W01860

Quanterra
Environmental Services

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

314 298-8566 Telephone
314 298-8757 Fax

0048831

CASE NARRATIVE

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, Washington 99352

September 29, 1997

Attention: Joan Kessner

OCT 1997 RECEIVED Data Log In

APR 1998 RECEIVED EDMC

Project number	:	550.232
Date Received by Lab	:	August 19, 1997
Number of Samples	:	Six (6)
Sample Type	:	Soil
SDG Number	:	W01860
Data Deliverable	:	Summary

I. Introduction

On August 19, 1997, six (6) soil samples were received by Quanterra, Richland and were transferred to Quanterra, St. Louis for chemical analysis. Upon receipt, the sample was given the following laboratory ID number to correspond with the specific client ID:

St. Louis ID	BHI ID	Richland ID	Matrix	Date of Receipt
15654-001	B0L704	70829901	Soil	08/19/97
15654-002	B0L705	70829902	Soil	08/19/97
15654-003	B0L706	70829903	Soil	08/19/97
15654-004	B0L707	70829904	Soil	08/19/97
15654-005	B0L708	70829905	Soil	08/19/97
15654-006	B0L709	70829906	Soil	08/19/97

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.

000002

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
There were no variances associated with sample receipt.

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.

Quanterra
Environmental Services

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\hanw11860.nar

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 — 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 August 23, 1997 04:39 pm
Account: 10722 Project: 550.232 Quanterra-Richland QAS No. 550.232 Rev. 0
Master Sample Login: 15654

Project Manager: W. Price

Draft: Final Entered and Reviewed by: PM Review:

Sample Header Template:

Sample No. / Comments	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
15654-001	BOL704	Soil	13-AUG-97 14:22	19-AUG-97 11:50	18-SEP-97	AIR BORNE	1	Screening not Required
RICHLAND I.D. 70829901//SEE QAS FOR TARGET LISTS.								

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-120ML	BNA/8270/Q4	S	COLD	11-SEP-97	27-AUG-97	R88	(327043:99)
1		PCB/8080/Q4	S	COLD	11-SEP-97	27-AUG-97	R88	(327044:98)
1	AN - Amber Glass-60ML	ICAP/6010/Q4	S	COLD	11-SEP-97	09-FEB-98	R88	(327045:99)
1		PM/IT/Q4	S	COLD	11-SEP-97	09-FEB-98	R88	(327045:99)

Sample No.	Client ID	C-Matrix	Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
15654-001MS	BOL704	Soil	13-AUG-97 14:22	19-AUG-97 11:50	18-SEP-97	AIR BORNE	1	Screening not Required
RICHLAND I.D. 70829901//SEE QAS FOR TARGET LISTS.								

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-120ML	BNA/8270/Q4	S	COLD	11-SEP-97	27-AUG-97	R88	(327043:99)
1		PCB/8080/Q4	S	COLD	11-SEP-97	27-AUG-97	R88	(327044:98)
1	AN - Amber Glass-60ML	ICAP/6010/Q4	S	COLD	11-SEP-97	09-FEB-98	R88	(327045:99)

Sample No.	Client ID	C-Matrix	Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
15654-001MSD	BOL704	Soil	13-AUG-97 14:22	19-AUG-97 11:50	18-SEP-97	AIR BORNE	1	Screening not Required
RICHLAND I.D. 70829901//SEE QAS FOR TARGET LISTS.								

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-120ML	BNA/8270/Q4	S	COLD	11-SEP-97	27-AUG-97	R88	(327043:99)
1		PCB/8080/Q4	S	COLD	11-SEP-97	27-AUG-97	R88	(327044:98)
1	AN - Amber Glass-60ML	ICAP/6010/Q4	S	COLD	11-SEP-97	09-FEB-98	R88	(327045:99)

Sample No.	Client ID	C-Matrix	Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
15654-002	BOL705	Soil	14-AUG-97 08:52	19-AUG-97 11:50	18-SEP-97	AIR BORNE	1	Screening not Required
RICHLAND I.D. 70829902//SEE QAS FOR TARGET LISTS.								

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-120ML	BNA/8270/Q4	S	COLD	11-SEP-97	28-AUG-97	R88	(327046:99)
1		PCB/8080/Q4	S	COLD	11-SEP-97	28-AUG-97	R88	(327047:98)
1	AN - Amber Glass-60ML	ICAP/6010/Q4	S	COLD	11-SEP-97	10-FEB-98	R88	(327048:99)
1		PM/IT/Q4	S	COLD	11-SEP-97	10-FEB-98	R88	(327048:99)

Sample No.	Client ID	C-Matrix	Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
15654-003	BOL706	Soil	14-AUG-97 09:40	19-AUG-97 11:50	18-SEP-97	AIR BORNE	1	Screening not Required
RICHLAND I.D. 70829903//SEE QAS FOR TARGET LISTS.								

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-120ML	BNA/8270/Q4	S	COLD	11-SEP-97	28-AUG-97	R88	(327049:99)
1		PCB/8080/Q4	S	COLD	11-SEP-97	28-AUG-97	R88	(327050:98)
1	AN - Amber Glass-60ML	ICAP/6010/Q4	S	COLD	11-SEP-97	10-FEB-98	R88	(327051:99)
1		PM/IT/Q4	S	COLD	11-SEP-97	10-FEB-98	R88	(327051:99)

Sample No.	Client ID	C-Matrix	Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
15654-004	BOL707	Soil	14-AUG-97 10:49	19-AUG-97 11:50	18-SEP-97	AIR BORNE	1	Screening not Required
RICHLAND I.D. 70829904//SEE QAS FOR TARGET LISTS.								

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-120ML	BNA/8270/Q4	S	COLD	11-SEP-97	28-AUG-97	R88	(327052:99)
		PCB/8080/Q4	S	COLD	11-SEP-97	28-AUG-97	R88	(327053:98)

3*Sample has not been rad screened.

000005

Quanterra August 23, 1997 04:39 pm
Account: 10722 Project: 550.232 Quanterra-Richland QAS No. 550.232 Rev. 0
Master Sample Login: 15654

Project Manager: W. Price

Draft: Final: Entered and Reviewed by:_____ PM Review:_____

Sample Header Template: _____

Sample No. / Comments	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
15654-005	B0L708	Soil	14-AUG-97 11:30	19-AUG-97 11:50	18-SEP-97	AIR BORNE	1	Screening not Required
RICHLAND I.D. 70829905//SEE QAS FOR TARGET LISTS.								
15654-006	B0L709	Soil	14-AUG-97 13:37	19-AUG-97 11:50	18-SEP-97	AIR BORNE	1	Screening not Required
RICHLAND I.D. 70829906//SEE QAS FOR TARGET LISTS.								

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
Data:								
1	AN - Amber Glass-60ML	ICAP/6010/Q4	S	COLD	11-SEP-97	10-FEB-98	R88	(327054:99)
1		PM/IT/Q4	S	COLD	11-SEP-97	10-FEB-98	R88	(327054:99)
1	AN - Amber Glass-120ML	BNA/8270/Q4	S	COLD	11-SEP-97	28-AUG-97	R88	(327055:99)
1		PCB/8080/Q4	S	COLD	11-SEP-97	28-AUG-97	R88	(327056:98)
1	AN - Amber Glass-60ML	ICAP/6010/Q4	S	COLD	11-SEP-97	10-FEB-98	R88	(327057:99)
1		PM/IT/Q4	S	COLD	11-SEP-97	10-FEB-98	R88	(327057:99)
1	AN - Amber Glass-120ML	BNA/8270/Q4	S	COLD	11-SEP-97	28-AUG-97	R88	(327058:99)
1		PCB/8080/Q4	S	COLD	11-SEP-97	28-AUG-97	R88	(327059:98)
1	AN - Amber Glass-60ML	ICAP/6010/Q4	S	COLD	11-SEP-97	10-FEB-98	R88	(327060:99)
1		PM/IT/Q4	S	COLD	11-SEP-97	10-FEB-98	R88	(327060:99)

3*=Sample has not been rad screened.

000006

R8B Temp 4°C cu# 12538.

ST LOUIS

QC

Chain of Custody Record

Quanterra Environmental Services

QUA-4124-1

Client: Bechtel	Project Manager: Jodie Carnes	Date: 8-20-97	Chain Of Custody Number: 64778
Address:	Telephone Number (Area Code)/Fax Number:	Lab Number:	Page 1 of 1
City / State / Zip Code:	Site Contact:	Lab Contact:	
Project Name: SAF B97-136	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.:			

Analysis (Attach list if more space is needed): SEE COC

Special Instructions/ Conditions of Receipt:

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
70829901 BOL 704												
2 705												
3 706												
4 707												
5 708												
6 709												

Chemical analysis Bottles

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 W01860

1. Relinquished By: Heidelberg Quanterra	Date: 8-20-97	Time: 1600	1. Received By: Fed Ex	Date: 8-21-97	Time: 0900
2. Relinquished By:	Date:	Time:	2. Received By:	Date:	Time:
3. Relinquished By:	Date:	Time:	3. Received By:	Date:	Time:

Comments:

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B97-136-02	Page 1 of 1

Collector Doug Bowers/Bob Fahlberg / RJ Nielson	Company Contact Frank Gustafson	Telephone No. 373-5904	Project Coordinator Koerner, CC	Date Turnaround 45 Days
Project Designation 300-FF-1 Ashpits/Clean Soil Stockpile	Sampling Location 300 FF-1		SAF No. B97-136	
Ice Chest No. ERC-96-040	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
Possibe radioactive

Special Handling and/or Storage
cool 4C

SAMPLE ANALYSIS
708299 SDG W01860

Preservation	None	None	None	Cool 4C	Cool 4C	None				
Type of Container	P	P	sG	sG	sG	sG				
No. of Container(s)	1	1	1	1	1	1				
Volume	20ml	20ml	60ml	120ml	120ml	1000ml				
	Activity Scan	Isotopic Uranium 708300	ICP Metals - 6010A (Add-on) (Arsenic, Thallium)	PCBs - 8080	Semi-VOA - 8270A (TCL) (Benzo(a)pyrene, Chrysene)	Gamma Spectroscopy (Cobalt-60) 708300				

Sample No.	Matrix *	Sample Date	Sample Time										
BOL704 01	S	8-13-97	1422	V	X	X	X	X	V		BOL704		
						100	100	100					

CHAIN OF POSSESSION

Sign/Print Names			
Relinquished By: Renee Nielsen	Date/Time: 8/19/97 1150	Received By: Heidelberg	Date/Time: 8-19-97 1150
Relinquished By	Date/Time	Received By: 2100 pm	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

LABORATORY SECTION
Received By | Title | Date/Time

FINAL SAMPLE Disposal Method

SPECIAL INSTRUCTIONS

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

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B97-136-02

Collector: Doug Bowers/Bob Fahlberg / RJ Nielson	Company Contact: Frank Gustafson	Telephone No.: 373-5904	Project Coordinator: Koerner, CC	Data Turnaround: 45 Days
Project Designation: 300-FF-1 Ashpits/Clean Soil Stockpile	Sampling Location: 300 FF-1		SAF No.: B97-136	
Ice Chest No.: ERC-96-038	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: Possibe radioactive

Special Handling and/or Storage: cool 4C

SAMPLE ANALYSIS: 708299

Preservation	None	None	None	Cool 4C	Cool 4C	None				
Type of Container	P	P	sG	sG	sG	sG				
No. of Container(s)	1	1	1	1	1	1				
Volume	20ml	20ml	60ml	120ml	120ml	1000ml				
	Activity Scan	Isotopic Uranium 708300	ICP Metals - 6010A (Arsenic, Thallium)	PCBs - 8080	Semi-VOA - 8270A (TCL) (Benzo(a)pyrene, Chrysene)	Gamma Spectroscopy (Cobalt-60) 708300				

Sample No.	Matrix *	Sample Date	Sample Time									
BOL705 02	S	8-14-97	0852	X	X	X	X	X	X		BOL725	
BOL706 03	S	8-14-97	0940	X	X	X	X	X	X		BOL726	
BOL707 04	S	8-14-97	1049	X	X	X	X	X	X		BOL727	
BOL708 05	S	8-14-97	1130	X	X	X	X	X	X		BOL728	
BOL709 06	S	8-14-97	1337	X	X	X	X	X	X		BOL729	
						100	100	100				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Nielsen	8/14/97 1150	Heidelberg	8-14-97 1150
		4100 RJN	

SPECIAL INSTRUCTIONS

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

GAMMA-RAY ENERGY ANALYSIS REPORT

Thermo Hanford Inc.
Radiological Counting Facility THI - RCF

B0L704

Project	300-FF-1 Ashpits/Soil	
Customer ID	B0L724 Soil	
RCF ID	RCF1577	
	Sample time, date	1422 8/13/97
	Analysis date	8/18/97

Isotope		Activity pCi/gm	2 s err	Ci/gm
K40	<	1.5e+01		1.5e-11
Co60	<	6.4e-01		6.4e-13
I129	<	6.8e+00		6.8e-12
Cs137	<	3.5e-01		3.5e-13
Eu152	<	1.8e+00		1.8e-12
Eu154	<	8.0e-01		8.0e-13
Eu155	<	2.7e+00		2.7e-12
Th32dau	<	3.8e+00		3.8e-12
U235	<	3.5e+00		3.5e-12
U238	<	6.7e+01		6.7e-11
U238dau	<	1.5e+00		1.5e-12
Np237	<	8.3e-01		8.3e-13
Am241	<	1.8e+00		1.8e-12
Tot Act Gam (pCi/gm)		0.0e+00	Ci/gm	0.0e+00
Y/Sr-90	<	N/R		
Gross Alpha	<	1.4e+00		1.4e-12
Gross Beta		1.2e+01	+/- 2.9e+00	1.2e-11 Reported as 137-Cs Betas.
AEA total	<	N/R		

Total Activity (pCi/gm) 1.2e+01
(Ci/gm) 1.2e-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 balanced for the gross alpha analysis.

N/R means no result or analysis not requested.

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

Radiological analyst — Date 8-18-97

Albert I. Davis, Radiological Manager — Date 08-18-97

Project review — Date

GAMMA-RAY ENERGY ANALYSIS REPORT

Thermo Hanford Inc.
Radiological Counting Facility THI - RCF

BOL 705

Project	300-FF-1 Ashpits/Soil	
Customer ID	BOL725 Soil	
RCF ID	RCF1571	
	Sample time, date	852 8/14/97
	Analysis date	8/18/97

Isotope		Activity pCi/gm		2 s err	Ci/gm	
K40		1.6e+01	+/-	7.5e+00	1.6e-11	
Co60	<	8.9e-01			8.9e-13	
I129	<	7.5e+01			7.5e-11	
Cs137	<	6.1e-01			6.1e-13	
Eu152	<	4.3e+00			4.3e-12	
Eu154	<	2.6e+00			2.6e-12	
Eu155	<	2.0e+00			2.0e-12	
Th32dau	<	9.0e-01			9.0e-13	
U235	<	3.4e+00			3.4e-12	
U238	<	7.6e+01			7.6e-11	
U238dau	<	1.2e+00			1.2e-12	
Np237	<	1.4e+00			1.4e-12	
Am241	<	3.2e+00			3.2e-12	
Tot Act Gam (pCi/gm)		1.6e+01		Ci/gm	1.6e-11	
Y/Sr-90	<	N/R				
Gross Alpha	<	1.3e+00			1.3e-12	
Gross Beta		1.3e+01	+/-	2.7e+00	1.3e-11	Reported as 137-Cs Betas.
AEA total	<	N/R				

Total Activity (pCi/gm) 1.6e+01
(Ci/gm) 1.6e-11

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

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.

SE Hoff 8/18/97 — Radiological analyst — Date 8-18-97

Albert I. Davis — Radiological Manager — Date 08-18-97

Project review — Date

GAMMA-RAY ENERGY ANALYSIS REPORT

Thermo Hanford Inc.
Radiological Counting Facility THI - RCF

BOL 726

Project	300-FF-1 Ashpits/Soil		
Customer ID	BOL726 Soil		
RCF ID	RCF1572		
	Sample time, date	940	8/14/97
	Analysis date		8/18/97

Isotope		Activity pCi/gm		2 s err	Ci/gm	
K40		2.1e+01	+/-	6.9e+00	2.1e-11	
Co60	<	7.2e-01			7.2e-13	
I129	<	7.3e+01			7.3e-11	
Cs137	<	5.8e-01			5.8e-13	
Eu152	<	4.0e+00			4.0e-12	
Eu154	<	2.1e+00			2.1e-12	
Eu155	<	1.8e+00			1.8e-12	
Th32dau	<	9.9e-01			9.9e-13	
U235	<	3.5e+00			3.5e-12	
U238	<	5.7e+01			5.7e-11	
U238dau	<	9.5e-01			9.5e-13	
Np237	<	1.3e+00			1.3e-12	
Am241	<	3.1e+00			3.1e-12	
Tot Act Gam (pCi/gm)		2.1e+01		Ci/gm	2.1e-11	
Y/Sr-90	<	N/R				
Gross Alpha	<	6.2e-01			6.2e-13	
Gross Beta		1.4e+01	+/-	2.7e+00	1.4e-11	Reported as 137-Cs Betas.
AEA total	<	N/R				

Total Activity (pCi/gm) 2.1e+01
(Ci/gm) 2.1e-11

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

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.

SEH JDK 8-18-97
Radiological analyst Date

Albert I. Davis 08-18-97
Albert I. Davis Date
Radiological Manager

Project review Date

GAMMA-RAY ENERGY ANALYSIS REPORT

Thermo Hanford Inc.
Radiological Counting Facility THI - RCF

B0L707

Project	300-FF-1 Ashpits/Soil		
Customer ID	B0L727 Soil		
RCF ID	RCF1573		
	Sample time, date	1049	8/14/97
	Analysis date		8/18/97

Isotope		Activity pCi/gm		2 s err	Ci/gm	
K40		1.3e+01	+/-	6.7e+00	1.3e-11	
Co60	<	4.6e-01			4.6e-13	
I129	<	3.8e+00			3.8e-12	
Cs137	<	3.7e-01			3.7e-13	
Eu152	<	1.2e+00			1.2e-12	
Eu154	<	5.7e-01			5.7e-13	
Eu155	<	2.3e+00			2.3e-12	
Th32dau	<	2.6e+00			2.6e-12	
U235	<	3.3e+00			3.3e-12	
U238	<	3.4e+01			3.4e-11	
U238dau	<	2.0e+00			2.0e-12	
Np237	<	5.0e-01			5.0e-13	
Am241	<	1.2e+00			1.2e-12	
Tot Act Gam (pCi/gm)		1.3e+01		Ci/gm	1.3e-11	
Y/Sr-90	<	N/R				
Gross Alpha	<	8.0e-01			8.0e-13	
Gross Beta		1.4e+01	+/-	2.7e+00	1.4e-11	Reported as 137-Cs Betas.
AEA total	<	N/R				

Total Activity (pCi/gm) 1.4e+01
(Ci/gm) 1.4e-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 apply:
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.

Radiological analyst — Date 8-16-97

Albert I. Davis, Radiological Manager — Date 08-18-97

Project review — Date

GAMMA-RAY ENERGY ANALYSIS REPORT

Thermo Hanford Inc.
Radiological Counting Facility THI - RCF

BOL 708

Project	300-FF-1 Aehpts/Soil		
Customer ID	B0L728 Soil		
RCF ID	RCF1574		
	Sample time, date	1130	8/14/97
	Analysis date		8/18/97

Isotope		Activity pCi/gm		2 s err	Ci/gm	
K40		1.8e+01	+/-	7.2e+00	1.8e-11	
Co60	<	5.8e-01			5.8e-13	
I129	<	4.7e+00			4.7e-12	
Cs137	<	3.2e-01			3.2e-13	
Eu152	<	1.8e+00			1.8e-12	
Eu154	<	1.4e+00			1.4e-12	
Eu155	<	3.0e+00			3.0e-12	
Th32dau	<	2.1e+00			2.1e-12	
U235	<	4.5e+00			4.5e-12	
U238	<	9.9e+01			9.9e-11	
U238dau	<	1.5e+00			1.5e-12	
Np237	<	1.1e+00			1.1e-12	
Am241	<	1.5e+00			1.5e-12	
Tot Act Gam (pCi/gm)		1.8e+01		Ci/gm	1.8e-11	
Y/Sr-90	<	N/R				
Gross Alpha	<	5.6e-01			5.6e-13	
Gross Beta		1.2e+01	+/-	3.0e+00	1.2e-11	Reported as 137-Cs Betas.
AEA total	<	N/R				

Total Activity (pCi/gm) 1.8e+01
(Ci/gm) 1.8e-11

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

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.

SEH 8-18-97
Radiological analyst Date

Albert I. Davis 08-18-97
Albert I. Davis Date
Radiological Manager

Project review Date

GAMMA-RAY ENERGY ANALYSIS REPORT

Thermo Hanford Inc.
Radiological Counting Facility THI - RCF

B0L709

Project	300-FF-1 Ashpits/Soil
Customer ID	B0L729 Soil
RCF ID	RCF1575
Sample time, date	1337 8/14/97
Analysis date	8/18/97

Isotope		Activity pCi/gm		2 s err	Ci/gm	
K40		2.2e+01	+/-	8.1e+00	2.2e-11	
Co60	<	6.9e-01			6.9e-13	
I129	<	8.3e+01			8.3e-11	
Cs137	<	6.2e-01			6.2e-13	
Eu152	<	3.6e+00			3.6e-12	
Eu154	<	2.6e+00			2.6e-12	
Eu155	<	2.0e+00			2.0e-12	
Th32dau	<	1.1e+00			1.1e-12	
U235	<	6.5e-01			6.5e-13	
U238	<	7.3e+01			7.3e-11	
U238dau	<	1.2e+00			1.2e-12	
Np237	<	1.3e+00			1.3e-12	
Am241	<	3.1e+00			3.1e-12	
Tot Act Gam (pCi/gm)		2.2e+01		Ci/gm	2.2e-11	
Y/Sr-90	<	N/R				
Gross Alpha	<	1.0e+00			1.0e-12	
Gross Beta		1.7e+01	+/-	2.9e+00	1.7e-11	Reported as 137-Cs Betas.
AEA total	<	N/R				

Total Activity (pCi/gm) 2.2e+01
(Ci/gm) 2.2e-11

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

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.

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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 analyses

N/R means no result or analysis not requested.

SEHoff, JOoff, [illegible] 8-18-97
Radiological analyst Date

Albert I. Davis 08-18-97
Albert I. Davis Date
Radiological Manager

Project review Date

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received 8-19 1150 Client Name BHI

Project/Client # B97-136 B97-133 Batch or Case # _____

Cooler ID (if noted on outside of cooler) 96-038

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 [✓] NA
6. Each sample is in a plastic bag? Yes [✓] No [ ]
7. Number of sample containers in cooler: 36
8. Samples have: ✓ tape ___ hazard labels ✓ custody seals ___ appropriate sample labels
9. Samples are: ___ in good condition ___ leaking ___ broken ___ have air bubbles ___ other
10. Coolant Present? Yes [✓] No [ ] Sample Temperature 30C
11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #(s) B97-136-02 B97-133-02
    Request for Analysis #(s) _____
    Airbill # NA Carrier GV web
12. Have any anomalies been identified above? Yes [ ] No [ ]
13. Memos have been initiated for all anomalies identified above: Yes [ ]

Printed Name/Signature Heidelberg Date/Time 8-19-97 1150

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received 8-19 1150 Client Name BHI

Project/Client # B97-136 B97-133 Batch or Case # _____

Cooler ID (if noted on outside of cooler) 96-040

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: 36
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 3.0 C
11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #(s) B97-136-02 B97-133-02
    Request for Analysis #(s) n/a
    Airbill # _____ Carrier GPV veh
12. Have any anomalies been identified above? Yes [ ] No [ ]
13. Memos have been initiated for all anomalies identified above: Yes [ ]

Printed Name/Signature Hiddelberg Date/Time 8-19-97 1150

Quanterra Environmental Services

BW+wp

012538

Login No.: 15654

Condition Upon Receipt Variance Report
St. Louis Laboratory

Client: Richland

Date: 8-21-97 Time: 0 2:00

Project No: 550.232

Initiated by: [illegible]

Shipper/No: A/B 599-9613 513

RFA/COC Numbers: 64778

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: 4°C

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 designee) [illegible] Date: 8-21-97

Project Management Review: [illegible] Date: 9/A/97

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

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

000018

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

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

Client ID: B0L704

Sample Date : 08/13/97
Receipt Date : 08/19/97
Report Date : 09/18/97

Quanterra ID : 15654-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aroclor-1016	12674-11-2	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
Aroclor-1221	11104-28-2	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
Aroclor-1232	11141-16-5	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
Aroclor-1242	53469-21-9	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
Aroclor-1248	12672-29-6	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
Aroclor-1254	11097-69-1	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
Aroclor-1260	11096-82-5	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
DCB	2051-24-3	QCBLK150269-1	08/25/97	09/16/97	100	%REC			1

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

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

Client ID: B0L704

Sample Date : 08/13/97
Receipt Date : 08/19/97
Report Date : 09/18/97

Quanterra ID : 15654-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aroclor-1016	12674-11-2	QCBLK150269-1	08/25/97	09/16/97	134	%REC			1
Aroclor-1260	11096-82-5	QCBLK150269-1	08/25/97	09/16/97	109	%REC			1
DCB	2051-24-3	QCBLK150269-1	08/25/97	09/16/97	85	%REC			1

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

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

Client ID: B0L704

Sample Date : 08/13/97
Receipt Date : 08/19/97
Report Date : 09/18/97

Quanterra ID : 15654-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aroclor-1016	12674-11-2	QCBLK150269-1	08/25/97	09/16/97	132	%REC			1
Aroclor-1260	11096-82-5	QCBLK150269-1	08/25/97	09/16/97	116	%REC			1
DCB	2051-24-3	QCBLK150269-1	08/25/97	09/16/97	95	%REC			1

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

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

Client ID: B0L705

Sample Date : 08/14/97
Receipt Date : 08/19/97
Report Date : 09/18/97

Quanterra ID : 15654-002

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aroclor-1016	12674-11-2	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
Aroclor-1221	11104-28-2	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
Aroclor-1232	11141-16-5	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
Aroclor-1242	53469-21-9	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
Aroclor-1248	12672-29-6	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
Aroclor-1254	11097-69-1	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
Aroclor-1260	11096-82-5	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
DCB	2051-24-3	QCBLK150269-1	08/25/97	09/16/97	102	%REC			1

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

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

Client ID: B0L706

Sample Date : 08/14/97
Receipt Date : 08/19/97
Report Date : 09/18/97

Quanterra ID : 15654-003

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aroclor-1016	12674-11-2	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
Aroclor-1221	11104-28-2	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
Aroclor-1232	11141-16-5	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
Aroclor-1242	53469-21-9	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
Aroclor-1248	12672-29-6	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
Aroclor-1254	11097-69-1	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
Aroclor-1260	11096-82-5	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
DCB	2051-24-3	QCBLK150269-1	08/25/97	09/16/97	110	%REC			1

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

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

Client ID: B0L707

Sample Date : 08/14/97
Receipt Date : 08/19/97
Report Date : 09/18/97

Quanterra ID : 15654-004

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aroclor-1016	12674-11-2	QCBLK150269-1	08/25/97	09/16/97	36	UG/KG	U	36	1
Aroclor-1221	11104-28-2	QCBLK150269-1	08/25/97	09/16/97	36	UG/KG	U	36	1
Aroclor-1232	11141-16-5	QCBLK150269-1	08/25/97	09/16/97	36	UG/KG	U	36	1
Aroclor-1242	53469-21-9	QCBLK150269-1	08/25/97	09/16/97	36	UG/KG	U	36	1
Aroclor-1248	12672-29-6	QCBLK150269-1	08/25/97	09/16/97	36	UG/KG	U	36	1
Aroclor-1254	11097-69-1	QCBLK150269-1	08/25/97	09/16/97	36	UG/KG	U	36	1
Aroclor-1260	11096-82-5	QCBLK150269-1	08/25/97	09/16/97	36	UG/KG	U	36	1
DCB	2051-24-3	QCBLK150269-1	08/25/97	09/16/97	112	%REC			1

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

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

Sample Date : 08/14/97
Receipt Date : 08/19/97
Report Date : 09/18/97

Client ID: B0L708

Quanterra ID : 15654-005

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aroclor-1016	12674-11-2	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
Aroclor-1221	11104-28-2	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
Aroclor-1232	11141-16-5	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
Aroclor-1242	53469-21-9	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
Aroclor-1248	12672-29-6	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
Aroclor-1254	11097-69-1	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
Aroclor-1260	11096-82-5	QCBLK150269-1	08/25/97	09/16/97	35	UG/KG	U	35	1
DCB	2051-24-3	QCBLK150269-1	08/25/97	09/16/97	106	%REC			1

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.232

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

Client ID: B0L709

Sample Date : 08/14/97
Receipt Date : 08/19/97
Report Date : 09/18/97

Quanterra ID : 15654-006

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aroclor-1016	12674-11-2	QCBLK150269-1	08/25/97	09/17/97	34	UG/KG	U	34	1
Aroclor-1221	11104-28-2	QCBLK150269-1	08/25/97	09/17/97	34	UG/KG	U	34	1
Aroclor-1232	11141-16-5	QCBLK150269-1	08/25/97	09/17/97	34	UG/KG	U	34	1
Aroclor-1242	53469-21-9	QCBLK150269-1	08/25/97	09/17/97	34	UG/KG	U	34	1
Aroclor-1248	12672-29-6	QCBLK150269-1	08/25/97	09/17/97	52	UG/KG		34	1
Aroclor-1254	11097-69-1	QCBLK150269-1	08/25/97	09/17/97	34	UG/KG	U	34	1
Aroclor-1260	11096-82-5	QCBLK150269-1	08/25/97	09/17/97	34	UG/KG	U	34	1
DCB	2051-24-3	QCBLK150269-1	08/25/97	09/17/97	108	%REC			1

1D
PCB ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOL704

Lab Name: QUANTERRA,MO Contract: 550-232

Lab Code: ITMO Case No.: _____ SAS No.: _____ SDG No.: W01860

Matrix: (soil/water) SOIL Lab Sample ID: 15654-001

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

Level: (low/med) LOW Date Sampled: 08-13-97

% Moisture: not dec. 4 dec. _____ Date Extracted: 08-25-97

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09-16-97

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	35	U
11104-28-2	Aroclor-1221	35	U
11141-16-5	Aroclor-1232	35	U
53469-21-9	Aroclor-1242	35	U
12672-29-6	Aroclor-1248	35	U
11097-69-1	Aroclor-1254	35	U
11096-82-5	Aroclor-1260	35	U

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

FORM I PEST

1D
PCB ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOL705

Lab Name: QUANTERRA,MO Contract: 550-232

Lab Code: ITMO Case No.: _____ SAS No.: _____ SDG No.: W01860

Matrix: (soil/water) SOIL Lab Sample ID: 15654-002

Sample wt/vol: 30.2 (g/ml) G Lab File ID: _____

Level: (low/med) LOW Date Sampled: 08-14-97

% Moisture: not dec. 6 dec. _____ Date Extracted: 08-25-97

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09-16-97

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	35	U
11104-28-2	Aroclor-1221	35	U
11141-16-5	Aroclor-1232	35	U
53469-21-9	Aroclor-1242	35	U
12672-29-6	Aroclor-1248	35	U
11097-69-1	Aroclor-1254	35	U
11096-82-5	Aroclor-1260	35	U

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

FORM I PEST

1D
PCB ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0L706

Lab Name: QUANTERRA,MO Contract: 550-232

Lab Code: ITMO Case No.: _____ SAS No.: _____ SDG No.: W01860

Matrix: (soil/water) SOIL Lab Sample ID: 15654-003

Sample wt/vol: 30.1 (g/ml) G Lab File ID: _____

Level: (low/med) LOW Date Sampled: 08-14-97

% Moisture: not dec. 6 dec. _____ Date Extracted: 08-25-97

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09-16-97

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	35	U
11104-28-2	Aroclor-1221	35	U
11141-16-5	Aroclor-1232	35	U
53469-21-9	Aroclor-1242	35	U
12672-29-6	Aroclor-1248	35	U
11097-69-1	Aroclor-1254	35	U
11096-82-5	Aroclor-1260	35	U

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

FORM I PEST

1D
PCB ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOL707

Lab Name: QUANTERRA,MO Contract: 550-232

Lab Code: ITMO Case No.: _____ SAS No.: _____ SDG No.: W01860

Matrix: (soil/water) SOIL Lab Sample ID: 15654-004

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

Level: (low/med) LOW Date Sampled: 08-14-97

% Moisture: not dec. 7 dec. _____ Date Extracted: 08-25-97

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09-16-97

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.

BOL708

Lab Name: QUANTERRA,MO Contract: 550-232

Lab Code: ITMO Case No.: _____ SAS No.: _____ SDG No.: W01860

Matrix: (soil/water) SOIL Lab Sample ID: 15654-005

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

Level: (low/med) LOW Date Sampled: 08-14-97

% Moisture: not dec. 5 dec. _____ Date Extracted: 08-25-97

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09-16-97

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

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

CAS NO.	Compound		Q
12674-11-2	Aroclor-1016	35	U
11104-28-2	Aroclor-1221	35	U
11141-16-5	Aroclor-1232	35	U
53469-21-9	Aroclor-1242	35	U
12672-29-6	Aroclor-1248	35	U
11097-69-1	Aroclor-1254	35	U
11096-82-5	Aroclor-1260	35	U

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

FORM I PEST

1D
PCB ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOL709

Lab Name: QUANTERRA,MO Contract: 550-232

Lab Code: ITMO Case No.: _____ SAS No.: _____ SDG No.: W01860

Matrix: (soil/water) SOIL Lab Sample ID: 15654-006

Sample wt/vol: 30.1 (g/ml) G Lab File ID: _____

Level: (low/med) LOW Date Sampled: 08-14-97

% Moisture: not dec. 2 dec. _____ Date Extracted: 08-25-97

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09-17-97

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

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

CAS NO.	Compound		Q
12674-11-2	Aroclor-1016	34	U
11104-28-2	Aroclor-1221	34	U
11141-16-5	Aroclor-1232	34	U
53469-21-9	Aroclor-1242	34	U
12672-29-6	Aroclor-1248	52	
11097-69-1	Aroclor-1254	34	U
11096-82-5	Aroclor-1260	34	U

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

FORM I PEST

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 : 08/13/97
Receipt Date : 08/19/97
Report Date : 09/11/97

Client ID: B0L704

Quanterra ID : 15654-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Arsenic	7440-38-2	QCBLK151804-1	09/08/97	09/09/97	1.5	MG/KG	B	31.4	1
Thallium	7440-28-0	QCBLK151804-1	09/08/97	09/09/97	2.0	MG/KG	B	209	1

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 : 08/13/97
Receipt Date : 08/19/97
Report Date : 09/11/97

Client ID: B0L704

Quanterra ID : 15654-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Arsenic	7440-38-2	QCBLK151804-1	09/08/97	09/09/97	98	%REC			1
Thallium	7440-28-0	QCBLK151804-1	09/08/97	09/09/97	92	%REC			1

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 : 08/13/97
Receipt Date : 08/19/97
Report Date : 09/11/97

Client ID: BOL704

Quanterra ID : 15654-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Arsenic	7440-38-2	QCBLK151804-1	09/08/97	09/09/97	99	%REC			1
Thallium	7440-28-0	QCBLK151804-1	09/08/97	09/09/97	94	%REC			1

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 : 08/14/97
Receipt Date : 08/19/97
Report Date : 09/11/97

Client ID: B0L705

Quanterra ID : 15654-002

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Arsenic	7440-38-2	QCBLK151804-1	09/08/97	09/09/97	0.95	MG/KG	B	32.0	1
Thallium	7440-28-0	QCBLK151804-1	09/08/97	09/09/97	1.2	MG/KG	B	213	1

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 : 08/14/97
Receipt Date : 08/19/97
Report Date : 09/11/97

Client ID: B0L706

Quanterra ID : 15654-003

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Arsenic	7440-38-2	QCBLK151804-1	09/08/97	09/09/97	2.0	MG/KG	B	32.0	1
Thallium	7440-28-0	QCBLK151804-1	09/08/97	09/09/97	1.4	MG/KG	B	213	1

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 : 08/14/97
Receipt Date : 08/19/97
Report Date : 09/11/97

Client ID: BOL707

Quanterra ID : 15654-004

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Arsenic	7440-38-2	QCBLK151804-1	09/08/97	09/09/97	8.2	MG/KG	B	32.3	1
Thallium	7440-28-0	QCBLK151804-1	09/08/97	09/09/97	5.2	MG/KG	B	215	1

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 : 08/14/97
Receipt Date : 08/19/97
Report Date : 09/11/97

Client ID: BOL708

Quanterra ID : 15654-005

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Arsenic	7440-38-2	QCBLK151804-1	09/08/97	09/09/97	2.0	MG/KG	B	31.7	1
Thallium	7440-28-0	QCBLK151804-1	09/08/97	09/09/97	1.0	MG/KG	B	211	1

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 : 08/14/97
Receipt Date : 08/19/97
Report Date : 09/11/97

Client ID: BOL709

Quanterra ID : 15654-006

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Arsenic	7440-38-2	QCBLK151804-1	09/08/97	09/09/97	2.4	MG/KG	B	30.7	1
Thallium	7440-28-0	QCBLK151804-1	09/08/97	09/09/97	0.90	MG/KG	B	205	1

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COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: QUANTERRA_MO_____ Contract: 550.232___

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W01860_____

SOW No.: SW846

EPA Sample No.	Lab Sample ID
B0L704	15654-001
B0L704SD	15654-001SD
B0L704S	15654-001S
B0L705	15654-002
B0L706	15654-003
B0L707	15654-004
B0L708	15654-005
B0L709	15654-006

Were ICP interelement corrections applied ? Yes/No YES

Were ICP background corrections applied ? Yes/No YES

If yes - were raw data generated before application of background corrections ? Yes/No NO_

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: _____

Date: _____ Title: _____

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0L704

Lab Name: QUANTERRA MO Contract: 550.232

Lab Code: ITMO Case No.: SAS No.: SDG No.: W01860

Matrix (soil/water): SOIL Lab Sample ID: 15654-001

Level (low/med): LOW Date Received: 08/19/97

% Solids: 95.6

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

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	1.5	B		P
7440-28-0	Thallium	2.0	B		P

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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SW-846

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0L705

Lab Name: QUANTERRA MO Contract: 550.232

Lab Code: ITMO Case No.: SAS No.: SDG No.: W01860

Matrix (soil/water): SOIL Lab Sample ID: 15654-002

Level (low/med): LOW Date Received: 08/19/97

% Solids: 93.8

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

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.95	B		P
7440-28-0	Thallium	1.2	B		P

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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SW-846

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0L706

Lab Name: QUANTERRA_MO Contract: 550.232

Lab Code: ITMO Case No.: SAS No.: SDG No.: W01860

Matrix (soil/water): SOIL Lab Sample ID: 15654-003

Level (low/med): LOW Date Received: 08/19/97

% Solids: 93.8

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

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.0	B		P
7440-28-0	Thallium	1.4	B		P

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0L707

Lab Name: QUANTERRA_MO Contract: 550.232

Lab Code: ITMO Case No.: SAS No.: SDG No.: W01860

Matrix (soil/water): SOIL Lab Sample ID: 15654-004

Level (low/med): LOW Date Received: 08/19/97

% Solids: 93.0

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

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	8.2	B		P
7440-28-0	Thallium	5.2	B		P

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0L708

Lab Name: QUANTERRA_MO Contract: 550.232
Lab Code: ITMO Case No.: SAS No.: SDG No.: W01860
Matrix (soil/water): SOIL Lab Sample ID: 15654-005
Level (low/med): LOW Date Received: 08/19/97
% Solids: 94.6

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

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.0	B		P
7440-28-0	Thallium	1.0	B		P

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

Comments:

FORM I - IN

SW-846

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0L709

Lab Name: QUANTERRA_MO Contract: 550.232

Lab Code: ITMO Case No.: SAS No.: SDG No.: W01860

Matrix (soil/water): SOIL Lab Sample ID: 15654-006

Level (low/med): LOW Date Received: 08/19/97

% Solids: 97.7

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

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.4	B		P
7440-28-0	Thallium	0.90	B		P

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

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 : 08/13/97
Receipt Date : 08/19/97
Report Date : 09/26/97

Client ID: B0L704

Quanterra ID : 15654-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Chrysene	218-01-9	QCBLK150267-1	08/25/97	09/23/97	340	UG/KG	U	340	1
Benzo(a)Pyrene	50-32-8	QCBLK150267-1	08/25/97	09/23/97	340	UG/KG	U	340	1
Unknown-1	TIC-32	QCBLK150267-1	08/25/97	09/23/97	250	UG/KG	BJ		1
Unknown-2	TIC-33	QCBLK150267-1	08/25/97	09/23/97	410	UG/KG	BJ		1
Unknown-3	TIC-34	QCBLK150267-1	08/25/97	09/23/97	87	UG/KG	BJ		1
ButylBenzylPhthalate	85-68-7	QCBLK150267-1	08/25/97	09/23/97	76	UG/KG	JN		1
Unknown-4	TIC-35	QCBLK150267-1	08/25/97	09/23/97	550	UG/KG	BJ		1
bis(2-Ethylhexyl)Phthalate	117-81-7	QCBLK150267-1	08/25/97	09/23/97	96	UG/KG	BJN		1
Unknown-5	TIC-36	QCBLK150267-1	08/25/97	09/23/97	120	UG/KG	J		1
Unknown-6	TIC-37	QCBLK150267-1	08/25/97	09/23/97	160	UG/KG	BJ		1
Nitrobenzene-d5	4165-60-0	QCBLK150267-1	08/25/97	09/23/97	82	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK150267-1	08/25/97	09/23/97	82	%REC			1
Terphenyl-d14	1718-51-0	QCBLK150267-1	08/25/97	09/23/97	85	%REC			1
Phenol-d5	4165-62-2	QCBLK150267-1	08/25/97	09/23/97	98	%REC			1
2-Fluorophenol	367-12-4	QCBLK150267-1	08/25/97	09/23/97	89	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK150267-1	08/25/97	09/23/97	55	%REC			1

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 : 08/13/97
Receipt Date : 08/19/97
Report Date : 09/26/97

Client ID: BOL704

Quanterra ID : 15654-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Phenol	108-95-2	QCBLK150267-1	08/25/97	09/23/97	72	%REC			.5
2-Chlorophenol	95-57-8	QCBLK150267-1	08/25/97	09/23/97	63	%REC			.5
1,4-Dichlorobenzene	106-46-7	QCBLK150267-1	08/25/97	09/23/97	70	%REC			.5
N-nitroso-di-n-propylamine	621-64-7	QCBLK150267-1	08/25/97	09/23/97	90	%REC			.5
1,2,4-Trichlorobenzene	120-82-1	QCBLK150267-1	08/25/97	09/23/97	80	%REC			.5
4-Chloro-3-Methylphenol	59-50-7	QCBLK150267-1	08/25/97	09/23/97	70	%REC			.5
Acenaphthene	83-32-9	QCBLK150267-1	08/25/97	09/23/97	80	%REC			.5
4-Nitrophenol	100-02-7	QCBLK150267-1	08/25/97	09/23/97	55	%REC			.5
2,4-Dinitrotoluene	121-14-2	QCBLK150267-1	08/25/97	09/23/97	88	%REC			.5
Pentachlorophenol	87-86-5	QCBLK150267-1	08/25/97	09/23/97	38	%REC			.5
Pyrene	129-00-0	QCBLK150267-1	08/25/97	09/23/97	83	%REC			.5
Nitrobenzene-d5	4165-60-0	QCBLK150267-1	08/25/97	09/23/97	80	%REC			.5
2-Fluorobiphenyl	321-60-8	QCBLK150267-1	08/25/97	09/23/97	79	%REC			.5
Terphenyl-d14	1718-51-0	QCBLK150267-1	08/25/97	09/23/97	89	%REC			.5
Phenol-d5	4165-62-2	QCBLK150267-1	08/25/97	09/23/97	92	%REC			.5
2-Fluorophenol	367-12-4	QCBLK150267-1	08/25/97	09/23/97	70	%REC			.5
2,4,6-Tribromophenol	118-79-6	QCBLK150267-1	08/25/97	09/23/97	34	%REC			.5

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 : 08/13/97
Receipt Date : 08/19/97
Report Date : 09/26/97

Client ID: BOL704

Quanterra ID : 15654-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Phenol	108-95-2	QCBLK150267-1	08/25/97	09/23/97	76	%REC			.5
2-Chlorophenol	95-57-8	QCBLK150267-1	08/25/97	09/23/97	66	%REC			.5
1,4-Dichlorobenzene	106-46-7	QCBLK150267-1	08/25/97	09/23/97	77	%REC			.5
N-nitroso-di-n-propylamine	621-64-7	QCBLK150267-1	08/25/97	09/23/97	92	%REC			.5
1,2,4-Trichlorobenzene	120-82-1	QCBLK150267-1	08/25/97	09/23/97	83	%REC			.5
4-Chloro-3-Methylphenol	59-50-7	QCBLK150267-1	08/25/97	09/23/97	70	%REC			.5
Acenaphthene	83-32-9	QCBLK150267-1	08/25/97	09/23/97	85	%REC			.5
4-Nitrophenol	100-02-7	QCBLK150267-1	08/25/97	09/23/97	59	%REC			.5
2,4-Dinitrotoluene	121-14-2	QCBLK150267-1	08/25/97	09/23/97	92	%REC			.5
Pentachlorophenol	87-86-5	QCBLK150267-1	08/25/97	09/23/97	42	%REC			.5
Pyrene	129-00-0	QCBLK150267-1	08/25/97	09/23/97	83	%REC			.5
Nitrobenzene-d5	4165-60-0	QCBLK150267-1	08/25/97	09/23/97	83	%REC			.5
2-Fluorobiphenyl	321-60-8	QCBLK150267-1	08/25/97	09/23/97	84	%REC			.5
Terphenyl-d14	1718-51-0	QCBLK150267-1	08/25/97	09/23/97	86	%REC			.5
Phenol-d5	4165-62-2	QCBLK150267-1	08/25/97	09/23/97	96	%REC			.5
2-Fluorophenol	367-12-4	QCBLK150267-1	08/25/97	09/23/97	75	%REC			.5
2,4,6-Tribromophenol	118-79-6	QCBLK150267-1	08/25/97	09/23/97	39	%REC			.5

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3350 George Washington Way
Richland, WA 99352

Project: 550.232

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

Client ID: BOL705

Sample Date : 08/14/97
Receipt Date : 08/19/97
Report Date : 09/26/97

Quanterra ID : 15654-002

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Chrysene	218-01-9	QCBLK150267-1	08/25/97	09/23/97	350	UG/KG	U	350	1
Benzo(a)Pyrene	50-32-8	QCBLK150267-1	08/25/97	09/23/97	350	UG/KG	U	350	1
Unknown-1	TIC-32	QCBLK150267-1	08/25/97	09/23/97	93	UG/KG	BJ		1
Unknown-2	TIC-33	QCBLK150267-1	08/25/97	09/23/97	72	UG/KG	BJ		1
Unknown-3	TIC-34	QCBLK150267-1	08/25/97	09/23/97	340	UG/KG	BJ		1
Unknown-4	TIC-35	QCBLK150267-1	08/25/97	09/23/97	430	UG/KG	BJ		1
Unknown-5	TIC-36	QCBLK150267-1	08/25/97	09/23/97	210	UG/KG	BJ		1
Unknown-6	TIC-37	QCBLK150267-1	08/25/97	09/23/97	300	UG/KG	J		1
Unknown-7	TIC-7	QCBLK150267-1	08/25/97	09/23/97	140	UG/KG	J		1
Nitrobenzene-d5	4165-60-0	QCBLK150267-1	08/25/97	09/23/97	78	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK150267-1	08/25/97	09/23/97	80	%REC			1
Terphenyl-d14	1718-51-0	QCBLK150267-1	08/25/97	09/23/97	85	%REC			1
Phenol-d5	4165-62-2	QCBLK150267-1	08/25/97	09/23/97	94	%REC			1
2-Fluorophenol	367-12-4	QCBLK150267-1	08/25/97	09/23/97	85	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK150267-1	08/25/97	09/23/97	47	%REC			1

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Project: 550.232

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

Sample Date : 08/14/97
Receipt Date : 08/19/97
Report Date : 09/26/97

Client ID: BOL706

Quanterra ID : 15654-003

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Chrysene	218-01-9	QCBLK150267-1	08/25/97	09/23/97	350	UG/KG	U	350	1
Benzo(a)Pyrene	50-32-8	QCBLK150267-1	08/25/97	09/23/97	350	UG/KG	U	350	1
Unknown-1	TIC-32	QCBLK150267-1	08/25/97	09/23/97	90	UG/KG	BJ		1
Unknown-2	TIC-33	QCBLK150267-1	08/25/97	09/23/97	320	UG/KG	BJ		1
Unknown-3	TIC-34	QCBLK150267-1	08/25/97	09/23/97	300	UG/KG	BJ		1
Unknown-4	TIC-35	QCBLK150267-1	08/25/97	09/23/97	170	UG/KG	BJ		1
Unknown-5	TIC-36	QCBLK150267-1	08/25/97	09/23/97	590	UG/KG	J		1
Unknown-6	TIC-37	QCBLK150267-1	08/25/97	09/23/97	340	UG/KG	J		1
Unknown-7	TIC-7	QCBLK150267-1	08/25/97	09/23/97	140	UG/KG	J		1
Nitrobenzene-d5	4165-60-0	QCBLK150267-1	08/25/97	09/23/97	83	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK150267-1	08/25/97	09/23/97	82	%REC			1
Terphenyl-d14	1718-51-0	QCBLK150267-1	08/25/97	09/23/97	88	%REC			1
Phenol-d5	4165-62-2	QCBLK150267-1	08/25/97	09/23/97	102	%REC			1
2-Fluorophenol	367-12-4	QCBLK150267-1	08/25/97	09/23/97	93	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK150267-1	08/25/97	09/23/97	52	%REC			1

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Project: 550.232

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

Sample Date : 08/14/97
Receipt Date : 08/19/97
Report Date : 09/26/97

Client ID: BOL707

Quanterra ID : 15654-004

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Chrysene	218-01-9	QCBLK150267-1	08/25/97	09/23/97	350	UG/KG	U	350	1
Benzo(a)Pyrene	50-32-8	QCBLK150267-1	08/25/97	09/23/97	350	UG/KG	U	350	1
Unknown-1	TIC-32	QCBLK150267-1	08/25/97	09/23/97	240	UG/KG	BJ		1
Unknown-2	TIC-33	QCBLK150267-1	08/25/97	09/23/97	400	UG/KG	BJ		1
Unknown-3	TIC-34	QCBLK150267-1	08/25/97	09/23/97	110	UG/KG	BJ		1
Unknown-4	TIC-35	QCBLK150267-1	08/25/97	09/23/97	140	UG/KG	J		1
Unknown-5	TIC-36	QCBLK150267-1	08/25/97	09/23/97	140	UG/KG	J		1
Unknown-6	TIC-37	QCBLK150267-1	08/25/97	09/23/97	130	UG/KG	J		1
Unknown-7	TIC-7	QCBLK150267-1	08/25/97	09/23/97	280	UG/KG	J		1
Unknown-8	TIC-8	QCBLK150267-1	08/25/97	09/23/97	75	UG/KG	J		1
Nitrobenzene-d5	4165-60-0	QCBLK150267-1	08/25/97	09/23/97	71	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK150267-1	08/25/97	09/23/97	71	%REC			1
Terphenyl-d14	1718-51-0	QCBLK150267-1	08/25/97	09/23/97	79	%REC			1
Phenol-d5	4165-62-2	QCBLK150267-1	08/25/97	09/23/97	88	%REC			1
2-Fluorophenol	367-12-4	QCBLK150267-1	08/25/97	09/23/97	82	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK150267-1	08/25/97	09/23/97	50	%REC			1

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Project: 550.232

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

Sample Date : 08/14/97
Receipt Date : 08/19/97
Report Date : 09/26/97

Client ID: BOL708

Quanterra ID : 15654-005

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Chrysene	218-01-9	QCBLK150267-1	08/25/97	09/23/97	350	UG/KG	U	350	1
Benzo(a)Pyrene	50-32-8	QCBLK150267-1	08/25/97	09/23/97	350	UG/KG	U	350	1
Unknown-1	TIC-32	QCBLK150267-1	08/25/97	09/23/97	130	UG/KG	BJ		1
Unknown-2	TIC-33	QCBLK150267-1	08/25/97	09/23/97	100	UG/KG	BJ		1
Unknown-3	TIC-34	QCBLK150267-1	08/25/97	09/23/97	360	UG/KG	BJ		1
Unknown-4	TIC-35	QCBLK150267-1	08/25/97	09/23/97	320	UG/KG	BJ		1
Unknown-5	TIC-36	QCBLK150267-1	08/25/97	09/23/97	240	UG/KG	BJ		1
Unknown-6	TIC-37	QCBLK150267-1	08/25/97	09/23/97	140	UG/KG	J		1
Unknown-7	TIC-7	QCBLK150267-1	08/25/97	09/23/97	390	UG/KG	J		1
Nitrobenzene-d5	4165-60-0	QCBLK150267-1	08/25/97	09/23/97	87	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK150267-1	08/25/97	09/23/97	90	%REC			1
Terphenyl-d14	1718-51-0	QCBLK150267-1	08/25/97	09/23/97	90	%REC			1
Phenol-d5	4165-62-2	QCBLK150267-1	08/25/97	09/23/97	103	%REC			1
2-Fluorophenol	367-12-4	QCBLK150267-1	08/25/97	09/23/97	87	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK150267-1	08/25/97	09/23/97	51	%REC			1

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Project: 550.232

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

Sample Date : 08/14/97
Receipt Date : 08/19/97
Report Date : 09/26/97

Client ID: BOL709

Quanterra ID : 15654-006

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Chrysene	218-01-9	QCBLK150267-1	08/25/97	09/23/97	340	UG/KG	U	340	1
Benzo(a)Pyrene	50-32-8	QCBLK150267-1	08/25/97	09/23/97	340	UG/KG	U	340	1
Unknown-1	TIC-32	QCBLK150267-1	08/25/97	09/23/97	120	UG/KG	BJ		1
Unknown-2	TIC-33	QCBLK150267-1	08/25/97	09/23/97	390	UG/KG	BJ		1
Hexadecanoic acid	57-10-3	QCBLK150267-1	08/25/97	09/23/97	190	UG/KG	JN		1
Unknown-3	TIC-34	QCBLK150267-1	08/25/97	09/23/97	140	UG/KG	BJ		1
bis(2-Ethylhexyl)Phthalate	117-81-7	QCBLK150267-1	08/25/97	09/23/97	67	UG/KG	BJN		1
Nitrobenzene-d5	4165-60-0	QCBLK150267-1	08/25/97	09/23/97	83	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK150267-1	08/25/97	09/23/97	83	%REC			1
Terphenyl-d14	1718-51-0	QCBLK150267-1	08/25/97	09/23/97	88	%REC			1
Phenol-d5	4165-62-2	QCBLK150267-1	08/25/97	09/23/97	95	%REC			1
2-Fluorophenol	367-12-4	QCBLK150267-1	08/25/97	09/23/97	81	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK150267-1	08/25/97	09/23/97	35	%REC			1

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0L704

Lab Name: QUANTERRA MO Contract: 550-232

Lab Code: ITMO Case No.: S65401 SAS No.: SDG No.: W01860 -

Matrix: (soil/water) SOIL Lab Sample ID: 15654-001

Sample wt/vol: 30.00 (g/mL) G Lab File ID: H4075

Level: (low/med) LOW Date Received: 08/19/97

% Moisture: 4 decanted: (Y/N) N Date Extracted: 08/25/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/23/97

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	340	U
50-32-8	Benzo(a)Pyrene	340	U

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0L704

Lab Name: QUANTERRA MO Contract: 550-232

Lab Code: ITMO Case No.: S65401 SAS No.: SDG No.: W01860 -

Matrix: (soil/water) SOIL Lab Sample ID: 15654-001

Sample wt/vol: 30.00 (g/mL) G Lab File ID: H4075

Level: (low/med) LOW Date Received: 08/19/97

% Moisture: 4 decanted: (Y/N) N Date Extracted: 08/25/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/23/97

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	UNKNOWN	18.08	250	BJ
2. 0	UNKNOWN	19.47	410	BJ
3. 0	UNKNOWN	20.92	87	BJ
4. 85687	Butylbenzylphthalate	23.16	76	JN
5. 0	UNKNOWN	24.58	550	BJ
6. 117817	bis(2-Ethylhexyl)Phthalate	24.70	96	BJN
7.	UNKNOWN	26.67	120	J
8. 0	UNKNOWN	29.21	160	BJ

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0L705

Lab Name: QUANTERRA MO Contract: 550-232

Lab Code: ITMO Case No.: S65401 SAS No.: SDG No.: W01860 -

Matrix: (soil/water) SOIL Lab Sample ID: 15654-002

Sample wt/vol: 30.20 (g/mL) G Lab File ID: H4078

Level: (low/med) LOW Date Received: 08/19/97

% Moisture: 6 decanted: (Y/N) N Date Extracted: 08/25/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/23/97

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0L705

Lab Name: QUANTERRA MO Contract: 550-232

Lab Code: ITMO Case No.: S65401 SAS No.: SDG No.: W01860

Matrix: (soil/water) SOIL Lab Sample ID: 15654-002

Sample wt/vol: 30.20 (g/mL) G Lab File ID: H4078

Level: (low/med) LOW Date Received: 08/19/97

% Moisture: 6 decanted: (Y/N) N Date Extracted: 08/25/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/23/97

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

Number TICs found: 7

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 0	UNKNOWN	5.68	93	BJ
2. 0	UNKNOWN	8.44	72	BJ
3. 0	UNKNOWN	18.08	340	BJ
4. 0	UNKNOWN	19.48	430	BJ
5. 0	UNKNOWN	20.93	210	BJ
6.	UNKNOWN	24.66	300	J
7.	UNKNOWN	29.31	140	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0L706

Lab Name: QUANTERRA MO Contract: 550-232

Lab Code: ITMO Case No.: S65401 SAS No.: SDG No.: W01860

Matrix: (soil/water) SOIL Lab Sample ID: 15654-003

Sample wt/vol: 30.20 (g/mL) G Lab File ID: H4079

Level: (low/med) LOW Date Received: 08/19/97

% Moisture: 6 decanted: (Y/N) N Date Extracted: 08/25/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/23/97

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0L706

Lab Name: QUANTERRA MO Contract: 550-232

Lab Code: ITMO Case No.: S65401 SAS No.: SDG No.: W01860 -

Matrix: (soil/water) SOIL Lab Sample ID: 15654-003

Sample wt/vol: 30.20 (g/mL) G Lab File ID: H4079

Level: (low/med) LOW Date Received: 08/19/97

% Moisture: 6 decanted: (Y/N) N Date Extracted: 08/25/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/23/97

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

Number TICs found: 7

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 0	UNKNOWN	5.67	90	BJ
2. 0	UNKNOWN	18.08	320	BJ
3. 0	UNKNOWN	19.46	300	BJ
4. 0	UNKNOWN	20.92	170	BJ
5.	UNKNOWN	24.69	590	J
6.	UNKNOWN	26.68	340	J
7.	UNKNOWN	29.42	140	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0L707

Lab Name: QUANTERRA MO Contract: 550-232

Lab Code: ITMO Case No.: S65401 SAS No.: SDG No.: W01860 -

Matrix: (soil/water) SOIL Lab Sample ID: 15654-004

Sample wt/vol: 30.10 (g/mL) G Lab File ID: H4080

Level: (low/med) LOW Date Received: 08/19/97

% Moisture: 7 decanted: (Y/N) N Date Extracted: 08/25/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/23/97

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

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0L707

Lab Name: QUANTERRA MO Contract: 550-232

Lab Code: ITMO Case No.: S65401 SAS No.: SDG No.: W01860 -

Matrix: (soil/water) SOIL Lab Sample ID: 15654-004

Sample wt/vol: 30.10 (g/mL) G Lab File ID: H4080

Level: (low/med) LOW Date Received: 08/19/97

% Moisture: 7 decanted: (Y/N) N Date Extracted: 08/25/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/23/97

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	UNKNOWN	18.08	240	BJ
2. 0	UNKNOWN	19.47	400	BJ
3. 0	UNKNOWN	20.92	110	BJ
4.	UNKNOWN	24.88	140	J
5.	UNKNOWN	24.96	140	J
6.	UNKNOWN	25.91	130	J
7.	UNKNOWN	26.90	280	J
8.	UNKNOWN	28.07	75	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0L708

Lab Name: QUANTERRA MO Contract: 550-232

Lab Code: ITMO Case No.: S65401 SAS No.: SDG No.: W01860

Matrix: (soil/water) SOIL Lab Sample ID: 15654-005

Sample wt/vol: 30.00 (g/mL) G Lab File ID: H4081

Level: (low/med) LOW Date Received: 08/19/97

% Moisture: 5 decanted: (Y/N) N Date Extracted: 08/25/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/23/97

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0L708

Lab Name: QUANTERRA MO Contract: 550-232

Lab Code: ITMO Case No.: S65401 SAS No.: SDG No.: W01860 -

Matrix: (soil/water) SOIL Lab Sample ID: 15654-005

Sample wt/vol: 30.00 (g/mL) G Lab File ID: H4081

Level: (low/med) LOW Date Received: 08/19/97

% Moisture: 5 decanted: (Y/N) N Date Extracted: 08/25/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/23/97

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

Number TICs found: 7

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.67	130	BJ
2.	UNKNOWN	8.43	100	BJ
3.	UNKNOWN	18.08	360	BJ
4.	UNKNOWN	19.46	320	BJ
5.	UNKNOWN	20.92	240	BJ
6.	UNKNOWN	24.82	140	J
7.	UNKNOWN	24.84	390	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0L709

Lab Name: QUANTERRA MO Contract: 550-232

Lab Code: ITMO Case No.: S65401 SAS No.: SDG No.: W01860

Matrix: (soil/water) SOIL Lab Sample ID: 15654-006

Sample wt/vol: 30.00 (g/mL) G Lab File ID: H4082

Level: (low/med) LOW Date Received: 08/19/97

% Moisture: 2 decanted: (Y/N) N Date Extracted: 08/25/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/23/97

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	340	U
50-32-8	Benzo(a)Pyrene	340	U

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0L709

Lab Name: QUANTERRA MO Contract: 550-232

Lab Code: ITMO Case No.: S65401 SAS No.: SDG No.: W01860 -

Matrix: (soil/water) SOIL Lab Sample ID: 15654-006

Sample wt/vol: 30.00 (g/mL) G Lab File ID: H4082

Level: (low/med) LOW Date Received: 08/19/97

% Moisture: 2 decanted: (Y/N) N Date Extracted: 08/25/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/23/97

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 0	UNKNOWN	8.43	120	BJ
2. 0	UNKNOWN	18.08	390	BJ
3. 57103	Hexadecanoic acid	19.46	190	JN
4. 0	UNKNOWN	20.92	140	BJ
5. 117817	bis(2-Ethylhexyl)Phthalate	24.70	67	BJN

W01860

CERTIFICATE OF ANALYSIS

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

September 29, 1997

Attention: Joan Kessner

SEP 1997
RECEIVED
Data
Log In

SAF Number	:	B97-136
Date SDG Closed	:	August 27, 1997
Number of Samples	:	Six (6)
Sample Type	:	Soil
SDG Number	:	W01860
Data Deliverable	:	Summary

I. Introduction

On August 19, 1997, six soil samples were received by the Quanterra Environmental Services Richland Laboratory (QTESRL) for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Bechtel Hanford (BHI) specific IDs:

QTESRL ID#	BHI ID#	MATRIX	DATE OF INITIATION
70830001	B0L704	SOIL	8/19/97
70830002	B0L705	SOIL	8/19/97
70830003	B0L706	SOIL	8/19/97
70830004	B0L707	SOIL	8/19/97
70830005	B0L708	SOIL	8/19/97
70830006	B0L709	SOIL	8/19/97

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-5030
Gamma Spectroscopy
Gamma Scan by method RICH-RC-5017

III. Quality Control

The analytical results for each analysis performed under SDG W01860 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

Alpha Spectroscopy

Uranium-234, -235, -238 by method RICH-RC-5030
The LCS, batch blank, sample and sample duplicate (B0L705) results are within contractual requirements.

Gamma Spectroscopy

Gamma Scan by method RICH-RC-5017
The LCS, batch blank, sample and sample duplicate (B0L709) 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:	W01860 / 3417
LAB SAMPLE ID:	70830001	MATRIX:	SOIL
CLIENT ID:	B0L704	DATE RECEIVED:	8/19/1997 11:50:00 AM

ANALYTE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
U-234	5.74E-01	1.3E-01	1.6E-01	2.89E-02	pCi/g	59.40%	RICHRC5030
U-235	3.59E-02	3.2E-02	3.3E-02	1.94E-02	pCi/g	59.40%	RICHRC5030
U-238	4.51E-01	1.1E-01	1.4E-01	3.28E-02	pCi/g	59.40%	RICHRC5030
CO-60	1.83E-03	1.3E-02	1.3E-02	2.26E-02	pCi/g	N/A	RICHRC5017
CS-137DA	1.79E-03	1.2E-02	1.2E-02	2.04E-02	pCi/g	N/A	RICHRC5017
EU-152	5.52E-03	3.4E-02	3.4E-02	5.51E-02	pCi/g	N/A	RICHRC5017
EU-154	-1.41E-02	3.9E-02	3.9E-02	6.45E-02	pCi/g	N/A	RICHRC5017
EU-155	4.99E-02	3.1E-02	3.2E-02	5.10E-02	pCi/g	N/A	RICHRC5017
K-40	1.22E+01	5.4E-01	1.3E+00	N/A	pCi/g	N/A	RICHRC5017
RA-224DA	6.27E-01	3.7E-02	7.3E-02	N/A	pCi/g	N/A	RICHRC5017
RA-226DA	4.69E-01	5.8E-02	7.4E-02	N/A	pCi/g	N/A	RICHRC5017
RA-228DA	7.99E-01	9.5E-02	1.2E-01	N/A	pCi/g	N/A	RICHRC5017
U-238	4.98E-01	3.1E-01	3.1E-01	N/A	pCi/g	N/A	RICHRC5017

Number of Results: 13

Result = IDL When Not Detected

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W01860 / 3417
LAB SAMPLE ID:	70830002	MATRIX:	SOIL
CLIENT ID:	B0L705	DATE RECEIVED:	8/19/1997 11:50:00 AM

ANALYTE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
U-234	8.37E-01	1.5E-01	2.1E-01	2.67E-02	pCi/g	61.00%	RICHRC5030
U-235	3.33E-02	3.0E-02	3.0E-02	1.80E-02	pCi/g	61.00%	RICHRC5030
U-238	7.70E-01	1.4E-01	2.0E-01	3.04E-02	pCi/g	61.00%	RICHRC5030
CO-60	-2.94E-03	9.0E-03	9.0E-03	1.48E-02	pCi/g	N/A	RICHRC5017
CS-137DA	-6.30E-03	8.3E-03	8.3E-03	1.29E-02	pCi/g	N/A	RICHRC5017
EU-152	-1.04E-02	2.0E-02	2.0E-02	3.25E-02	pCi/g	N/A	RICHRC5017
EU-154	5.51E-03	2.6E-02	2.6E-02	4.35E-02	pCi/g	N/A	RICHRC5017
EU-155	2.24E-02	2.0E-02	2.0E-02	3.28E-02	pCi/g	N/A	RICHRC5017
K-40	7.06E+00	3.6E-01	7.9E-01	N/A	pCi/g	N/A	RICHRC5017
RA-224DA	3.80E-01	2.4E-02	4.5E-02	N/A	pCi/g	N/A	RICHRC5017
RA-226DA	2.86E-01	3.5E-02	4.5E-02	N/A	pCi/g	N/A	RICHRC5017
RA-228DA	3.80E-01	5.6E-02	6.7E-02	N/A	pCi/g	N/A	RICHRC5017
U-238	3.51E-01	2.6E-01	2.6E-01	N/A	pCi/g	N/A	RICHRC5017

Number of Results: 13

Result = IDL When Not Detected

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W01860 / 3417
LAB SAMPLE ID:	70830003	MATRIX:	SOIL
CLIENT ID:	B0L706	DATE RECEIVED:	8/19/1997 11:50:00 AM

ANALYTE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
U-234	6.11E-01	1.4E-01	1.8E-01	5.01E-02	pCi/g	51.10%	RICHRC5030
U-235	6.16E-03	1.6E-02	1.6E-02	4.04E-02	pCi/g	51.10%	RICHRC5030
U-238	7.28E-01	1.5E-01	2.1E-01	3.70E-02	pCi/g	51.10%	RICHRC5030
CO-60	1.01E-02	1.2E-02	1.2E-02	2.16E-02	pCi/g	N/A	RICHRC5017
CS-137DA	8.20E-04	1.2E-02	1.2E-02	1.91E-02	pCi/g	N/A	RICHRC5017
EU-152	-4.06E-03	2.8E-02	2.8E-02	4.53E-02	pCi/g	N/A	RICHRC5017
EU-154	3.97E-02	3.5E-02	3.6E-02	6.32E-02	pCi/g	N/A	RICHRC5017
EU-155	4.61E-02	3.0E-02	3.1E-02	5.05E-02	pCi/g	N/A	RICHRC5017
K-40	1.15E+01	4.6E-01	1.2E+00	N/A	pCi/g	N/A	RICHRC5017
RA-224DA	6.10E-01	3.5E-02	7.0E-02	N/A	pCi/g	N/A	RICHRC5017
RA-226DA	4.43E-01	4.4E-02	6.2E-02	N/A	pCi/g	N/A	RICHRC5017
RA-228DA	6.52E-01	7.5E-02	9.9E-02	N/A	pCi/g	N/A	RICHRC5017

Number of Results: 12

Result = IDL When Not Detected

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W01860 / 3417
LAB SAMPLE ID:	70830004	MATRIX:	SOIL
CLIENT ID:	B0L707	DATE RECEIVED:	8/19/1997 11:50:00 AM

ANALYTE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
U-234	7.21E-01	1.4E-01	1.9E-01	3.14E-02	pCi/g	61.40%	RICHRC5030
U-235	3.44E-02	3.1E-02	3.1E-02	1.86E-02	pCi/g	61.40%	RICHRC5030
U-238	7.76E-01	1.5E-01	2.0E-01	2.76E-02	pCi/g	61.40%	RICHRC5030
CO-60	2.59E-02	1.1E-02	1.1E-02	2.17E-02	pCi/g	N/A	RICHRC5017
CS-137DA	1.21E-03	1.1E-02	1.1E-02	1.83E-02	pCi/g	N/A	RICHRC5017
EU-152	-1.63E-02	2.8E-02	2.9E-02	4.52E-02	pCi/g	N/A	RICHRC5017
EU-154	-3.91E-03	3.9E-02	3.9E-02	6.54E-02	pCi/g	N/A	RICHRC5017
EU-155	4.03E-02	3.3E-02	3.4E-02	5.39E-02	pCi/g	N/A	RICHRC5017
K-40	1.16E+01	5.1E-01	1.3E+00	N/A	pCi/g	N/A	RICHRC5017
RA-224DA	6.14E-01	3.5E-02	7.1E-02	N/A	pCi/g	N/A	RICHRC5017
RA-226DA	4.71E-01	5.3E-02	7.1E-02	N/A	pCi/g	N/A	RICHRC5017
RA-228DA	6.81E-01	9.2E-02	1.1E-01	N/A	pCi/g	N/A	RICHRC5017
U-238	3.15E-01	6.6E-01	6.6E-01	N/A	pCi/g	N/A	RICHRC5017

Number of Results: 13

Result = IDL When Not Detected

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W01860 / 3417
LAB SAMPLE ID:	70830005	MATRIX:	SOIL
CLIENT ID:	B0L708	DATE RECEIVED:	8/19/1997 11:50:00 AM

ANALYTE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
U-234	6.78E-01	1.5E-01	1.9E-01	3.99E-02	pCi/g	55.60%	RICHRC5030
U-235	1.60E-02	2.3E-02	2.3E-02	2.16E-02	pCi/g	55.60%	RICHRC5030
U-238	8.23E-01	1.6E-01	2.2E-01	3.22E-02	pCi/g	55.60%	RICHRC5030
CO-60	-1.74E-02	2.3E-02	2.4E-02	3.76E-02	pCi/g	N/A	RICHRC5017
CS-137DA	-8.03E-04	2.0E-02	2.0E-02	3.28E-02	pCi/g	N/A	RICHRC5017
EU-152	-1.38E-02	4.6E-02	4.6E-02	7.55E-02	pCi/g	N/A	RICHRC5017
EU-154	-5.55E-02	6.7E-02	6.7E-02	1.06E-01	pCi/g	N/A	RICHRC5017
EU-155	1.02E-02	4.0E-02	4.0E-02	6.25E-02	pCi/g	N/A	RICHRC5017
K-40	1.20E+01	8.6E-01	1.5E+00	N/A	pCi/g	N/A	RICHRC5017
RA-224DA	6.58E-01	5.4E-02	8.5E-02	N/A	pCi/g	N/A	RICHRC5017
RA-226DA	5.40E-01	7.3E-02	9.1E-02	N/A	pCi/g	N/A	RICHRC5017
RA-228DA	7.49E-01	1.5E-01	1.7E-01	N/A	pCi/g	N/A	RICHRC5017

Number of Results: 12

Result = IDL When Not Detected

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG: /RPT GRP:**	W01860 / 3417
LAB SAMPLE ID:	70830006	**MATRIX:**	SOIL
CLIENT ID:	B0L709	**DATE RECEIVED:**	8/19/1997 11:50:00 AM

ANALYTE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
U-234	7.46E-01	1.6E-01	2.2E-01	2.32E-02	pCi/g	47.00%	RICHRC5030
U-235	4.29E-02	3.8E-02	3.9E-02	2.32E-02	pCi/g	47.00%	RICHRC5030
U-238	7.71E-01	1.6E-01	2.2E-01	3.45E-02	pCi/g	47.00%	RICHRC5030
CO-60	-3.73E-03	1.2E-02	1.2E-02	1.97E-02	pCi/g	N/A	RICHRC5017
CS-137DA	-9.88E-03	1.2E-02	1.2E-02	1.84E-02	pCi/g	N/A	RICHRC5017
EU-152	-3.21E-02	3.1E-02	3.1E-02	4.85E-02	pCi/g	N/A	RICHRC5017
EU-154	-1.13E-02	4.0E-02	4.0E-02	6.42E-02	pCi/g	N/A	RICHRC5017
EU-155	1.77E-02	2.8E-02	2.8E-02	4.45E-02	pCi/g	N/A	RICHRC5017
K-40	1.50E+01	5.4E-01	1.6E+00	N/A	pCi/g	N/A	RICHRC5017
RA-224DA	6.00E-01	3.5E-02	6.9E-02	N/A	pCi/g	N/A	RICHRC5017
RA-226DA	4.33E-01	5.3E-02	6.8E-02	N/A	pCi/g	N/A	RICHRC5017
RA-228DA	7.12E-01	8.3E-02	1.1E-01	N/A	pCi/g	N/A	RICHRC5017
U-238	4.92E-01	2.9E-01	3.0E-01	N/A	pCi/g	N/A	RICHRC5017

Number of Results: 13

Result = IDL When Not Detected

Quanterra Data Review Checklist
RADIOCHEMISTRY

Work Order number (s): 708300

Client ID: BHI

Due Date: 9-19-97

Lab Sample Number or SDG: W91860

Method Test Parameter: U ISO

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? JM 9-19-97	✓			✓
5. Were all calculations checked at a minimum frequency?	✓			✓
6. Units checked?	✓			✓

Comments on any "No" response: _____

First Level Review: [signature] Date: 9-19-97

Second Level Review: [signature] Date: 9/29/97

Form #: LS-038.2/96, Rev 4

Quanterra Data Review Checklist
RADIOCHEMISTRY

Work Order number (s):	708300
Client ID:	BITI
Due Date:	10-11-97
Lab Sample Number or SDG:	W01860
Method Test Parameters:	+
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 Minumum 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?	SK			JPS
5. Were all calculations checked at a minimum frequency?	—			✓
6. Units checked?	—			✓

Comments on any "No" response: _____

First Level Review: Joel Kengeman Date: 9-19-97

Second Level Review: Lorrie Date: 9/29/97

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

Report BHI.5 for blank, dup + Samples. In addition samples + dup ~~lead~~ have detects listed on last page of summary report, 9-19-97

000018

CHAIN OF

CUSTODY FORMS

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B97-136-02	Page 1 of 1

Collector Doug Bowers/Bob Fahlberg / RJ Nielson	Company Contact Frank Gustafson	Telephone No. 373-5904	Project Coordinator Koerner, CC	Data Turnaround 45 Days
Project Designation 300-FF-1 Ashpits/Clean Soil Stockpile	Sampling Location 300 FF-1		SAF No. B97-136	
Ice Chest No. ERC-96-040	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
Possibe radioactive

Special Handling and/or Storage
cool 4C

Preservation	None	None	None	Cool 4C	Cool 4C	None					
Type of Container	P	P	sG	sG	sG	sG					
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)	PCBs - 8080	Semi-VOA - 8270A (TCL) (Benzo(a)pyrene, Chrysene)	Gamma Spectroscopy (Cobalt-60)					
708299 SDG W01860		708300				708300					
Sample No.	Matrix *	Sample Date	Sample Time								
BOL704 01	S	8-13-97	1422	X	X	X	X	X	X	BOL704	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Renee Nielsen 8/14/97 1150	Date/Time	Received By: Heidelberg 8-19-97 1150	Date/Time
Relinquished By	Date/Time	Received By: 2100	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By: 000020	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

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	Disposal Method		

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B97-136-02

Collector: Doug Bowers/Bob Fahlberg / RJ Nielson	Company Contact: Frank Gustafson	Telephone No.: 373-3904	Project Coordinator: Koerner, CC
			Data Turnaround: 45 Days
Project Designation: 300-FF-1 Ashpits/Clean Soil Stockpile	Sampling Location: 300 FF-1		SAF No.: B97-136
Ice Chest No.: ERC-96-038	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: Possibe radioactive

Special Handling and/or Storage: cool 4C

Preservation	None	None	None	Cool 4C	Cool 4C	None					
Type of Container	P	P	sG	sG	sG	sG					
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)	PCBs - 8080	Semi-VOA - 8270A (TCL) (Benzo(a)pyrene, Chrysene)	Gamma Spectroscopy (Cobalt-60)					
708299		708300				708300					

Sample No.	Matrix *	Sample Date	Sample Time									
BOL705 02	S	8-14-97	0852	X	X	X	X	X	X		BOL705	
BOL706 03	S	8-14-97	0940	X	X	X	X	X	X		BOL706	
BOL707 04	S	8-14-97	1049	X	X	X	X	X	X		BOL707	
BOL708 05	S	8-14-97	1130	X	X	X	X	X	X		BOL708	
BOL709 06	S	8-14-97	1337	X	X	X	X	X	X		BOL709	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
RJ Nielsen	8/19/97 1150	Heidelberg	8-19-97 1150
		4100 RJN	
000021			

SPECIAL INSTRUCTIONS

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:

708299 01
300 01

GAMMA-RAY ENERGY ANALYSIS REPORT

Thermo Hanford Inc.
Radiological Counting Facility THI - RCF

B0L704

Project	300-FF-1 Ashpits/Soil	
Customer ID	B0L724 Soil	
RCF ID	RCF1577	
	Sample time, date	1422 8/13/97
	Analysis date	8/18/97

Isotope		Activity pCi/gm	2 s err	Ci/gm	
K40	<	1.5e+01		1.5e-11	
Co60	<	6.4e-01		6.4e-13	
I129	<	6.8e+00		6.8e-12	1515g.
Cs137	<	3.5e-01		3.5e-13	
Eu152	<	1.8e+00		1.8e-12	
Eu154	<	8.0e-01		8.0e-13	
Eu155	<	2.7e+00		2.7e-12	
Th32dau	<	3.8e+00		3.8e-12	
U235	<	3.5e+00		3.5e-12	CAT I
U238	<	6.7e+01		6.7e-11	
U238dau	<	1.5e+00		1.5e-12	
Np237	<	8.3e-01		8.3e-13	
Am241	<	1.8e+00		1.8e-12	
Tot Act Gam (pCi/gm)		0.0e+00	Ci/gm	0.0e+00	
Y/Sr-90	<	N/R			
Gross Alpha	<	1.4e+00		1.4e-12	2121 < 10K pCi
Gross Beta		1.2e+01	+/- 2.9e+00	1.2e-11	Reported as 137-Cs Betas. 18180 < 100K pCi
AEA total	<	N/R			
			Total Activity (pCi/gm)	1.2e+01	< 2000 pCi/g
			(Ci/gm)	1.2e-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 balanced for the gross alpha analysis.

N/R means no result or analysis not requested.

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

Radiological analyst — Date 8-18-97

Albert I. Davis, Radiological Manager — Date 08-18-97

Project review — Date

70829902
↓ 30002

GAMMA-RAY ENERGY ANALYSIS REPORT

Thermo Hanford Inc.
Radiological Counting Facility THI - RCF

BOL705

Project	300-FF-1 Ashpits/Soil	
Customer ID	B0L725 Soil	
RCF ID	RCF1571	
	Sample time, date	852 8/14/97
	Analysis date	8/18/97

1245g

Isotope		Activity pCi/gm		2 s err	Ci/gm
K40		1.6e+01	+/-	7.5e+00	1.6e-11
Co60	<	8.9e-01			8.9e-13
I129	<	7.5e+01			7.5e-11
Cs137	<	6.1e-01			6.1e-13
Eu152	<	4.3e+00			4.3e-12
Eu154	<	2.6e+00			2.6e-12
Eu155	<	2.0e+00			2.0e-12
Th32dau	<	9.0e-01			9.0e-13
U235	<	3.4e+00			3.4e-12
U238	<	7.6e+01			7.6e-11
U238dau	<	1.2e+00			1.2e-12
Np237	<	1.4e+00			1.4e-12
Am241	<	3.2e+00			3.2e-12
Tot Act Gam (pCi/gm)		1.6e+01		Ci/gm	1.6e-11
Y/Sr-90	<	N/R			
Gross Alpha	<	1.3e+00			1.3e-12
Gross Beta		1.3e+01	+/-	2.7e+00	1.3e-11
AEA total	<	N/R			

CAT I

16833 < 10K pCi
16835 < 100K pCi

Reported as 137-Cs Betas.

Total Activity (pCi/gm) 1.6e+01 < .2K pCi/g
(Ci/gm) 1.6e-11

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

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 analyses.

N/R means no result or analysis not requested.

SE Hall 8/18/97 — Radiological analyst
8-18-97 — Date

Albert I. Davis — Albert I. Davis, Radiological Manager
08-18-97 — Date

Project review — Date

70829903
↓ 30003

GAMMA-RAY ENERGY ANALYSIS REPORT

Thermo Hanford Inc.
Radiological Counting Facility THI - RCF

BOL 726

Project	300-FF-1 Ashpits/Soil		
Customer ID	BOL726 Soil		
RCF ID	RCF1572		
	Sample time, date	940	8/14/97
	Analysis date		8/18/97

Isotope		Activity pCi/gm		2 s err	Ci/gm
K40		2.1e+01	+/-	6.9e+00	2.1e-11
Co60	<	7.2e-01			7.2e-13
I129	<	7.3e+01			7.3e-11
Cs137	<	5.8e-01			5.8e-13
Eu152	<	4.0e+00			4.0e-12
Eu154	<	2.1e+00			2.1e-12
Eu155	<	1.8e+00			1.8e-12
Th32dau	<	9.9e-01			9.9e-13
U235	<	3.5e+00			3.5e-12
U238	<	5.7e+01			5.7e-11
U238dau	<	9.5e-01			9.5e-13
Np237	<	1.3e+00			1.3e-12
Am241	<	3.1e+00			3.1e-12
Tot Act Gam (pCi/gm)		2.1e+01		Ci/gm	2.1e-11
Y/Sr-90	<	N/R			
Gross Alpha	<	6.2e-01			6.2e-13
Gross Beta		1.4e+01	+/-	2.7e+00	1.4e-11
AEA total	<	N/R			

1450g

CAT I

887 < 10K pCi

Reported as 137-Cs Betas. 20020 < 100K pCi

Total Activity (pCi/gm) 2.1e+01 < 2K pCi/g
(Ci/gm) 2.1e-11

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

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 inappropriate 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.

SEH [signature] 8-18-97
Radiological analyst Date

[signature] 08-18-97
Albert I. Davis Date
Radiological Manager

Project review Date

000024

708 29904
↓ 30004

GAMMA-RAY ENERGY ANALYSIS REPORT

Thermo Hanford Inc.
Radiological Counting Facility THI - RCF

BOL707

Project	300-FF-1 Ashpits/Soil		
Customer ID	BOL727 Soil		
RCF ID	RCF1573		
	Sample time, date	1049	8/14/97
	Analysis date		8/18/97

1420g

Isotope		Activity pCi/gm		2 s err	Ci/gm
K40		1.3e+01	+/-	6.7e+00	1.3e-11
Co60	<	4.6e-01			4.6e-13
I129	<	3.8e+00			3.8e-12
Cs137	<	3.7e-01			3.7e-13
Eu152	<	1.2e+00			1.2e-12
Eu154	<	5.7e-01			5.7e-13
Eu155	<	2.3e+00			2.3e-12
Th32dau	<	2.6e+00			2.6e-12
U235	<	3.3e+00			3.3e-12
U238	<	3.4e+01			3.4e-11
U238dau	<	2.0e+00			2.0e-12
Np237	<	5.0e-01			5.0e-13
Am241	<	1.2e+00			1.2e-12
Tot Act Gam (pCi/gm)		1.3e+01		Ci/gm	1.3e-11
Y/Sr-90	<	N/R			
Gross Alpha	<	8.0e-01			8.0e-13
Gross Beta		1.4e+01	+/-	2.7e+00	1.4e-11
AEA total	<	N/R			

1136 < 10K pCi
14880 < 100K pCi

Reported as 137-Cs Betas.

Total Activity	(pCi/gm)	1.4e+01
	(Ci/gm)	1.4e-11

< 2K pCi/g

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

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.

SEH J. Hoff 8-18-97
Radiological analyst Date

Albert I. Davis 08-18-97
Albert I. Davis Date
Radiological Manager

Project review Date

000025

70829905
30005

GAMMA-RAY ENERGY ANALYSIS REPORT

Thermo Hanford Inc.
Radiological Counting Facility THI - RCF

BOL 708

Project	300-FF-1 Ashpits/Soil	
Customer ID	B0L728 Soil	
RCF ID	RCF1574	
	Sample time, date	1130 8/14/97
	Analysis date	8/18/97

Isotope		Activity pCi/gm		2 s err	Ci/gm
K40		1.8e+01	+/-	7.2e+00	1.8e-11
Co60	<	5.8e-01			5.8e-13
I129	<	4.7e+00			4.7e-12
Cs137	<	3.2e-01			3.2e-13
Eu152	<	1.8e+00			1.8e-12
Eu154	<	1.4e+00			1.4e-12
Eu155	<	3.0e+00			3.0e-12
Th32dau	<	2.1e+00			2.1e-12
U235	<	4.5e+00			4.5e-12
U238	<	9.9e+01			9.9e-11
U238dau	<	1.5e+00			1.5e-12
Np237	<	1.1e+00			1.1e-12
Am241	<	1.5e+00			1.5e-12
Tot Act Gam (pCi/gm)		1.8e+01		Ci/gm	1.8e-11
Y/Sr-90	<	N/R			
Gross Alpha	<	5.6e-01			5.6e-13
Gross Beta		1.2e+01	+/-	3.0e+00	1.2e-11
AEA total	<	N/R			

1440g

CAT. I

806 < 10K pCi

Reported as 137-Cs Betas. 17280 < 100K pCi

Total Activity (pCi/gm) 1.8e+01 < 2K pCi/g
(Ci/gm) 1.8e-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 balanced for the gross alpha analysis.

N/R means no result or analysis not requested.

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

SEH [signature] 8-18-97
Radiological analyst Date

[signature] 08-18-97
Albert I. Davis Date
Radiological Manager

Project review Date

000026

70829906
↓ 300006

GAMMA-RAY ENERGY ANALYSIS REPORT
Thermo Hanford Inc.
Radiological Counting Facility THI - RCF

B0L709

Project	300-FF-1 Ashpits/Soil		
Customer ID	B0L729 Soil		
RCF ID	RCF1575		
	Sample time, date	1337	8/14/97
	Analysis date		8/18/97

Isotope		Activity pCi/gm		2 s err	Ci/gm
K40		2.2e+01	+/-	8.1e+00	2.2e-11
Co60	<	6.9e-01			6.9e-13
I129	<	8.3e+01			8.3e-11
Cs137	<	6.2e-01			6.2e-13
Eu152	<	3.6e+00			3.6e-12
Eu154	<	2.6e+00			2.6e-12
Eu155	<	2.0e+00			2.0e-12
Th32dau	<	1.1e+00			1.1e-12
U235	<	6.5e-01			6.5e-13
U238	<	7.3e+01			7.3e-11
U238dau	<	1.2e+00			1.2e-12
Np237	<	1.3e+00			1.3e-12
Am241	<	3.1e+00			3.1e-12
Tot Act Gam (pCi/gm)		2.2e+01		Ci/gm	2.2e-11
Y/Sr-90	<	N/R			
Gross Alpha	<	1.0e+00			1.0e-12
Gross Beta		1.7e+01	+/-	2.9e+00	1.7e-11
AEA total	<	N/R			

1155g

CAT I

1155 < 10K pCi

Reported as 137-Cs Betas. 19635 < 100K pCi

Total Activity (pCi/gm) 2.2e+01
(Ci/gm) 2.2e-11 < .2K pCi/g

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

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 analyses

N/R means no result or analysis not requested.

SEH 30 Aug 1910 8-18-97
Radiological analyst Date

Albert I. Davis 08-18-97
Albert I. Davis Date
Radiological Manager

Project review Date

000027

Site
W01860
708299
708300

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received 8-19 1150 Client Name BHI

Project/Client # B97-136 B97-133 Batch or Case # _____

Cooler ID (if noted on outside of cooler) 96-038

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 [✓] na
6. Each sample is in a plastic bag? Yes [✓] No [ ]
7. Number of sample containers in cooler: 36
8. Samples have: ✓ tape ___ hazard labels ✓ custody seals ___ appropriate sample labels
9. Samples are: ___ in good condition ___ leaking ___ broken ___ have air bubbles ___ other
10. Coolant Present? Yes [✓] No [ ] Sample Temperature 30C
11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #(s) B97-136-02 B97-133-02
    Request for Analysis #(s) _____
    Airbill # _____ Carrier _____
12. Have any anomalies been identified above? Yes [ ] No [ ]
13. Memos have been initiated for all anomalies identified above: Yes [ ]

Printed Name/Signature Heidelberg Date/Time 8-19-97 1150

SDG
W01860
708299
708300

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received 8-19 1150 Client Name BHI

Project/Client # B97-136 B97-133 Batch or Case # _____

Cooler ID (if noted on outside of cooler) 96-040

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: 36
8. Samples have: ✓ tape ___ hazard labels ✓ custody seals ___ appropriate sample labels
9. Samples are: ✓ in good condition ___ leaking ___ broken ___ have air bubbles ___ other
10. Coolant Present? Yes [✓] No [ ] Sample Temperature 3° C
11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #(s) B97-136-02 B97-133-02
    Request for Analysis #(s) n/a
    Airbill # n/a Carrier Gov veh
12. Have any anomalies been identified above? Yes [ ] No [ ]
13. Memos have been initiated for all anomalies identified above: Yes [ ]

Printed Name/Signature Hidelberg Date/Time 8-19-97 1150

DUE ~~10-1-97~~ 9-17-97
9-19-97

*** UISU ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

20-Aug-1997
Page 1

CUSTOMER: BHI SAF SAMPLE DELIVERY GROUP WD1860

MATRIX : SOIL B97-136 BATCH NUMBER 08-300

	GES ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	T08300 1B T08300 1S				
1)	70830001		BHI	BOL704	
2)	70830002 R08300 02		BHI	BOL705	
3)	70830003		BHI	BOL706	
4)	70830004		BHI	BOL707	
5)	70830005		BHI	BOL708	
6)	70830006		BHI	BOL709	

ACTIONS (Initial & Date)

1) INITIATED SH 8/20/97
SOP(S) # RD3500

2) PREP LAB RECEIVED 8-22-97
SOP(S) # RICHRC 5013-D
REC 9-4-97 RICHRC 5019

3) SAMPLE REMAINDER STORED 9-4-97
SOP(S) # NA

4) SEPARATION LAB RECEIVED 09/12/97
SOP(S) # RICHRC 5030
Extract. 9-15-97 RICHRC5030
E.D. 9-17-97 RICHRC5039.1

5) COUNTING/MEASUREMENT LAB 9/18/97
SOP(S) # RICHRC0008

6) DATA REVIEWED AND ANALYTICAL PREP STORED JK 9-19-97
SOP(S) # RICHRC0002 Rev

000030

DUE 9-19-97 *M

*** GAMMA ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

20-Aug-1997
Page 1

CUSTOMER: BHI SAF

SAMPLE DELIVERY GROUP W01860

MATRIX : SOIL B97-136

BATCH NUMBER 08-300

	GES ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	T083001X	OSBR			
	T083001M	CAL491			
1)	70830001		BHI	BOL704	
2)	70830002		BHI	BOL705	
3)	70830003		BHI	BOL706	
4)	70830004		BHI	BOL707	
5)	70830005		BHI	BOL708	NGS to generate a consistent geometry due 9-4-97
6)	70830006		BHI	BOL709	
	R083006	dup			

ACTIONS (Initial & Date)

1) INITIATED JH 8/20/97

SOP(S) # RD3800

2) PREP LAB RECEIVED 8-22-97 [illegible]

SOP(S) # RICHREL3017-1 RICHREL3013-0

3) SAMPLE REMAINDER STORED 9-4-97 [illegible]

SOP(S) # n/a

4) SEPARATION LAB RECEIVED

SOP(S) #

5) COUNTING/MEASUREMENT LAB 9/4/97

SOP(S) # RICHED000T

6) DATA REVIEWED AND ANALYTICAL PREP STORED 9/19/97

SOP(S) # RICHECOOZ

No special isotopes requested, 9-19-97

000031