin Atterbury / Quanterra	9-2-97	1600
2 Relinquished By			
3 Relinquished By			
1 Received By	Jimmie Jackson	9-3-97	8:05
2 Received By			
3 Received By			

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

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CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B97-120-02 | Page 1 of 1

Collector Doug Bowers/Bob Fahlberg	**Company Contact** Frank Gustafson	**Telephone No.** 373-5904	**Project Coordinator** Koerner, CC	**Data Turnaround** 15 Days
Project Designation 300-FF-1 Process Trenches Verification/Screening Sampling	**Sampling Location** 300 FF-1		**SAF No.** B97-120	
Ice Chest No.	**Field Logbook No.** EFL 1133-4		**Method of Shipment** Gov vehicle	
Shipped To Quanterra	**Offsite Property No.**		**Bill of Lading/Air Bill No.**	

POSSIBLE SAMPLE HAZARDS/REMARKS
Possible radioactive

Special Handling and/or Storage
cool 4C

Preservation	None	None	None	Cool 4C	Cool 4C	None				
Type of Container	P	P	aG	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	20ml	20ml	60ml	120ml	120ml	1000ml				
SAMPLE ANALYSIS	Activity Scan	Isotopic Uranium	ICP Metals - 6010A (Add-on) (Arsenic, Thallium) 7090/10	PCBs - 8080	Semi-VOA - 8270A (TCL) (Benzo(a)pyrene, Chrysene) 7090/11	Gamma Spectroscopy (Cobalt-60)				

Sample No.	Matrix *	Sample Date	Sample Time										
BOL945	S	8-25-97	1602	X	X	1 X	1 X	1 X	X	01			
BOL944	S	8-26-97	1614	X	X	1 X	1 X	1 X	X	02			
						100%	100%	100%					

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	8-28-97 / 13:0	[illegible]	08/29/97 1338
[illegible]	08/29/97 14:25	[illegible]	8/29/97 1425
		2100 PM	

SPECIAL INSTRUCTIONS

SD-GUX-01886

Matrix *

S	= Soil
SE	= Sediment
SO	= Solid
SL	= 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 ____

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Post-it® Fax Note 7671 | Date | # of pages ▶ 4
To Doug Bowers | From A L Davis
Co./Dept. | Co.
Phone # | Phone # 373-9751
Fax # 376-8851 | Fax #

GAMMA-RAY ENERGY ANALYSIS REPORT

Thermo Hanford Inc.
Radiological Counting Facility THI - RCF

B0L975

Project	300-FF-1 Process Trench		
Customer ID	B0L975 Soil		
RCF ID	RCF1618		
	Sample time, date	1602	8/26/97
	Analysis date		8/27/97

Isotope		Activity pCi/gm	2 s err	Ci/gm	
K40	<	1.3e+01		1.3e-11	
Co60	<	1.6e+00		1.6e-12	
I129	<	1.8e+02		1.8e-10	
Cs137	<	1.2e+00		1.2e-12	
Eu152	<	5.7e+00		5.7e-12	
Eu154	<	4.4e+00		4.4e-12	
Eu155	<	4.0e+00		4.0e-12	
Th32dau	<	5.0e+00		5.0e-12	
U235	<	7.5e+00		7.5e-12	
U238	<	1.2e+02		1.2e-10	
U238dau	<	2.4e+00		2.4e-12	
Np237	<	2.7e+00		2.7e-12	
Am241	<	5.8e+00		5.8e-12	
Tot Act Gam (pCi/gm)		0.0e+00	Ci/gm	0.0e+00	
Y/Sr-90	<	N/R			
Gross Alpha	<	1.1e+00		1.1e-12	
Gross Beta		2.0e+01	+/- 3.5e+00	2.0e-11	Reported as 137-Cs Betas.
AEA total	<	N/R			
			Total Activity (pCi/gm)		2.0e+01
			(Ci/gm)		2.0e-11

Definitions.

All errors reported at 2 standard deviations
A Assigned as residual beta from Gamma/Beta balance
Per soils and natural samples, the following applies:
The analyses of U238 is based on the activity of Pa234m

The analyses of Np237 is based on the activity of Pa233

U238dau is the activity of Pb214 and Bi214 short lived daughter products of U238. Equilibrium between parent and daughter products probably does not exist in disturbed materials

Th32dau is the activity of Ac228, Pb212, and Tl208 short lived daughter products of 232Th. Equilibrium between parent and daughter products may not exist in disturbed materials

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

N/R means no result or analyses not requested.

Note! 152-Eu is not a 100% Beta emitter.

S E Huff 8-29-97
Radiological analyst Date

Albert I. Davis 08-28-97
Albert I. Davis Date
Radiological Manager

Project review Date

C00007

GAMMA-RAY ENERGY ANALYSIS REPORT

Thermo Hanford Inc.
Radiological Counting Facility THI - RCF

B0L974

Project	300-FF-1 Process Trench	
Customer ID	B0L974 Soil	
RCF ID	RCF1619	
	Sample time, date -	1614 8/26/97
	Analysis date	8/27/97

Isotope		Activity pCi/gm		2 s err	Ci/gm	
K40		2.8e+01	+/-	1.0e+01	2.8e-11	
Co60	<	5.8e-01			5.8e-13	
I129	<	6.4e+00			6.4e-12	
Cs137	<	6.6e-01			6.6e-13	
Eu152	<	2.3e+00			2.3e-12	
Eu154	<	1.3e+00			1.3e-12	
Eu155	<	3.7e+00			3.7e-12	
Th32dau	<	4.8e+00			4.8e-12	
U235	<	6.1e+00			6.1e-12	
U238	<	9.9e+01			9.9e-11	
U238dau	<	5.3e+00			5.3e-12	
Np237	<	5.2e+00			5.2e-12	
Am241	<	2.0e+00			2.0e-12	
Tot Act Gam (pCi/gm)		2.8e+01		Ci/gm	2.8e-11	
Y/Sr-90	<	N/R				
Gross Alpha	<	5.9e-01			5.9e-13	
Gross Beta		2.1e+01	+/-	3.5e+00	2.1e-11	Reported as 137-Cs Betas.
AEA total	<	N/R				

Total Activity (pCi/gm) 2.8e+01
(Ci/gm) 2.8e-11

Definitions

Note! 152-Eu is not a 100% Beta emitter.

All errors reported at 2 standard deviations
A Assigned as residual beta from Gamma/Beta balance
For soils and natural samples, the following applies:
The analysis of U235 is based on the activity of Pa234m

The analysis of Np237 is based on the activity of Pa233

U238dau is the activity of Pb214 and Bi214, short lived daughter products of U238. Equilibrium between parent and daughter products probably does not exist in disturbed materials

Th32dau is the activity of Ac228, Pb212, and Tl208, short lived daughter products of 232Th 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.

N/R means no result or analysis not requested.

SE Hoffly AED — Radiological analyst — 8-28-97 Date

Albert I. Davis — Radiological Manager — 08-28-97 Date

Project review — Date

C00003

[redacted]
Revision 4

Figure 1

SAMPLE CHECK-IN LIST

[redacted]

Date/Time Received 8/29/97 1425 Client Name BHI

Project/Client # B97-120 B97-129 Batch or Case # _____

Cooler ID (if noted on outside of cooler) 96-016

1. Condition of shipping container? OK
2. Custody Seals on cooler intact? Yes [✓] No [ ]
3. Custody Seals dated and signed? Yes [✓] No [ ]
4. Chain of Custody record is taped to inside of cooler lid? Yes [ ] No [✓]
5. Vermiculite/packing material is: Wet [ ] Dry [ ] N/A
6. Each sample is in a plastic bag? Yes [✓] No [ ]
7. Number of sample containers in cooler: 18
8. Samples have:
   - [✓] tape
   - [ ] custody seals
   - [ ] hazard labels
   - [ ] appropriate sample labels
9. Samples are:
   - [✓] in good condition
   - [ ] broken
   - [ ] other
   - [ ] leaking
   - [ ] have air bubbles
10. Coolant Present? Yes [ ] No [✓] Sample Temperature _____
11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #(s) B97-120-024 B97-129-02
    Request for Analysis #(s) N/A
    Airbill # _____ Carrier GOUVER
12. Have any anomalies been identified above? Yes [✓] No [ ]
13. Memos have been initiated for all anomalies identified above: Yes [✓]

Printed Name/Signature [redacted] Date/Time 8/29/97 1425

C00009

SAMPLE RECEIPT VARIANCE REPORT

WORK ORDER NUMBER: _____ DATE INITIATED: 8/29/97

INITIATED BY: [signature]

DATE/TIME OF SAMPLE (AND/OR RFA & COC) RECEIPT: 8/29/97 1425

CLIENT SAMPLE NUMBER	RFA/COC NUMBERS	ANALYSIS REQUESTED
BOL 884	B97-129-02	All
BOL 945	B97-120-02	↓
BOL 944	↓	↓

Samples were received with the following deficiencies:

- ☐ 1. Not enough sample received for proper analysis.
- ☐ 2. Sample received without proper preservative.
- ☐ 3. No sample received in container.
- ☐ 4. Sample received without a RFA/COC form.
- ☐ 5. No sample ID on container.
- ☐ 6. Sample received broken or leaking.
- ☐ 7. Holding time exceeded at receipt.
- ☐ 8. Custody tape broken.
- ☐ 9. COC not relinquished by client.
- ☐ 10. Sample information on container does not match sample information on the paper work (Explain below).
- ☐ 11. All shipping containers (coolers) on waybill not received with shipment.
  - ☐ RFA/COC received
  - ☐ RFA/COC not received
- ☑ 12. Other (Explain below).

NOTES: No Temperature Vial in Cooler.

SUPERVISOR REVIEW: _____

PROJECT MANAGER REVIEW: _____

TELEPHONED TO: _____ ON _____ BY _____

TELEFAXED TO: _____ ON _____ BY _____

SIGNED ORIGINAL MUST BE RETAINED IN WORK ORDER FILE

FORM NO. LS-023, 3/92, Rev. 0

C00010

Quanterra
Environmental Services

RW & WP

012700

Login No.: 15767

Condition Upon Receipt Variance Report
St. Louis Laboratory

Client: Richland

Date: 9-3-97 Time: 8:05

Project No: SDG232

Initiated by: JIMMIE JACKSON

Shipper/No: 5999620-711 AIRBORNE

RFA/COC Numbers: 64818

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: _____
   - ☐ 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.
8. ☐ Sample ID on container does not match sample ID on paperwork. Explain: _____
9. ☐ All coolers on airbill not received with shipment.
10. ☐ Other (explain below): _____

☐ No variances were noted during sample receipt. Cooler Temperature Upon Receipt: _____

Notes: _____

Corrective Action:

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

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

☐ Sample(s) processed "as is". _____

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

Sample Control Supervisor Review: (or designate) [signature] Date: 9-5-97

Project Management Review: [signature] Date: 9/9/97

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

C00011

SL-ADMIN-0004, Revised 11/24/95

Quanterra
Environmental Services

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

Category: Semi-VOA 8270A (TCL)
Method: EPA 8270
Matrix: SOLID

Sample Date : 08/26/97
Receipt Date : 08/29/97
Report Date : 10/07/97

Client ID: B0L945

Quanterra ID : 15757-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Chrysene	218-01-9	QCBLK151902-1	09/09/97	10/01/97	350	UG/KG	U	350	1
Benzo(a)Pyrene	50-32-8	QCBLK151902-1	09/09/97	10/01/97	350	UG/KG	U	350	1
Aldol Condensation	TIC-4	QCBLK151902-1	09/09/97	10/01/97	55000	UG/KG	BJN		1
Hexadecanoic acid	57-10-3	QCBLK151902-1	09/09/97	10/01/97	830	UG/KG	JN		1
bis(2-Ethylhexyl)Phthalate	117-81-7	QCBLK151902-1	09/09/97	10/01/97	62	UG/KG	JN		1
Unknown-1	TIC-32	QCBLK151902-1	09/09/97	10/01/97	76	UG/KG	J		1
Unknown-2	TIC-33	QCBLK151902-1	09/09/97	10/01/97	140	UG/KG	J		1
Unknown-3	TIC-34	QCBLK151902-1	09/09/97	10/01/97	97	UG/KG	J		1
Unknown-4	TIC-35	QCBLK151902-1	09/09/97	10/01/97	120	UG/KG	J		1
Unknown-5	TIC-36	QCBLK151902-1	09/09/97	10/01/97	140	UG/KG	J		1
Nitrobenzene-d5	4165-60-0	QCBLK151902-1	09/09/97	10/01/97	68	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK151902-1	09/09/97	10/01/97	78	%REC			1
Terphenyl-d14	1718-51-0	QCBLK151902-1	09/09/97	10/01/97	74	%REC			1
Phenol-d5	4165-62-2	QCBLK151902-1	09/09/97	10/01/97	87	%REC			1
2-Fluorophenol	367-12-4	QCBLK151902-1	09/09/97	10/01/97	84	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK151902-1	09/09/97	10/01/97	80	%REC			1

Quanterra
Environmental Services

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

Category: Semi-VOA 8270A (TCL)
Method: EPA 8270
Matrix: SOLID

Sample Date : 08/26/97
Receipt Date : 08/29/97
Report Date : 10/09/97

Client ID: B0L945

Quanterra ID : 15757-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Phenol	108-95-2	QCBLK151902-1	09/09/97	10/02/97	122	%REC			1
2-Chlorophenol	95-57-8	QCBLK151902-1	09/09/97	10/02/97	132	%REC			1
1,4-Dichlorobenzene	106-46-7	QCBLK151902-1	09/09/97	10/02/97	130	%REC			1
N-nitroso-di-n-propylamine	621-64-7	QCBLK151902-1	09/09/97	10/02/97	258	%REC			1
1,2,4-Trichlorobenzene	120-82-1	QCBLK151902-1	09/09/97	10/02/97	153	%REC			1
4-Chloro-3-Methylphenol	59-50-7	QCBLK151902-1	09/09/97	10/02/97	132	%REC			1
Acenaphthene	83-32-9	QCBLK151902-1	09/09/97	10/02/97	170	%REC			1
4-Nitrophenol	100-02-7	QCBLK151902-1	09/09/97	10/02/97	107	%REC			1
2,4-Dinitrotoluene	121-14-2	QCBLK151902-1	09/09/97	10/02/97	173	%REC			1
Pentachlorophenol	87-86-5	QCBLK151902-1	09/09/97	10/02/97	45	%REC			1
Pyrene	129-00-0	QCBLK151902-1	09/09/97	10/02/97	157	%REC			1
Nitrobenzene-d5	4165-60-0	QCBLK151902-1	09/09/97	10/02/97	81	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK151902-1	09/09/97	10/02/97	86	%REC			1
Terphenyl-d14	1718-51-0	QCBLK151902-1	09/09/97	10/02/97	82	%REC			1
Phenol-d5	4165-62-2	QCBLK151902-1	09/09/97	10/02/97	89	%REC			1
2-Fluorophenol	367-12-4	QCBLK151902-1	09/09/97	10/02/97	85	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK151902-1	09/09/97	10/02/97	71	%REC			1

Quanterra
Environmental Services

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

Category: Semi-VOA 8270A (TCL)
Method: EPA 8270
Matrix: SOLID

Sample Date : 08/26/97
Receipt Date : 08/29/97
Report Date : 10/07/97

Client ID: B0L945

Quanterra ID : 15757-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Phenol	108-95-2	QCBLK151902-1	09/09/97	10/02/97	111	%REC			1
2-Chlorophenol	95-57-8	QCBLK151902-1	09/09/97	10/02/97	119	%REC			1
1,4-Dichlorobenzene	106-46-7	QCBLK151902-1	09/09/97	10/02/97	100	%REC			1
N-nitroso-di-n-propylamine	621-64-7	QCBLK151902-1	09/09/97	10/02/97	224	%REC			1
1,2,4-Trichlorobenzene	120-82-1	QCBLK151902-1	09/09/97	10/02/97	116	%REC			1
4-Chloro-3-Methylphenol	59-50-7	QCBLK151902-1	09/09/97	10/02/97	120	%REC			1
Acenaphthene	83-32-9	QCBLK151902-1	09/09/97	10/02/97	154	%REC			1
4-Nitrophenol	100-02-7	QCBLK151902-1	09/09/97	10/02/97	95	%REC			1
2,4-Dinitrotoluene	121-14-2	QCBLK151902-1	09/09/97	10/02/97	159	%REC			1
Pentachlorophenol	87-86-5	QCBLK151902-1	09/09/97	10/02/97	23	%REC			1
Pyrene	129-00-0	QCBLK151902-1	09/09/97	10/02/97	143	%REC			1
Nitrobenzene-d5	4165-60-0	QCBLK151902-1	09/09/97	10/02/97	61	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK151902-1	09/09/97	10/02/97	70	%REC			1
Terphenyl-d14	1718-51-0	QCBLK151902-1	09/09/97	10/02/97	75	%REC			1
Phenol-d5	4165-62-2	QCBLK151902-1	09/09/97	10/02/97	78	%REC			1
2-Fluorophenol	367-12-4	QCBLK151902-1	09/09/97	10/02/97	77	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK151902-1	09/09/97	10/02/97	61	%REC			1

Quanterra Environmental Services

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

Category: Semi-VOA 8270A (TCL)
Method: EPA 8270
Matrix: SOLID

Sample Date : 08/26/97
Receipt Date : 08/29/97
Report Date : 10/07/97

Client ID: B0L944

Quanterra ID : 15757-002

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Chrysene	218-01-9	QCBLK151902-1	09/09/97	10/02/97	360	UG/KG	U	360	1
Benzo(a)Pyrene	50-32-8	QCBLK151902-1	09/09/97	10/02/97	360	UG/KG	U	360	1
Aldol Condensation-1	TIC-108	QCBLK151902-1	09/09/97	10/02/97	45000	UG/KG	AJN		1
Aldol Condensation-2	TIC-109	QCBLK151902-1	09/09/97	10/02/97	6200	UG/KG	BJN		1
Unknown-1	TIC-32	QCBLK151902-1	09/09/97	10/02/97	120	UG/KG	BJ		1
Unknown-2	TIC-33	QCBLK151902-1	09/09/97	10/02/97	240	UG/KG	BJ		1
Unknown-3	TIC-34	QCBLK151902-1	09/09/97	10/02/97	100	UG/KG	J		1
Unknown-4	TIC-35	QCBLK151902-1	09/09/97	10/02/97	83	UG/KG	J		1
bis(2-Ethylhexyl)Phthalate	117-81-7	QCBLK151902-1	09/09/97	10/02/97	65	UG/KG	JN		1
Unknown-5	TIC-36	QCBLK151902-1	09/09/97	10/02/97	92	UG/KG	J		1
Unknown-6	TIC-37	QCBLK151902-1	09/09/97	10/02/97	160	UG/KG	J		1
Unknown-7	TIC-7	QCBLK151902-1	09/09/97	10/02/97	160	UG/KG	J		1
Unknown-8	TIC-8	QCBLK151902-1	09/09/97	10/02/97	130	UG/KG	J		1
Unknown-9	TIC-9	QCBLK151902-1	09/09/97	10/02/97	72	UG/KG	J		1
Nitrobenzene-d5	4165-60-0	QCBLK151902-1	09/09/97	10/02/97	59	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK151902-1	09/09/97	10/02/97	73	%REC			1
Terphenyl-d14	1718-51-0	QCBLK151902-1	09/09/97	10/02/97	78	%REC			1
Phenol-d5	4165-62-2	QCBLK151902-1	09/09/97	10/02/97	85	%REC			1
2-Fluorophenol	367-12-4	QCBLK151902-1	09/09/97	10/02/97	85	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK151902-1	09/09/97	10/02/97	56	%REC			1

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0L945

Lab Name: QUANTERRA MO Contract: 550-232

Lab Code: ITMO Case No.: S75701 SAS No.: SDG No.: W01886

Matrix: (soil/water) SOIL Lab Sample ID: 15757-001

Sample wt/vol: 30.00 (g/mL) G Lab File ID: H4303

Level: (low/med) LOW Date Received: 08/29/97

% Moisture: 6 decanted: (Y/N) N Date Extracted: 09/09/97

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/01/97

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
218-01-9	Chrysene	350	U
50-32-8	Benzo(a)Pyrene	350	U

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0L945

Lab Name: QUANTERRA MO Contract: 550-232

Lab Code: ITMO Case No.: S75701 SAS No.: SDG No.: W01886

Matrix: (soil/water) SOIL Lab Sample ID: 15757-001

Sample wt/vol: 30.00 (g/mL) G Lab File ID: H4303

Level: (low/med) LOW Date Received: 08/29/97

% Moisture: 6 decanted: (Y/N) N Date Extracted: 09/09/97

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/01/97

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

Number TICs found: 8 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	0	Aldol Condensation	4.74	55000	ABJN
2.	57103	Hexadecanoic acid	20.53	830	JN
3.	117817	bis(2-Ethylhexyl)Phthalate	25.86	62	JN
4.		UNKNOWN	27.29	76	J
5.		UNKNOWN	28.71	140	J
6.		UNKNOWN	30.19	97	J
7.		UNKNOWN	30.34	120	J
8.		UNKNOWN	30.36	140	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0L944

Lab Name: QUANTERRA MO Contract: 550-232

Lab Code: ITMO Case No.: S75701 SAS No.: SDG No.: W01886

Matrix: (soil/water) SOIL Lab Sample ID: 15757-002

Sample wt/vol: 30.20 (g/mL) G Lab File ID: H4314

Level: (low/med) LOW Date Received: 08/29/97

% Moisture: 8 decanted: (Y/N) N Date Extracted: 09/09/97

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/02/97

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
218-01-9	Chrysene	360	U
50-32-8	Benzo(a)Pyrene	360	U

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B0L944

Lab Name: QUANTERRA MO Contract: 550-232

Lab Code: ITMO Case No.: S75701 SAS No.: SDG No.: W01886

Matrix: (soil/water) SOIL Lab Sample ID: 15757-002

Sample wt/vol: 30.20 (g/mL) G Lab File ID: H4314

Level: (low/med) LOW Date Received: 08/29/97

% Moisture: 8 decanted: (Y/N) N Date Extracted: 09/09/97

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/02/97

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

Number TICs found: 12

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		Aldol Condensation	4.67	45000	AJN
2.	0	Aldol Condensation	4.72	6200	ABJN
3.	0	UNKNOWN	19.20	120	BJ
4.	0	UNKNOWN	20.50	240	BJ
5.		UNKNOWN	21.03	100	J
6.		UNKNOWN	23.71	83	J
7.	117817	bis(2-Ethylhexyl)Phthalate	25.85	65	JN
8.		UNKNOWN	28.24	92	J
9.		UNKNOWN	28.69	160	J
10.		UNKNOWN	30.17	160	J
11.		UNKNOWN	30.28	130	J
12.		UNKNOWN	31.92	72	J

Quanterra
Environmental Services

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

Category: PCB's-8080
Method: EPA 8080
Matrix: SOLID

Sample Date : 08/26/97
Receipt Date : 08/29/97
Report Date : 10/06/97

Client ID: B0L945

Quanterra ID : 15757-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aroclor-1016	12674-11-2	QCBLK151765-1	09/09/97	09/09/97	36	UG/KG	U	36	1
Aroclor-1221	11104-28-2	QCBLK151765-1	09/09/97	09/09/97	36	UG/KG	U	36	1
Aroclor-1232	11141-16-5	QCBLK151765-1	09/09/97	09/09/97	36	UG/KG	U	36	1
Aroclor-1242	53469-21-9	QCBLK151765-1	09/09/97	09/09/97	36	UG/KG	U	36	1
Aroclor-1248	12672-29-6	QCBLK151765-1	09/09/97	09/09/97	36	UG/KG	U	36	1
Aroclor-1254	11097-69-1	QCBLK151765-1	09/09/97	09/09/97	36	UG/KG	U	36	1
Aroclor-1260	11096-82-5	QCBLK151765-1	09/09/97	09/09/97	36	UG/KG	U	36	1
DCB	2051-24-3	QCBLK151765-1	09/09/97	09/09/97	116	%REC			1

Quanterra
Environmental Services

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

Category: PCB's-8080
Method: EPA 8080
Matrix: SOLID

Sample Date : 08/26/97
Receipt Date : 08/29/97
Report Date : 10/06/97

Client ID: B0L945

Quanterra ID : 15757-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aroclor-1016	12674-11-2	QCBLK151765-1	09/09/97	09/10/97	127	%REC			1
Aroclor-1260	11096-82-5	QCBLK151765-1	09/09/97	09/10/97	139	%REC			1
DCB	2051-24-3	QCBLK151765-1	09/09/97	09/10/97	111	%REC			1

Quanterra
Environmental Services

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

Category: PCB's-8080
Method: EPA 8080
Matrix: SOLID

Sample Date : 08/26/97
Receipt Date : 08/29/97
Report Date : 10/06/97

Client ID: B0L945

Quanterra ID : 15757-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aroclor-1016	12674-11-2	QCBLK151765-1	09/09/97	09/10/97	130	%REC			1
Aroclor-1260	11096-82-5	QCBLK151765-1	09/09/97	09/10/97	150	%REC			1
DCB	2051-24-3	QCBLK151765-1	09/09/97	09/10/97	115	%REC			1

Quanterra
Environmental Services

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

Category: PCB's-8080
Method: EPA 8080
Matrix: SOLID

Sample Date : 08/26/97
Receipt Date : 08/29/97
Report Date : 10/06/97

Client ID: B0L944

Quanterra ID : 15757-002

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aroclor-1016	12674-11-2	QCBLK151765-1	09/09/97	09/10/97	36	UG/KG	U	36	1
Aroclor-1221	11104-28-2	QCBLK151765-1	09/09/97	09/10/97	36	UG/KG	U	36	1
Aroclor-1232	11141-16-5	QCBLK151765-1	09/09/97	09/10/97	36	UG/KG	U	36	1
Aroclor-1242	53469-21-9	QCBLK151765-1	09/09/97	09/10/97	36	UG/KG	U	36	1
Aroclor-1248	12672-29-6	QCBLK151765-1	09/09/97	09/10/97	36	UG/KG	U	36	1
Aroclor-1254	11097-69-1	QCBLK151765-1	09/09/97	09/10/97	36	UG/KG	U	36	1
Aroclor-1260	11096-82-5	QCBLK151765-1	09/09/97	09/10/97	36	UG/KG	U	36	1
DCB	2051-24-3	QCBLK151765-1	09/09/97	09/10/97	99	%REC			1

1D

PCB ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0L945

Lab Name: QUANTERRA,MO Contract: 550-232

Lab Code: ITMO Case No.: _____ SAS No.: _____ SDG No.: W01886

Matrix: (soil/water) SOIL Lab Sample ID: 15757-001

Sample wt/vol: 30.0 (g/ml) G Lab File ID: _____

Level: (low/med) LOW Date Sampled: 08-26-97

% Moisture: not dec. 6 dec. _____ Date Extracted: 09-09-97

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09-09-97

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1

CAS NO.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	36	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	36	U
11096-82-5	Aroclor-1260	36	U

U: Concentration of analyte is less than the value given.

FORM I PEST

1D

PCB ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0L944

Lab Name: QUANTERRA,MO Contract: 550-232

Lab Code: ITMO Case No.: _____ SAS No.: _____ SDG No.: W01886

Matrix: (soil/water) SOIL Lab Sample ID: 15757-002

Sample wt/vol: 30.0 (g/ml) G Lab File ID: _____

Level: (low/med) LOW Date Sampled: 08-26-97

% Moisture: not dec. 8 dec. _____ Date Extracted: 09-09-97

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09-10-97

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1

CAS NO.	Compound	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	36	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	36	U
11096-82-5	Aroclor-1260	36	U

U: Concentration of analyte is less than the value given.

Quanterra
Environmental Services

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

Category: ICP Metals-6010A (As,Tl)
Method: EPA 6010
Matrix: SOLID

Sample Date : 08/26/97
Receipt Date : 08/29/97
Report Date : 09/15/97

Client ID: B0L945

Quanterra ID : 15757-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Arsenic	7440-38-2	QCBLK152410-1	09/11/97	09/11/97	7.6	MG/KG	U	32.0	1
Thallium	7440-28-0	QCBLK152410-1	09/11/97	09/11/97	4.0	MG/KG	U	214	1

Quanterra
Environmental Services

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

Category: ICP Metals-6010A (As,Tl)
Method: EPA 6010
Matrix: SOLID

Sample Date : 08/26/97
Receipt Date : 08/29/97
Report Date : 09/15/97

Client ID: B0L945

Quanterra ID : 15757-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Arsenic	7440-38-2	QCBLK152410-1	09/11/97	09/11/97	102	%REC			1
Thallium	7440-28-0	QCBLK152410-1	09/11/97	09/11/97	90	%REC			1

Quanterra
Environmental Services

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

Category: ICP Metals-6010A (As,Tl)
Method: EPA 6010
Matrix: SOLID

Sample Date : 08/26/97
Receipt Date : 08/29/97
Report Date : 09/15/97

Client ID: B0L945

Quanterra ID : 15757-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Arsenic	7440-38-2	QCBLK152410-1	09/11/97	09/11/97	98	%REC			1
Thallium	7440-28-0	QCBLK152410-1	09/11/97	09/11/97	90	%REC			1

Quanterra
Environmental Services

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

Category: ICP Metals-6010A (As,Tl)
Method: EPA 6010
Matrix: SOLID

Sample Date : 08/26/97
Receipt Date : 08/29/97
Report Date : 09/15/97

Client ID: B0L944

Quanterra ID : 15757-002

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Arsenic	7440-38-2	QCBLK152410-1	09/11/97	09/11/97	7.8	MG/KG	U	32.6	1
Thallium	7440-28-0	QCBLK152410-1	09/11/97	09/11/97	4.1	MG/KG	U	218	1

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0L944

Lab Name: QUANTERRA_MO_____ Contract: 550.232___
Lab Code: ITMO__ Case No.:_____ SAS No.:_____ SDG No.: W01886_____
Matrix (soil/water): SOIL_ Lab Sample ID: 15757-002
Level (low/med): LOW__ Date Received: 08/29/97
% Solids: _92.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	7.8	U		P
7440-28-0	Thallium	4.1	U		P

Color Before: _____ Clarity Before: _____ Texture: _____
Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

_____

_____

_____

_____

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0L945

Lab Name: QUANTERRA_MO_____ Contract: 550.232___
Lab Code: ITMO__ Case No.:_____ SAS No.:_____ SDG No.: W01886_____
Matrix (soil/water): SOIL_ Lab Sample ID: 15757-001
Level (low/med): LOW__ Date Received: 08/29/97
% Solids: _93.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	7.6	U		P
7440-28-0	Thallium	4.0	U		P

Color Before: _____ Clarity Before: _____ Texture: _____
Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

FORM I - IN

SW-846

CERTIFICATE OF ANALYSIS

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

October 2, 1997

Attention: Joan Kessner

SAF Number	:	B97-120
Date SDG Closed	:	September 12, 1997
Number of Samples	:	Two (2)
Sample Type	:	Soil
SDG Number	:	W01886
Data Deliverable	:	Summary

I. Introduction

On August 29, 1997, two soil samples were received by the Quanterra Environmental Services Richland Laboratory (QESRL) for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Bechtel Hanford, Inc. (BHI) specific IDs:

QESRL ID#	BHI ID#	MATRIX	DATE OF RECEIPT
70901101	B0L945	SOIL	8/29/97
70901102	B0L944	SOIL	8/29/97

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-5062
Gamma Spectroscopy
Gamma Scan by method RICH-RC-5017

III. Quality Control

The analytical results for each analysis performed under SDG W01886 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate. Any exceptions have been noted in the "Comments" section.

Quality control sample results are reported in the same units as sample results.

IV. Comments

Due to a Sample Receiving error, the samples were initially processed incorrectly. The analyses were performed a second time.

Alpha Spectroscopy

Uranium-234, -235, -238 by method RICH-RC-5030
The LCS, batch blank, sample and sample duplicate (B0L944) results are within contractual requirements.

Gamma Spectroscopy

Gamma Scan by method RICH-RC-5017
The LCS, batch blank, sample and sample duplicate (B0L945) 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:

Jodie Carnes
Project Manager

SAMPLE RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	**W01886 / 3515**
LAB SAMPLE ID:	70901101	**MATRIX:**	SOIL
CLIENT ID:	B0L945	**DATE RECEIVED:**	8/29/1997 2:25:00 PM

ANALYTE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
U-234	1.19E+00	3.7E-01	4.1E-01	1.26E-01	pCi/g	57.50%	RICHRC5030
U-235	2.69E-02	5.8E-02	5.9E-02	1.17E-01	pCi/g	57.50%	RICHRC5030
U-238	1.37E+00	4.0E-01	4.4E-01	7.90E-02	pCi/g	57.50%	RICHRC5030
CO-60	-1.36E-03	1.0E-02	1.0E-02	1.71E-02	pCi/g	N/A	RICHRC5017
CS-137DA	1.55E-01	1.6E-02	2.2E-02	N/A	pCi/g	N/A	RICHRC5017
EU-152	-1.10E-02	2.2E-02	2.2E-02	3.45E-02	pCi/g	N/A	RICHRC5017
EU-154	-7.34E-03	3.3E-02	3.3E-02	5.51E-02	pCi/g	N/A	RICHRC5017
EU-155	2.80E-02	2.7E-02	2.7E-02	4.43E-02	pCi/g	N/A	RICHRC5017
K-40	1.46E+01	4.4E-01	1.5E+00	N/A	pCi/g	N/A	RICHRC5017
RA-224DA	6.16E-01	2.8E-02	6.8E-02	N/A	pCi/g	N/A	RICHRC5017
RA-226DA	4.60E-01	3.4E-02	5.7E-02	N/A	pCi/g	N/A	RICHRC5017
RA-228DA	6.12E-01	6.7E-02	9.0E-02	N/A	pCi/g	N/A	RICHRC5017
U-235HP	1.38E-01	6.6E-02	6.7E-02	N/A	pCi/g	N/A	RICHRC5017
U-238	2.10E+00	5.7E-01	6.0E-01	N/A	pCi/g	N/A	RICHRC5017

Number of Results: 14

Result = IDL When Not Detected

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG: /RPT GRP:**	W01886 / 3515
LAB SAMPLE ID:	70901102	**MATRIX:**	SOIL
CLIENT ID:	B0L944	**DATE RECEIVED:**	8/29/1997 2:25:00 PM

ANALYTE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
U-234	9.43E-01	2.8E-01	3.0E-01	8.88E-02	pCi/g	86.60%	RICHRC5030
U-235	4.11E-02	5.8E-02	5.8E-02	5.56E-02	pCi/g	86.60%	RICHRC5030
U-238	8.21E-01	2.6E-01	2.8E-01	7.48E-02	pCi/g	86.60%	RICHRC5030
CO-60	5.00E-03	1.1E-02	1.1E-02	1.96E-02	pCi/g	N/A	RICHRC5017
CS-137DA	1.01E-01	1.8E-02	2.1E-02	N/A	pCi/g	N/A	RICHRC5017
EU-152	-8.95E-03	2.3E-02	2.3E-02	3.70E-02	pCi/g	N/A	RICHRC5017
EU-154	-5.60E-03	3.3E-02	3.3E-02	5.65E-02	pCi/g	N/A	RICHRC5017
EU-155	2.97E-02	3.1E-02	3.1E-02	4.96E-02	pCi/g	N/A	RICHRC5017
K-40	1.61E+01	5.3E-01	1.7E+00	N/A	pCi/g	N/A	RICHRC5017
RA-224DA	7.07E-01	3.1E-02	7.7E-02	N/A	pCi/g	N/A	RICHRC5017
RA-226DA	5.41E-01	4.1E-02	6.8E-02	N/A	pCi/g	N/A	RICHRC5017
RA-228DA	5.93E-01	7.9E-02	9.9E-02	N/A	pCi/g	N/A	RICHRC5017
U-235HP	7.62E-02	6.7E-02	6.7E-02	N/A	pCi/g	N/A	RICHRC5017
U-238	1.45E+00	6.5E-01	6.7E-01	N/A	pCi/g	N/A	RICHRC5017

Number of Results: 14

Quanterra Data Review Checklist
RADIOCHEMISTRY

"Reanalysis"

Work Order number (s): 709011

Client ID: BHG

Due Date: 9-13-97

Lab Sample Number or SDG: WP 1852C

Method Test Parameters: U 7.5O

Matrix: Soil

Review Item	Yes (✓)	No (✓)	NA (✓)	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. Is the blank result < 1/2 the Contract Detection Limit?	✓			✓
4. Is the blank > 1/2 the Contract Detection Limit but < 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. MS/MSD results and yield meet acceptance criteria?			✓	✓
10. Duplicate sample results and yield meet acceptance criteria?	✓			✓
D. Other				
1. Are all Nonconformances included and noted?			✓	✓
2. Are all required forms filled out?	✓			✓
3. Correct methodology used?	✓			✓
4. Transcription checked? JM 9-10-97	✓			✓
5. Were all calculations checked at a minimum frequency?	✓			✓
6. Units checked?	✓			✓

Comments on any "No" response: reanalysis performed because initial analysis had incorrect address.

First Level Review: [signature] Date: 9-11-97

Second Level Review: [signature] Date: 10/2/97

Form #: LS-038.2 /96, Rev.4

000013

Quanterra Data Review Checklist
RADIOCHEMISTRY

Work Order number (s):	709011 Report
Client ID:	BHI
Due Date:	9-29-97 10-2-97
Lab Sample Number or SDG:	~~9-29-9~~ W 0886
Method Test Parameters:	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. Is the blank result < 1/2 the Contract Detection Limit?	✓			✓
4. Is the blank > 1/2 the Contract Detection Limit but < 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. MS/MSD results and yield meet acceptance criteria?			✓	✓
10. Duplicate sample results and yield meet acceptance criteria?	✓			✓
D. Other				
1. Are all Nonconformances included and noted?			✓	✓
2. Are all required forms filed out?	✓			✓
3. Correct methodology used?	✓			✓
4. Transcription checked?	✓			✓
5. Were all calculations checked at a minimum frequency?	✓			✓
6. Units checked?	✓			✓

Comments on any "No" response: _____

First Level Review: Joel Kenyon Date: 10-2-97

Second Level Review: Cecilia Date: 10/2/97

Form #: LS-038.2 /96, Rev.4

Report BHI "S" + K40, Ra226DA, Ra226DA, Ra228DA, U235 HP for client samples.

Transfer overwrite initial results for PM.

Quanterra Data Review Checklist
RADIOCHEMISTRY

Work Order number (s):	7C9C11
Client ID:	BHI
Due Date:	9-13-97
Lab Sample Number or SDG:	400156
Method Test Parameters:	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?		✓ N/Cm		✓
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?	~~N/A~~ 9-15-97	✓ N/Cm		✓
3. Is the blank result < 1/2 the Contract Detection Limit?	✓			✓
4. Is the blank > 1/2 the Contract Detection Limit but < 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?	✓	~~✓~~ 9-15-97		✓
7. Is the LCS yield within acceptance criteria			✓	✓
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?			✓	✓
9. MS/MSD results and yield meet acceptance criteria?			✓	✓
10. Duplicate sample results and yield meet acceptance criteria?			✓	✓
D. Other				
1. Are all Nonconformances included and noted? N/Cm	✓			✓
2. Are all required forms filed out?	✓	9-15-97		✓
3. Correct methodology used?	~~✓~~ N/A	✓ N/Cm		✓
4. Transcription checked?	✓			✓
5. Were all calculations checked at a minimum frequency?	✓			✓
6. Units checked?	✓			✓

Comments on any "No" response: _____

First Level Review: Joel Kingsman Date: 9-15-97

Second Level Review: Jodie Ca Date: 9/15/97

Form #: LS-038.2 /96, Rev.4

Report BHI "5"

QUANTERRA LABORATORY NONCONFORMANCE MEMO (NCM)

LOG #: RD-97-_____

Project ID: BHQ NCM Initiated by: Joel Kenyama

Sample Numbers: 709011O1 402, T090111B, 15, 25

Tests: Gamma

Matrix: Soil W01886

Analytical Area (check appropriate area):

- ☐ Sample control
- ☐ Organic preparation
- ☐ Inorganic preparation
- ☐ GC
- ☐ HPLC
- ☐ GC/MS
- ☐ Wet chemistry
- ☐ Metals
- ☐ Reporting
- ☒ Data review
- ☒ Radiochemistry
- ☐ Bioassay

Nonconformance (check appropriate area):

Holding Time Violations (exceeded by _____ days)

Category I: Laboratory Independent

- ☐ 1. Holding time expired in transit
- ☐ 2. Sample received > 48 hrs. or 1/2 holding time has expired
- ☐ 3. Test added by client after expiration

Category II: Laboratory Dependent

- ☐ 4. Instrument failure
- ☐ 5. Analyst error
- ☐ 6. Login error
- ☐ 7. Miscommunication
- ☐ 8. Other (complete description required)

Category III: Analysis Reruns (QA/QC)

- ☐ 9. Surrogates
- ☐ 10. Internal Standards
- ☐ 11. Spike Recoveries
- ☐ 12. Blank Contamination

Category IV: Analysis Reruns (Confirmation)

- ☐ 13. Second column
- ☐ 14. Contamination check
- ☐ 15. Confirmation of matrix effects
- ☐ 16. Other (complete description required)

Quality Assurance/Quality Control

- ☐ 17. QC data reported outside of controls
- ☐ 18. Incorrect procedure used
- ☐ 19. SOP intentionally modified with QA and Tech. approval
- ☐ 20. Invalid instrument calibration
- ☐ 21. Insufficient sample received for proper analysis

Incorrect or Incomplete Client Deliverable

- ☐ 22. Hardcopy deliverable error
- ☐ 23. Electronic deliverable error

Reported detection limits elevated due to:

- ☐ 24. Sample matrix
- ☐ 25. Insufficient sample volume
- ☒ 26. Other (complete description required)
- ☒ 27. *Other (specify):* Error on login of Client

Comments/Explanation: Samples logged in as BHQ when they should have been BHI

Notification (check appropriate area):

Client notified by (name and date): Jodie Canas 9/12/97

- ☐ in writing
- ☒ by telephone
- ☐ by facsimile
- ☐ other (explain)

Client's name and response: Joan Kessner

- ☒ process "as is" / reanalyze
- ☐ on hold until _____
- ☐ re-sample
- ☐ other (explain)

Project Manager (signature and date): Jodie Canas 9/15/97

QUANTERRA LABORATORY NONCONFORMANCE MEMO (NCM)

LOG#: RD-97-_____

Corrective Action

Root Cause Initial and date: JMC 9-15-97

Count times & Geometry not sufficient to meet MDAs

Corrective Action Initial and Date: JMC 9-15-97

Results to be transferred + reported as preliminary but prior to data package reanalysis is to be performed + new results to be reported in data pkg as per client wishes

Responsibility for performing CA assigned to: _____

Actions to prevent recurrence Initial and Date: _____

ONE TIME OCCURANCE

First Level Supervisor: _____ Date: 9-15-97

Responsible Manager: _____ Date: 10/7/97

Quality Assurance Review

☐ Anomaly ☑ Deficiency ☐ Rerun

☐ Further action required: _____

Assigned to: _____

QA signature: _____ Date: 10-7-97

Corrective Action Verification

☑ Verified

☐ Cannot Verify (specify reason): _____

Nonconformance Memo Closure

QA signature/date: _____ 10-7-97

CHAIN OF

CUSTODY FORMS

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B97-120-02 | Page 1 of 1

Collector Doug Bowers/Bob Fahlberg	**Company Contact** Frank Gustafson	**Telephone No.** 373-5904	**Project Coordinator** Koerner, CC	**Data Turnaround** 15 Days
Project Designation 300-FF-1 Process Trenches Verification/Screening Sampling	**Sampling Location** 300 FF-1		**SAF No.** B97-120	
Ice Chest No.	**Field Logbook No.** EFL 1133-4		**Method of Shipment** Gov vehicle	
Shipped To Quanterra	**Offsite Property No.**		**Bill of Lading/Air Bill No.**	

POSSIBLE SAMPLE HAZARDS/REMARKS
Possible radioactive

Special Handling and/or Storage
cool 4C

Preservation	None	None	None	Cool 4C	Cool 4C	None				
Type of Container	P	P	aG	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	20ml	20ml	60ml	120ml	120ml	1000ml				
SAMPLE ANALYSIS	Activity Scan	Isotopic Uranium	ICP Metals - 6010A (Add-on) (Arsenic, Thallium) 709010	PCBs - 8080	Semi-VOA - 8270A (TCL) (Benzo(a)pyrene, Chrysene) 709011	Gamma Spectroscopy (Cobalt-60)				

Sample No.	Matrix *	Sample Date	Sample Time										
BOL945	S	8-26-97	1602	X	X	X	X	X	X	01			
BOL944	S	8-26-97	1614	X	X	X	X	X	X	02			

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

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	8-28-97 / 1130		08/29/97 1352
	08/29/97 14:25		8/29/97 1425
			2100 PM

SPECIAL INSTRUCTIONS

SDG-WX0186

Matrix *

S	= Soil
SE	= Sediment
SO	= Solid
SL	= 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

000019

GAMMA-RAY ENERGY ANALYSIS REPORT

Thermo Hanford Inc.
Radiological Counting Facility THI - RCF

B0L974

Project	300-FF-1 Process Trench	
Customer ID	B0L974 Soil	
RCF ID	RCF1619	
Sample time, date	1614	8/26/97
Analysis date		8/27/97

Solid 1000g

Isotope		Activity pCi/gm		2 s err	Ci/gm
K40		2.8e+01	+/-	1.0e+01	2.8e-11
Co60	<	5.8e-01			5.8e-13
I129	<	6.4e+00			6.4e-12
Cs137	<	6.6e-01			6.6e-13
Eu152	<	2.3e+00			2.3e-12
Eu154	<	1.3e+00			1.3e-12
Eu155	<	3.7e+00			3.7e-12
Th32dau	<	4.8e+00			4.8e-12
U235	<	6.1e+00			6.1e-12
U238	<	9.9e+01			9.9e-11
U238dau	<	5.3e+00			5.3e-12
Np237	<	5.2e+00			5.2e-12
Am241	<	2.0e+00			2.0e-12
Tot Act Gam (pCi/gm)		2.8e+01		Ci/gm	2.8e-11
Y/Sr-90	<	N/R			
Gross Alpha	<	5.9e-01			5.9e-13
Gross Beta		2.1e+01	+/-	3.5e+00	2.1e-11
AEA total	<	N/R			

CAT I
9/2/97

< 10K pCi

Reported as 137-Cs Betas. < 100K pCi.

Total Activity	(pCi/gm)	2.8e+01
	(Ci/gm)	2.8e-11

< 2K pCi/g

Definitions.

All errors reported at 2 standard deviations
A Assigned as residual beta from Gamma/Beta balance
For soils and natural samples, the following applies:
The analysis of U238 is based on the activity of Pa234m

The analysis of Np237 is based on the activity of Pa233

U238dau is the activity of Pb214 and Bi214, short lived daughter products of U238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.

Th32dau is the activity of Ac228, Pb212, and Tl208, short lived daughter products of 232Th. 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.

N/R means no result or analysis not requested.

Note! 152-Eu is not a 100% Beta emitter.

SE Hafley
Radiological analyst

8-28-97
Date

Albert I. Davis
Radiological Manager

08-28-97
Date

Project review

Date

Post-it® Fax Note 7671 | Date | # of pages ▶ 4
To Doug Powers | From A Davis
Co./Dept. | Co.
Phone # | Phone # 373-9751
Fax # 376-8851 | Fax #

GAMMA-RAY ENERGY ANALYSIS REPORT

Thermo Hanford Inc.
Radiological Counting Facility THI - RCF

B0L945

Project	300-FF-1 Process Trench	
Customer ID	B0L975 Soil	
RCF ID	RCF1618	
	Sample time, date - 1602	3/26/97
	Analysis date	3/27/97

Solid 100cc g

Isotope		Activity pCi/gm	2 s err	Ci/gm
K40	<	1.3e+01		1.3e-11
Co60	<	1.6e+00		1.6e-12
I129	<	1.8e+02		1.8e-10
Cs137	<	1.2e+00		1.2e-12
Eu152	<	5.7e+00		5.7e-12
Eu154	<	4.4e+00		4.4e-12
Eu155	<	4.0e+00		4.0e-12
Th32dau	<	5.0e+00		5.0e-12
U235	<	7.5e+00		7.5e-12
U238	<	1.2e+02		1.2e-10
U238dau	<	2.4e+00		2.4e-12
Np237	<	2.7e+00		2.7e-12
Am241	<	5.8e+00		5.8e-12
Tot Act Gam (pCi/gm)		0.0e+00	Ci/gm	0.0e+00
Y/Sr-90	<	N/R		
Gross Alpha	<	1.1e+00		1.1e-12
Gross Beta		2.0e+01	+/- 3.5e+00	2.0e-11
AEA total	<	N/R		

C+T I
9/2/97 TWD

< 10K pCi

Reported as 137-Cs Betas. < 100K pCi

Total Activity (pCi/gm) 2.0e+01 < 2K pCi/g
(Ci/gm) 2.0e-11

Definitions.

All errors reported at 2 standard deviations
A Assigned as residual beta from Gamma/Beta balance
For soils and natural samples, the following applies:
The analysis of U238 is based on the activity of Pa234m

The analysis of Np237 is based on the activity of Pa233

U238dau is the activity of Pb214 and Bi214 short lived daughter products of U238. Equilibrium between parent and daughter products probably does not exist in disturbed materials

Th32dau is the activity of Ac228, Pb212, and Tl208 short lived daughter products of 232Th. 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 assessed for the gross alpha analysis.

N/R means no result or analysis not requested.

Note! 152-Eu is not a 100% Beta emitter.

S E Huffy AE — Radiological analyst — 8-29-97 Date

Albert I. Davis — Radiological Manager — 08-28-97 Date

Project review — Date

SDG
WO1886
709010
709011

[illegible]
Revision 4

Figure 1

SAMPLE CHECK-IN LIST

[illegible]

Date/Time Received 8/29/97 1425 Client Name BHI

Project/Client # B97-120 B97-129 Batch or Case # _____

Cooler ID (if noted on outside of cooler) 96-016

1. Condition of shipping container? OK
2. Custody Seals on cooler intact? Yes [✓] No [ ]
3. Custody Seals dated and signed? Yes [✓] No [ ]
4. Chain of Custody record is taped on inside of cooler lid? Yes [ ] No [✓]
5. Vermiculite/packing material is: Wet [ ] Dry [ ] N/A
6. Each sample is in a plastic bag? Yes [✓] No [ ]
7. Number of sample containers in cooler: 18
8. Samples have:
   - ✓ tape
   - ___ custody seals
   - ___ hazard labels
   - ___ appropriate sample labels
9. Samples are:
   - ✓ in good condition
   - ___ broken
   - ___ other
   - ___ leaking
   - ___ have air bubbles
10. Coolant Present? Yes [ ] No [✓] Sample Temperature _____
11. The following paperwork should be accounted for (N/A if not applicable):
    - Chain of Custody #(s) B97-120-027 B97-129-02
    - Request for Analysis #(s) N/A
    - Airbill # _____ Carrier GOUVER
12. Have any anomalies been identified above? Yes [✓] No [ ]
13. Memos have been initiated for all anomalies identified above: Yes [✓]

Printed Name/Signature [signature] Date/Time 8/29/97 1425

SDG
W01886
709010
709011

SAMPLE RECEIPT VARIANCE REPORT

WORK ORDER NUMBER: _____ DATE INITIATED: 8/29/97

INITIATED BY: [signature]

DATE/TIME OF SAMPLE (AND/OR RFA & COC) RECEIPT: 8/29/97 1425

CLIENT SAMPLE NUMBER	RFA/COC NUMBERS	ANALYSIS REQUESTED
BOL884	B97-129-02	All
BOL945	B97-120-02	↓
BOL944	↓	↓

Samples were received with the following deficiencies:

- ☐ 1. Not enough sample received for proper analysis.
- ☐ 2. Sample received without proper preservative.
- ☐ 3. No sample received in container.
- ☐ 4. Sample received without a RFA/COC form.
- ☐ 5. No sample ID on container.
- ☐ 6. Sample received broken or leaking.
- ☐ 7. Holding time exceeded at receipt.
- ☐ 8. Custody tape broken.
- ☐ 9. COC not relinquished by client.
- ☐ 10. Sample information on container does not match sample information on the paper work (Explain below).
- ☐ 11. All shipping containers (coolers) on waybill not received with shipment.
  - ☐ RFA/COC received
  - ☐ RFA/COC not received
- ☑ 12. Other (Explain below).

NOTES: No Temperature vial in Cooler

SUPERVISOR REVIEW: Jani Heidelberg

PROJECT MANAGER REVIEW: [signature]

TELEPHONED TO: J. Kessner ON 9/8/97 BY J.C.

TELEFAXED TO: _____ ON _____ BY _____

SIGNED ORIGINAL MUST BE RETAINED IN WORK ORDER FILE

FORM NO. LS-023, 3/92, Rev. 0

Quanterra

DUE DATE 9-13

*** REANALYSIS REQUEST ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

CUSTOMER 3HQ

ANALYSIS U150

MATRIX SOIL

SAMPLE DELIVERY GROUP W01886

BATCH NUMBER 9-011

LAB SAMPLE ID	CUSTOMER ID	COMMENTS
1) 70901101		
2) 70901102		
3) R0901102		
4)		
5)		
6)		
7)		
8)		
9)		
10)		
11)		
12)		
13)		
14)		
15)		
16)		
17)		
18)		
19)		
20)		

LAB QC ID		
BLANK) T0901111B		
SPIKE) T0901111S		
~~SPIKE)~~		
~~9-8-97~~		

ACTIONS (Initial & Date)

1) INITIATED SOP(S) # — AUG K/L/97 — 1001

2) PREP LAB RECEIVED — ~~AB~~ 9-8-97 — SOP(S) # RICHRC5017

3) SAMPLE REMAINDER STORED — ~~BB~~ 9-8-97 — SOP(S) # IN/D

4) SEPARATION LAB RECEIVED — ~~AB~~ 9-8-97 — SOP(S) # RICHWRC5002.3 — E.D. ~~AB~~ 9-8-97 RICHRC5039

5) COUNTING/MEASUREMENT ~~9-8-97~~ LAB RECEIVED — (R) 9-9-97 — SOP(S) # RICHRCCCCS 20

6) DATA REVIEWED AND ANALYTICAL PREP STORED — 9-11-97 — SOP(S) # ~~RICHRCCCCC~~

RC-048 10/96 REV 3

Dell 9-13-97

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

2-Sep-1997
Page 1

CUSTOMER: BHQ

SAMPLE DELIVERY GROUP WO1786

MATRIX : SOIL

BATCH NUMBER 9-011

	QES ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	T0901111 b T0901115 ~~T0901123~~ ~~MS~~ 9-4-97				
1)	70901101		BHQ	BOL745	
2)	70901102 R0901102		BHQ	BOL944	

ACTIONS (Initial & Date)

1) INITIATED ~~KM~~ 9-2-97

SOP(S) # RD280C

2) PREP LAB RECEIVED 9-3-97 DK

SOP(S) # RICHRC5013.0

3) SAMPLE REMAINDER STORED 9-3-97 DK

SOP(S) # NA

4) SEPARATION LAB RECEIVED ~~MS~~ 9-4-97

SOP(S) # RICHRC5036.3

ED BB 9-4-97
RICHRC5039

5) COUNTING/MEASUREMENT LAB (R) 9-9-97

SOP(S) # RICHRCCCC5.2.0

6) DATA REVIEWED AND ANALYTICAL PREP STORED JJC 9-11-97

SOP(S) # RICHRC0002
Rev 1

000025

Quanterra Environmental Services

DUE DATE 9-29-97

••• REANALYSIS REQUEST •••

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

CUSTOMER BHI

ANALYSIS Gamma

MATRIX Soil

SAMPLE DELIVERY GROUP WO1856

BATCH NUMBER

Ingrow Radon 10 days prior to counting

	LAB SAMPLE ID	CUSTOMER ID	COMMENTS
1)	~~7090111B~~ MK 9-12-97		MA Geometry Proceed: w 25 cm if insufficient for MA
2)	7090111		
3)	7090112		
4)	R090111		
5)			
6)			
7)			
8)			
9)			
10)			
11)			
12)			
13)			
14)			
15)			
16)			
17)			
18)			
19)			
20)			

LAB QC ID			
BLANK)	TQ90112B MK 9-12-97	CAL 827	
SPIKE)	TQ90112S MK 9-12-97	CAL 816	

ACTIONS (Initial & Date)

1) INITIATED SOP(S) # MK 9-12-97 / RICHRCC002 Rev 1

2) PREP LAB RECEIVED 9-15-97 DK
SOP(S) # RICHRC 5013-0
RICHRC 5017-1

3) SAMPLE REMAINDER STORED 9-16-97 DK
SOP(S) # N/A

4) SEPARATION LAB RECEIVED N/A
SOP(S) #

5) COUNTING/MEASUREMENT LAB RECEIVED 9/16/97
SOP(S) # RICHRCC007

6) DATA REVIEWED AND ANALYTICAL PREP STORED MK 10-2-97
SOP(S) # RICHRCC002 Rev 1

INSufficient mass to generate physical dup
DK 9-16-97

RC-048 10/96 REV 3

*** GAMMA ***

Dec 9-13-97

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

8-Sep-1997
Page 1

CUSTOMER: ~~BHQ~~ BHI

SAMPLE DELIVERY GROUP WG1886

MATRIX : SOIL MK 9-15-97

BATCH NUMBER 9-011

	QES ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	T0901101B			BLK: FINE OTTAWA SAND	
	T0901111S			BHQC001	
	T0901125			BHQC002	
1)	70901101		BHQ	BOL945	
2)	70901102		BHQ	BOL944	

ACTIONS (Initial & Date)

1) INITIATED KH 9-2-97

SOP(S) # RD2800

2) PREP LAB RECEIVED 9-3-97 DK
RCHRCS017-1

SOP(S) # RCHRC3013.0

3) SAMPLE REMAINDER STORED 9-3-97 DK

SOP(S) # n/a

4) SEPARATION LAB RECEIVED

SOP(S) #

5) COUNTING/MEASUREMENT LAB 9/4/97

SOP(S) # RICHRD0007

6) DATA REVIEWED AND ANALYTICAL PREP STORED MK 9-12-97

SOP(S) # RICHRC0002 Rev

No add on ISTDs

000027