W02428

Quanterra
Environmental Services

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

314 298-8566 Telephone
314 298-8757 Fax

0049865

CASE NARRATIVE

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, Washington 99352

July 17, 1998

Attention: Joan Kessner

OCT 1998 RECEIVED EDMC

JUL 1998 RECEIVED Data Log In

Project Number	:	550.263
SDG	:	W02428
Number of Samples	:	One (1)
Sample Matrix	:	Other Liquid
Data Deliverable	:	Summary
Date SDG Closed	:	June 15, 1998

II. Introduction

On June 15, 1998, one (1) "other liquid" sample was received by Quanterra, Richland and transferred to Quanterra, St. Louis for chemical analysis. There are no comments or nonconformances associated with the shipping and receiving of these samples. Upon receipt, the samples were given the following laboratory ID numbers to correspond with the specific client ID's:

St. Louis ID	BHI ID	Richland ID	Matrix	Date of Receipt
18261-001	B0P0V9	80624001	Other Liquid	15-JUNE-98

III. Analytical Results/ Methodology

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

Analyses requested:
- Semivolatiles by EPA method 8270
- ICP metals EPA method 6010
- Mercury EPA method 7471
- Volatiles by EPA method 8260

Deviation from Request: No Deviation from requested methods.

IV. Definitions

The following codes are used to denote laboratory quality control samples and can be found in the data summary section of this report:

QCBLK-	Quality Control Blank, Method Blank
QCLCS-	Quality Control Laboratory Control Sample, Blank Spike
MS-	Matrix Spike
MSD-	Matrix Spike Duplicate
DUP-	Sample Duplicate
EXTBLK-	TCLP Extraction Blank

V. Comments

General: No general comments were noted for this Sample Delivery Group.

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

Percent solids was not determined for the samples in SDG W02428. Due to software configuration, the CLP forms list solid sample result units as " dry weight" and % solids as " 100 ". The results on the forms are actually mg/Kg as is and are not corrected for percent solids. The figure of 100 was used as percent solids for calculation purposes only and does not represent measured solids content of the samples.

The recoveries of the matrix spikes and/or the matrix spike duplicates for the following list of elements were not within the 80%-120% range, therefore all associated data was flagged with a "N".

	% REC MS	% REC MSD
Antimony	62.7	73.6
Calcium	118.4*	71.2
Chromium	128.9	97.6*
Magnesium	122.3	87.4*
Manganese	146.1	38.6

* Met criteria, for reference only

The recoveries of the matrix spikes and/or the matrix spike duplicates for Aluminum and Iron were also outside the 80%-120% range but the data did not require flagging because the sample concentrations for these elements were greater than 4 X the spiking levels.

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

Samples in this SDG were extracted 12 days outside holding time. See NCM #4395.

The samples were a difficult matrix, a viscous liquid. The samples 18261-001 and -001MS concentrated to a final volume of 2ml, instead of the usual 1 ml. The MSD would only concentrate to 3 ml. The samples were then analyzed with a 4x dilution at the instrument. Due to the prep and instrument dilutions, surrogate and MS/MSD recoveries were outside QC limits. The sample also exhibited low internal standard areas..

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

Samples were a viscous liquid. A half of a gram was weighed out and purged, resulting in a 10x dilution.

Quanterra
Environmental Services

Sample 18261-001 and -001MS were analyzed 14 days outside holding time. Sample -001MSD was analyzed 18 days outside holding time. The samples were received on 6/17 but did not show up on the VOA backlog until 7/1. Hold time expired on 6/24. See NCM #4385.

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:

Robert E. White

Robert E. White
Project Manager

QUANTERRA ISSUE RESOLUTION FORM
FOR CONTRACT MW6-SBB-A19981 WITH BHI/RUS/PNNL

SAF No. **B98-091** Project: **200-ZP-2 Waste Sampling - other liquid** Date **07/15/98**
SDG: **W02428**
SampleNo.(s) **B0P0V9 (login 18261)**

Submitted By: Andy Kopriva Bob White	Submitted To: Karl N. Pool (RUS) Joan Kessner (BHI) Dot Stewart (PNNL)
Phone No. 509-375-3131 x132 314-298-8566 x208	Phone No. 509-372-2557 (Pool) 509-372-538 (Kessner) 509-376-5056 (Stewart)
Fax No. 509-375-5590 314-298-8757	Fax No. 509-372-1616

ISSUE	PROPOSED RESOLUTION
1) Sample exceeded hold time for semivolatiles by 12 days for sample, and matrix QC.	1) Analyze "as is" and report in case narrative, nonconformance 4395 has been issued.

BHI/RUS/PNNL COMMENTS

Signature and Date

XC: Ron Butler

QUANTERRA ISSUE RESOLUTION FORM
FOR CONTRACT MW6-SBB-A19981 WITH BHI/RUS/PNNL

SAF No. **B98-091** Project: **200-ZP-2 Waste Sampling - other liquid** Date **07/14/98**
SDG: **W02428**
SampleNo.(s) **B0P0V9 (login 18261)**

Submitted By: Andy Kopriva
Bob White

Phone No. 509-375-3131 x132
314-298-8566 x208

Fax No. 509-375-5590
314-298-8757

Submitted To: Karl N. Pool (RUS)
Joan Kessner (BHI)
Dot Stewart (PNNL)

Phone No. 509-372-2557 (Pool)
509-372-538 (Kessner)
509-376-5056 (Stewart)

Fax No. 509-372-1616

ISSUE	PROPOSED RESOLUTION
1) Sample exceeded hold time for volatiles 8260 by 14 days for sample, and matrix spike, 18 days for the matrix spike duplicate.	1) Analyze "as is" and report in case narrative, a nonconformance has been issued.

BHI/RUS/PNNL COMMENTS

Signature and Date

XC: Ron Butler

Log # 4285

LABORATORY NONCONFORMANCE MEMO (NCM)

Quanterra Incorporated

W02428

Project ID/Client: 550.263 / Hanford

NCM Initiated by/Date: LMurphy 071498 Project Manager: Bob White

Sample Numbers/QC batch or lot numbers: 18261-001, -00MS/MSD

Tests: VOA 18260/Q4

Analytical Area (check appropriate area):

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

Nonconformance (check appropriate area): *To be completed by analyst*

Holding Time Violations (exceeded by 14, 18 days)

Category I: Laboratory Independent

- ☐ 1. Holding time expired in transit
- ☐ 2. Sample rec'd > 48 hrs after sampling, or ½ holding time has expired
- ☐ 3. Test added by client after expiration

Category II: Laboratory Dependent

- ☐ 4. Instrument failure
- ☐ 5. Analyst error
- ☐ 6. Log-in error
- ☑ 7. Miscommunication
- ☐ 8. Other (explanation required) _____

Category III: Analysis Reruns (QA/QC)

- ☐ 9. Surrogates
- ☐ 10. Internal standards
- ☐ 11. Spike recoveries
- ☐ 12. Blank contamination

Category IV: Analysis Reruns (Confirmation)

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

Category V: Analysis Reruns (Dilution)

- ☐ 17. Over calibration
- ☐ 18. Under calibration
- ☐ 19. Other (explanation required) _____

Quality Assurance/Quality Control

- ☐ 20. QC data reported outside of controls
- ☐ 21. Incorrect procedure used
- ☐ 22. SOP intentionally modified with QA and tech approval
- ☐ 23. Invalid instrument calibration
- ☐ 24. Received insufficient sample for proper analysis

Incorrect or Incomplete Client Deliverable

- ☐ 25. Hardcopy deliverable error
- ☐ 26 Electronic deliverable error

Reported Detection Limits Elevated Due to:

- ☐ 27. Sample matrix: Does not include high analyte content
- ☐ 28. Insufficient sample volume
- ☐ 29. Other (explanation required)

Miscellaneous

- ☐ 30. Instrument/equipment Tag-out
- ☐ 31. Other (explanation required)

Notification (check appropriate area): ☐ **Required** ☐ **Not Required** *To be completed by project manager*

Client notified by (name and date): Bob White

- ☑ In writing
- ☐ By telephone
- ☐ By facsimile
- ☐ Other (explain)

Client's name and response: JOAN KESSNER

- ☐ Process "as is"
- ☐ On hold until _____
- ☐ Re-sample
- ☑ Other (explain) IRF

Project manager (signature and date): Robert E. White 7/15/98 Note in case narrative

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QUANTERRA LABORATORY NONCONFORMANCE MEMO

LOG # 4385

Corrective Action: *To be completed and reviewed by all associates involved*

Problem Description/Root Cause Author's initials and date: 071498

18261-001 + -001MS run 14 days out of hold. 18261-001MSD run 18 days out of hold. Date rec'd 6/17. Did not appear on backlog until 7/1. Hold time 6/25.
Paperwork, COC's were lost.

Corrective Actions (Short Term) Author's initials and date: 071498

As is.

Corrective Actions to Prevent Reoccurrence (Long Term)

Shipping and receiving or PM error.
In future obtain copies of COC from Richland in order to ~~procedle~~ proceed with Coging and analyses.

Corrective Action approved by (Supervisor/Group Leader) and date: Dumas 7/14/98 R E White 7/15/98

Additional Comments:

Corrective Action to be completed by (if other than Supervisor/Group Leader):

Date Corrective Action is to be completed:

Quality Assurance Review *To be completed by a QA associate*

☐ Anomaly ☐ Deficiency ☐ Notified Ops/Sys Manager (Initials)

☐ Further action required:

Further action assigned to:

QA signature: Date:

Corrective Action Verification: *To be completed by a QA associate*

☐ Verification not required or requested

☐ Verified / CA completed on: by

☐ Cannot verify (specify reason)

Verified by: Date:

Nonconformance Memo Closure:

QA signature: Date:

The Office of Quality Assurance maintains a copy of this NCM indicating its final status.

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LOG # 4395

LABORATORY NONCONFORMANCE MEMO (NCM)

Quanterra Incorporated

Project ID/Client: 550.263 / Hanford

NCM Initiated by/Date: Bob White 7/15/98 Project Manager: Bob White

Sample Numbers/QC batch or lot numbers: 18261-001, MS, MSD

Tests: Semivolatiles 8270

Analytical Area (check appropriate area):

- ☐ Sample control
- ☑ Organic preparation
- ☐ Inorganic preparation
- ☐ GC
- ☐ HPLC
- ☑ GC/MS RRW 7/15/98
- ☐ Wet chemistry
- ☐ Metals
- ☐ Reporting
- ☐ Data review
- ☐ Radiochemistry
- ☐ _____

Nonconformance (check appropriate area): *To be completed by analyst*

Holding Time Violations (exceeded by 12 days)

Category I: Laboratory Independent

- ☐ 1. Holding time expired in transit
- ☐ 2. Sample rec'd > 48 hrs after sampling, or ½ holding time has expired
- ☐ 3. Test added by client after expiration

Category II: Laboratory Dependent

- ☐ 4. Instrument failure
- ☐ 5. Analyst error
- ☐ 6. Log-in error
- ☑ 7. Miscommunication
- ☐ 8. Other (explanation required) _____

Category III: Analysis Reruns (QA/QC)

- ☐ 9. Surrogates
- ☐ 10. Internal standards
- ☐ 11. Spike recoveries
- ☐ 12. Blank contamination

Category IV: Analysis Reruns (Confirmation)

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

Category V: Analysis Reruns (Dilution)

- ☐ 17. Over calibration
- ☐ 18. Under calibration
- ☐ 19. Other (explanation required) _____

Quality Assurance/Quality Control

- ☐ 20. QC data reported outside of controls
- ☐ 21. Incorrect procedure used
- ☐ 22. SOP intentionally modified with QA and tech approval
- ☐ 23. Invalid instrument calibration
- ☐ 24. Received insufficient sample for proper analysis

Incorrect or Incomplete Client Deliverable

- ☐ 25. Hardcopy deliverable error
- ☐ 26. Electronic deliverable error

Reported Detection Limits Elevated Due to:

- ☐ 27. Sample matrix: Does not include high analyte content
- ☐ 28. Insufficient sample volume
- ☐ 29. Other (explanation required)

Miscellaneous

- ☐ 30. Instrument/equipment Tag-out
- ☐ 31. Other (explanation required) _____

Notification (check appropriate area): ☐ **Required** ☐ **Not Required** *To be completed by project manager*

Client notified by (name and date): Bob White

- ☑ In writing
- ☐ By facsimile
- ☐ By telephone
- ☐ Other (explain)

Client's name and response: JOAN KESSNER

- ☐ Process "as is"
- ☐ Re-sample
- ☐ On hold until _____
- ☑ Other (explain) IRF

Project manager (signature and date): Robert E. White 7/15/98 Note in case narrative

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QUANTERRA LABORATORY NONCONFORMANCE MEMO

LOG #: 4395

Corrective Action: *To be completed and reviewed by all associates involved*

Problem Description/Root Cause Author's initials and date: RGW 7/15/98

Paperwork, COC's were lost.
Samples missed hold time.

Corrective Actions (Short Term) Author's initials and date:

Report "as is"

Corrective Actions to Prevent Reoccurrence (Long Term)

In future obtain copies of COC from Richland in order to proceed with login and analyses.

Corrective Action approved by (Supervisor/Group Leader) and date: RGW. 7/15/98

Additional Comments:

Corrective Action to be completed by (if other than Supervisor/Group Leader):

Date Corrective Action is to be completed:

Quality Assurance Review *To be completed by a QA associate*

☐ Anomaly ☒ Deficiency ☐ Notified Ops/Sys Manager (Initials)

☐ Further action required:

Further action assigned to:

QA signature: M Winter Date: 7/15/98

Corrective Action Verification: *To be completed by a QA associate*

☐ Verification not required or requested

☐ Verified / CA completed on: by

☐ Cannot verify (specify reason)

Verified by: Date:

Nonconformance Memo Closure:

QA signature: Date:

The Office of Quality Assurance maintains a copy of this NCM indicating its final status.

W02428

Quanterra July 07, 1998 08:37 am
Account: 10722 Project: 550.263 Quanterra-Richland QAS No. 550.263 Rev. 1
Master Sample Login: 18261

Project Manager: R. White

Draft: Final: Entered and Reviewed by: Sue Mason PM Review: Robert E White

Sample Header Template:

Sample No. / #	Client ID / Container Type	C-Matrix / Analysis	Date: Collected / Class	Received / Preservative	Due / Anal. Due Date	Shipper / Hold Date	Site	Rad Category / (Container Numbers:% Filled)	Rad Sample No. / Comments / Data:
18261-001	BOP0V9	Solid	11-JUN-98 08:40		~~17~~ 15-JUN-98 08:30	30-JUN-98	AIRBORNE	1	Screening not Required
	RICHLAND I.D. 80624001								
1	VI - Vial-40ml	VOA/8260/Q4	S	COLD	26-JUN-98	25-JUN-98	109Q	(389136:99)	
2	AN - Amber Glass-1L	BNA/8270/Q4	S	COLD	26-JUN-98	25-JUN-98	R17D	(389134:99 389135:98)	
1	AN - Amber Glass-500ml	HG/7471/Q4	S	COLD	26-JUN-98	09-JUL-98	R17D	(389133:98)	
1		ICAP/6010/Q4	S	COLD	26-JUN-98	08-DEC-98	R17D	(389132:99)	
18261-001MS	BOP0V9	Solid	11-JUN-98 08:40		~~17~~ 15-JUN-98 08:30	30-JUN-98	AIRBORNE	1	Screening not Required
	RICHLAND I.D. 80624001								
1	VI - Vial-40ml	VOA/8260/Q4	S	COLD	26-JUN-98	25-JUN-98	109Q	(389136:99)	
2	AN - Amber Glass-1L	BNA/8270/Q4	S	COLD	26-JUN-98	25-JUN-98	R17D	(389134:99 389135:98)	
1	AN - Amber Glass-500ml	HG/7471/Q4	S	COLD	26-JUN-98	09-JUL-98	R17D	(389133:98)	
1		ICAP/6010/Q4	S	COLD	26-JUN-98	08-DEC-98	R17D	(389132:99)	
18261-001MSD	BOP0V9	Solid	11-JUN-98 08:40		~~17~~ 15-JUN-98 08:30	30-JUN-98	AIRBORNE	1	Screening not Required
	RICHLAND I.D. 80624001								
1	VI - Vial-40ml	VOA/8260/Q4	S	COLD	26-JUN-98	25-JUN-98	109Q	(389136:99)	
2	AN - Amber Glass-1L	BNA/8270/Q4	S	COLD	26-JUN-98	25-JUN-98	R17D	(389134:99 389135:98)	
1	AN - Amber Glass-500ml	HG/7471/Q4	S	COLD	26-JUN-98	09-JUL-98	R17D	(389133:98)	
1		ICAP/6010/Q4	S	COLD	26-JUN-98	08-DEC-98	R17D	(389132:99)	

RSW 7/15/98

C110

3*=Sample has not been rad screened.

temp 4°C cert # 015614
ST 10000

Chain of Custody Record

Quanterra

QUA 4124 0797

Client: Bechtel	Project Manager: A. Koprowa	Date: 6-16-98	Chain of Custody Number: 09740
Address:	Telephone Number (Area Code)/Fax Number:	Lab Number:	Page 1 of 1
City / State / Zip Code:	Site Contact:	Lab Contact:	
Project Name: SAF B98-091	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	
80624001 BOPOV9	all	clothes											

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 Due 7-1-98

QC Requirements (Specify): SDG W02428

1. Relinquished By: Heidelberg QES	Date: 6-16-98	Time: 16:00	1. Received By: Joe Tumuna	Date: 6-17-98	Time: 0830
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	B98-091-02	Page 1 of 1

Collector Fahlberg/Nielson	**Company Contact** Keith Maki	**Telephone No.** 373-4989	**Project Coordinator** TRENT, RJ	**Data Turnaround** 15 Days
Project Designation 200-ZP-2 Waste Sampling - Other Liquid	**Sampling Location** 200 West		**SAF No.** B98-091	
Ice Chest No.	**Field Logbook No.** EL-1424		**Method of Shipment** Hand deliver - Govt Vehicle	
Shipped To Quanterra Incorporated	**Offsite Property No.**		**Bill of Lading/Air Bill No.**	
Waste Designation F001			**COA**	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage Cool 4C

Preservation	None	None	None	Cool 4C	Cool 4C						
Type of Container	P	aG	aG	aG	aGs*						
No. of Container(s)	~~1~~ 0	1	1	2	~~3~~ 1						
Volume	20ml	500ml	500ml	1000ml	40ml						
SAMPLE ANALYSIS	Activity Scan	ICP Metals - 6010A (SW-846)	Mercury - 7470 - (CV)	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)						
80624001 SDG W02428											
Sample No.	**Matrix ***	**Sample Date**	**Sample Time**								
B0P0V9	Other Liquid	6-11-98	0840	X	X	X	X	X			B0P0V8
					100%	100%	100% x2	100% x1			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By R Fahlberg / R. Fahlberg	Date/Time 6-15-98 1230	Received By	Date/Time 6/15/98 1230
Relinquished By	Date/Time	Received By Joe Turner	Date/Time 6-17-98 0830
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

** Close SDG upon receipt of samples.

** Quanterra is directed to rehomogenize the sample if necessary and report the results as an "other liquid".

Note: activity scan to be taken from other container.

Only one VOA is collected because of insufficient free liquid.

Matrix *

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

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

Post-it® Fax Note 7671

To Bob Faithfull		Date 6/15/98	# of pages ▶ 1
Co./Dept.		From Al Davis	
Phone #		Co.	
Fax # 376-6957		Phone # 373-9731	
		Fax #	

GAMMA-RAY ENERGY ANALYSIS REPORT

Thermo Hanford Inc.
Radiological Counting Facility THI - RCF

BOPOV9

Project	200-ZP-2		
Customer ID	BOPOV9	Other Liquid	
RCF ID	RCF3539		
	Sample time, date	840	6/11/98
	Analysis date		6/12/98

Isotope		Activity pCi/gm	2 s em	Ci/gm
K40	<	5.7e+00		5.7e-12
Co60	<	5.3e-01		5.3e-13
I129	<	9.1e+00		9.1e-12
Cs137	<	3.1e-01		3.1e-13
Eu152	<	3.0e+00		3.0e-12
Eu154	<	1.3e+00		1.3e-12
Eu155	<	1.3e+00		1.3e-12
Th232dau	<	4.7e-01		4.7e-13
U235	<	4.5e-01		4.5e-13
U238	<	5.5e+01		5.5e-11
U238dau	<	9.5e-01		9.5e-13
Np237	<	9.0e-01		9.0e-13
Am241	<	8.9e-01		8.9e-13
Tot Act Gam (pCi/gm)		0.0e+00	Ci/gm	0.0e+00
Y/Sr-90	<	N/R		
Gross Alpha	<	5.4e-02		5.4e-14
Gross Beta	<	1.9e-01		1.9e-13 Reported as 137-Cs Betas.
AEA total	<	N/R		

Total Activity (pCi/gm) 1.0e+00
(Ci/gm) 1.0e-12

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 L. Gill 6-15-98
Radiological analyst Date

Albert I. Davis 6/15/98
Albert I. Davis Date
Radiological Manager

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received: 6/15 1230 SG#: W02428

Work Order Number: 806240 SAF #: B98-091

Shipping Container ID: n/a Chain of Custody # B98-091-02

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 5°
5. Vermiculite/packing materials is Wet [ ] Dry [✓] n/a
6. Number of samples in shipping container: 5
7. Sample holding times exceeded? Yes [ ] No [✓]

8. Samples have:
   - ✓ tape
   - ✓ custody seals
   - ___ hazard labels
   - ___ appropriate sample labels

9. Samples are:
   - ✓ in good condition
   - ___ broken
   - ___ leaking
   - ___ have air bubbles

10. Where any anomalies identified in sample receipt? Yes [ ] No [✓]
11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: Heidelberg Date: 6/15/98

Telephoned To: _____ On _____ By _____

Post-it® Fax Note 7671

To Bob Fullmer	Date 6/15/98
Co./Dept.	From Al Davis
Phone #	Phone # 373-9731
Fax # 376-8857	Fax #

GAMMA-RAY ENERGY ANALYSIS REPORT

Thermo Hanford Inc.
Radiological Counting Facility THI - RCF

B0P0V9

Project	200-ZP-2		
Customer ID	B0P0V8	Other Liquid	
RCF ID	RCF3539		
	Sample time, date	840	6/11/98
	Analysis date		6/12/98

Isotope		Activity pCi/gm	2 s err	Ci/gm
K40	<	5.7e+00		5.7e-12
Co60	<	5.3e-01		5.3e-13
I129	<	9.1e+00		9.1e-12
Cs137	<	3.1e-01		3.1e-13
Eu152	<	3.0e+00		3.0e-12
Eu154	<	1.3e+00		1.3e-12
Eu155	<	1.3e+00		1.3e-12
Th232dau	<	4.7e-01		4.7e-13
U235	<	4.5e-01		4.5e-13
U238	<	5.5e+01		5.5e-11
U238dau	<	9.5e-01		9.5e-13
Np237	<	9.0e-01		9.0e-13
Am241	<	8.9e-01		8.9e-13
Tot Act Gam (pCi/gm)		0.0e+00	Ci/gm	0.0e+00
Y/Sr-90	<	N/R		
Gross Alpha	<	5.4e-02		5.4e-14
Gross Beta	<	1.9e-01		1.9e-13 Reported as 137-Cs Betas.
AEA total	<	N/R		

Total Activity (pCi/gm) 1.0e+00
(Ci/gm) 1.0e-12

Cat I
6/16/98

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 & GID. 6-15-98
Radiological analyst Date

Albert I. Davis 6/15/98
Radiological Manager Date

017

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
PGW B0NX58		6 15 1998 3:10:00 PM	QUAD23D	6 16 1998 10:53:12 AM	B0NX58	30	25	0.77476190	99	2.1985714
	LIQUID		Bkg:	6 16 1998 2:32:00 AM	BKG	700	41	0.05857143	771	1.1014286

Anl Date: 6 16 1998	Tot Sa, Alq: 5.00E+00	, 1.00E+01	Alp;	(Dpm/ 2.38E+00	(uCi/ 5.36E-04	(pCi/ 1.07E+02	± 2.9E+01	CAL 1	2.3E-01	Lab Alq Lig.
Ppt mg: 4.5	Units: 1	, ml	Bet;	Alq): 3.74E+00	Sa): 8.42E-04	Lig): 1.68E+02	± 2.8E+01		3.0E-01	

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
PGW B0NX83		6 15 1998 3:10:00 PM	QUAD24A	6 16 1998 10:53:08 AM	B0NX83	30	8	0.21380952	99	0.1985714
	LIQUID		Bkg:	6 16 1998 2:31:46 AM	BKG	700	37	0.05285714	771	1.1014286

Anl Date: 6 16 1998	Tot Sa, Alq: 5.50E+00	, 1.00E+01	Alp;	(Dpm/ 6.56E-01	(uCi/ 1.63E-04	(pCi/ 2.96E+01	± 2.4E+01	CAL 1	8.5E-01	Lab Alq Lig
Ppt mg: 0	Units: 1	, ml	Bet;	Alq): 2.59E-01	Sa): 6.42E-05	Lig): 1.17E+01	± 1.8E+01		4.3E+00	

Reviewed 6/16/98 [illegible]

018

Quanterra
Environmental Services

015614

Login No.: 18261

Condition Upon Receipt Variance Report
St. Louis Laboratory

Client: BHI (Richland)
Date: 6-17-98 Time: 0830
Project No: 550.263
Initiated by: Joe Tiemann
Shipper/No: Airborne
RFA/COC Numbers: 09740

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 designate) Joe Tiemann Date: 6-17-98

Project Management Review: Robert F. White Date: 7-2-98

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

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

Quanterra Environmental Services

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352-1613

Project: 550.263

Category: Volatiles 8260
Method: EPA 8260A
Matrix: SOLID

Client ID: B0P0V9

Sample Date : 06/11/98
Receipt Date : 06/17/98
Report Date : 07/14/98

Quanterra ID : 18261-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Chloromethane	74-87-3	QCBLK177628-1	07/10/98	07/10/98	100	UG/KG	U	100	10
Bromomethane	74-83-9	QCBLK177628-1	07/10/98	07/10/98	100	UG/KG	U	100	10
Vinyl Chloride	75-01-4	QCBLK177628-1	07/10/98	07/10/98	100	UG/KG	U	100	10
Chloroethane	75-00-3	QCBLK177628-1	07/10/98	07/10/98	100	UG/KG	U	100	10
Methylene Chloride	75-09-2	QCBLK177628-1	07/10/98	07/10/98	24	UG/KG	BJ	50	10
Acetone	67-64-1	QCBLK177628-1	07/10/98	07/10/98	220	UG/KG	B	200	10
Carbon Disulfide	75-15-0	QCBLK177628-1	07/10/98	07/10/98	50	UG/KG	U	50	10
1,1-Dichloroethene	75-35-4	QCBLK177628-1	07/10/98	07/10/98	50	UG/KG	U	50	10
1,1-Dichloroethane	75-34-3	QCBLK177628-1	07/10/98	07/10/98	50	UG/KG	U	50	10
1,2-Dichloroethene (total)	540-59-0	QCBLK177628-1	07/10/98	07/10/98	50	UG/KG	U	50	10
Chloroform	67-66-3	QCBLK177628-1	07/10/98	07/10/98	50	UG/KG	U	50	10
1,2-Dichloroethane	107-06-2	QCBLK177628-1	07/10/98	07/10/98	50	UG/KG	U	50	10
2-Butanone (MEK)	78-93-3	QCBLK177628-1	07/10/98	07/10/98	200	UG/KG	U	200	10
1,1,1-Trichloroethane	71-55-6	QCBLK177628-1	07/10/98	07/10/98	50	UG/KG	U	50	10
Carbon Tetrachloride	56-23-5	QCBLK177628-1	07/10/98	07/10/98	50	UG/KG	U	50	10
Bromodichloromethane	75-27-4	QCBLK177628-1	07/10/98	07/10/98	50	UG/KG	U	50	10
1,2-Dichloropropane	78-87-5	QCBLK177628-1	07/10/98	07/10/98	50	UG/KG	U	50	10
cis-1,3-Dichloropropene	10061-01-5	QCBLK177628-1	07/10/98	07/10/98	50	UG/KG	U	50	10
Trichloroethene	79-01-6	QCBLK177628-1	07/10/98	07/10/98	50	UG/KG	U	50	10
Dibromochloromethane	124-48-1	QCBLK177628-1	07/10/98	07/10/98	50	UG/KG	U	50	10
1,1,2-Trichloroethane	79-00-5	QCBLK177628-1	07/10/98	07/10/98	50	UG/KG	U	50	10
Benzene	71-43-2	QCBLK177628-1	07/10/98	07/10/98	50	UG/KG	U	50	10
trans-1,3-Dichloropropene	10061-02-6	QCBLK177628-1	07/10/98	07/10/98	50	UG/KG	U	50	10
Bromoform	75-25-2	QCBLK177628-1	07/10/98	07/10/98	50	UG/KG	U	50	10
4-Methyl-2-Pentanone (MIBK)	108-10-1	QCBLK177628-1	07/10/98	07/10/98	200	UG/KG	U	200	10
2-Hexanone	591-78-6	QCBLK177628-1	07/10/98	07/10/98	200	UG/KG	U	200	10
Tetrachloroethene	127-18-4	QCBLK177628-1	07/10/98	07/10/98	50	UG/KG	U	50	10
Toluene	108-88-3	QCBLK177628-1	07/10/98	07/10/98	50	UG/KG	U	50	10
1,1,2,2-Tetrachloroethane	79-34-5	QCBLK177628-1	07/10/98	07/10/98	50	UG/KG	U	50	10
Chlorobenzene	108-90-7	QCBLK177628-1	07/10/98	07/10/98	50	UG/KG	U	50	10
EthylBenzene	100-41-4	QCBLK177628-1	07/10/98	07/10/98	50	UG/KG	U	50	10
Styrene	100-42-5	QCBLK177628-1	07/10/98	07/10/98	50	UG/KG	U	50	10
Xylene (total)	1330-20-7	QCBLK177628-1	07/10/98	07/10/98	50	UG/KG	U	50	10
Bromofluorobenzene	460-00-4	QCBLK177628-1	07/10/98	07/10/98	94	%REC			10
Dibromofluoromethane	1868-53-7	QCBLK177628-1	07/10/98	07/10/98	117	%REC			10
Toluene-d8	2037-26-5	QCBLK177628-1	07/10/98	07/10/98	96	%REC			10

Quanterra Environmental Services

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352-1613

Project: 550.263

Category: Volatiles 8260
Method: EPA 8260A
Matrix: SOLID

Client ID: B0P0V9

Sample Date : 06/11/98
Receipt Date : 06/17/98
Report Date : 07/14/98

Quanterra ID : 18261-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
1,1-Dichloroethene	75-35-4	QCBLK177628-1	07/10/98	07/10/98	126	%REC			10
Trichloroethene	79-01-6	QCBLK177628-1	07/10/98	07/10/98	123	%REC			10
Benzene	71-43-2	QCBLK177628-1	07/10/98	07/10/98	124	%REC			10
Toluene	108-88-3	QCBLK177628-1	07/10/98	07/10/98	113	%REC			10
Chlorobenzene	108-90-7	QCBLK177628-1	07/10/98	07/10/98	111	%REC			10
Bromofluorobenzene	460-00-4	QCBLK177628-1	07/10/98	07/10/98	95	%REC			10
Dibromofluoromethane	1868-53-7	QCBLK177628-1	07/10/98	07/10/98	111	%REC			10
Toluene-d8	2037-26-5	QCBLK177628-1	07/10/98	07/10/98	93	%REC			10

Quanterra Environmental Services

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352-1613

Project: 550.263

Category: Volatiles 8260
Method: EPA 8260A
Matrix: SOLID

Client ID: B0P0V9

Sample Date : 06/11/98
Receipt Date : 06/17/98
Report Date : 07/14/98

Quanterra ID : 18261-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
1,1-Dichloroethene	75-35-4	QCBLK177972-1	07/13/98	07/13/98	139	%REC			10
Trichloroethene	79-01-6	QCBLK177972-1	07/13/98	07/13/98	109	%REC			10
Benzene	71-43-2	QCBLK177972-1	07/13/98	07/13/98	110	%REC			10
Toluene	108-88-3	QCBLK177972-1	07/13/98	07/13/98	103	%REC			10
Chlorobenzene	108-90-7	QCBLK177972-1	07/13/98	07/13/98	99	%REC			10
Bromofluorobenzene	460-00-4	QCBLK177972-1	07/13/98	07/13/98	84	%REC			10
Dibromofluoromethane	1868-53-7	QCBLK177972-1	07/13/98	07/13/98	111	%REC			10
Toluene-d8	2037-26-5	QCBLK177972-1	07/13/98	07/13/98	95	%REC			10

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0P0V9

Lab Name: QUANTERRA MO Contract: 550.263

Lab Code: ITMO Case No.: SAS No.: SDG No.: W02428

Matrix: (soil/water) SOIL Lab Sample ID: 18261-001

Sample wt/vol: 0.5 (g/mL) G Lab File ID: BSMP4287

Level: (low/med) LOW Date Received: 06/17/98

% Moisture: not dec. _____ Date Analyzed: 07/10/98

Column: (pack/cap) CAP Dilution Factor: 10.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
74-87-3	Chloromethane	100	U
74-83-9	Bromomethane	100	U
75-01-4	Vinyl Chloride	100	U
75-00-3	Chloroethane	100	U
75-09-2	Methylene Chloride	24	BJ
67-64-1	Acetone	220	B
75-15-0	Carbon Disulfide	50	U
75-35-4	1,1-Dichloroethene	50	U
75-34-3	1,1-Dichloroethane	50	U
540-59-0	1,2-Dichloroethene (total)	50	U
67-66-3	Chloroform	50	U
107-06-2	1,2-Dichloroethane	50	U
78-93-3	2-Butanone	200	U
71-55-6	1,1,1-Trichloroethane	50	U
56-23-5	Carbon Tetrachloride	50	U
75-27-4	Bromodichloromethane	50	U
78-87-5	1,2-Dichloropropane	50	U
10061-01-5	cis-1,3-Dichloropropene	50	U
79-01-6	Trichloroethene	50	U
124-48-1	Chlorodibromomethane	50	U
79-00-5	1,1,2-Trichloroethane	50	U
71-43-2	Benzene	50	U
10061-02-6	trans-1,3-Dichloropropene	50	U
75-25-2	Bromoform	50	U
108-10-1	4-Methyl-2-pentanone	200	U
591-78-6	2-Hexanone	200	U
127-18-4	Tetrachloroethene	50	U
108-88-3	Toluene	50	U
79-34-5	1,1,2,2-Tetrachloroethane	50	U
108-90-7	Chlorobenzene	50	U
100-41-4	Ethylbenzene	50	U
100-42-5	Styrene	50	U
1330-20-7	Xylenes (total)	50	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0P0V9

Lab Name: QUANTERRA MO Contract: 550.263

Lab Code: ITMO Case No.: SAS No.: SDG No.: W02428

Matrix: (soil/water) SOIL Lab Sample ID: 18261-001

Sample wt/vol: 0.5 (g/mL) G Lab File ID: BSMP4287

Level: (low/med) LOW Date Received: 06/17/98

% Moisture: not dec. _____ Date Analyzed: 07/10/98

Column: (pack/cap) CAP Dilution Factor: 10.0

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
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30.				

Quanterra Environmental Services

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352-1613

Project: 550.263

Category: Semivolatile
Method: EPA 8270
Matrix: SOLID

Client ID: B0P0V9

Sample Date : 06/11/98
Receipt Date : 06/17/98
Report Date : 07/15/98

Quanterra ID : 18261-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Phenol	108-95-2	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
bis(2-Chloroethyl)Ether	111-44-4	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
2-Chlorophenol	95-57-8	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
1,3-Dichlorobenzene	541-73-1	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
1,4-Dichlorobenzene	106-46-7	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
1,2-Dichlorobenzene	95-50-1	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
2-Methylphenol	95-48-7	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
2,2'-oxybis (1-Chloropropane)	108-60-1	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
4-Methylphenol	106-44-5	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
N-nitroso-di-n-propylamine	621-64-7	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
Hexachloroethane	67-72-1	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
Nitrobenzene	98-95-3	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
Isophorone	78-59-1	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
2-Nitrophenol	88-75-5	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
2,4-Dimethylphenol	105-67-9	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
bis(2-Chloroethoxy)Methane	111-91-1	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
2,4-Dichlorophenol	120-83-2	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
1,2,4-Trichlorobenzene	120-82-1	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
Naphthalene	91-20-3	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
4-Chloroaniline	106-47-8	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
Hexachlorobutadiene	87-68-3	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
4-Chloro-3-Methylphenol	59-50-7	QCBLK177011-1	07/07/98	07/13/98	870	UG/KG	J	2600	4
2-Methylnaphthalene	91-57-6	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
Hexachlorocyclopentadiene	77-47-4	QCBLK177011-1	07/07/98	07/13/98	13000	UG/KG	U	13000	4
2,4,6-Trichlorophenol	88-06-2	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
2,4,5-Trichlorophenol	95-95-4	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
2-Chloronaphthalene	91-58-7	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
2-Nitroaniline	88-74-4	QCBLK177011-1	07/07/98	07/13/98	13000	UG/KG	U	13000	4
DimethylPhthalate	131-11-3	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
Acenaphthylene	208-96-8	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
2,6-Dinitrotoluene	606-20-2	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
3-Nitroaniline	99-09-2	QCBLK177011-1	07/07/98	07/13/98	13000	UG/KG	U	13000	4
Acenaphthene	83-32-9	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
2,4-Dinitrophenol	51-28-5	QCBLK177011-1	07/07/98	07/13/98	13000	UG/KG	U	13000	4
4-Nitrophenol	100-02-7	QCBLK177011-1	07/07/98	07/13/98	13000	UG/KG	U	13000	4
Dibenzofuran	132-64-9	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
2,4-Dinitrotoluene	121-14-2	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
Diethylphthalate	84-66-2	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
4-Chlorophenyl-PhenylEther	7005-72-3	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
Fluorene	86-73-7	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
4-Nitroaniline	100-01-6	QCBLK177011-1	07/07/98	07/13/98	13000	UG/KG	U	13000	4
4,6-Dinitro-2-Methylphenol	534-52-1	QCBLK177011-1	07/07/98	07/13/98	13000	UG/KG	U	13000	4
n-Nitrosodiphenylamine	86-30-6	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
4-Bromophenyl-Phenyl Ether	101-55-3	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
Hexachlorobenzene	118-74-1	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
Pentachlorophenol	87-86-5	QCBLK177011-1	07/07/98	07/13/98	13000	UG/KG	U	13000	4
Phenanthrene	85-01-8	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
Anthracene	120-12-7	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
Carbazole	86-74-8	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
Di-N-Butylphthalate	84-74-2	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
Fluoranthene	206-44-0	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
Pyrene	129-00-0	QCBLK177011-1	07/07/98	07/13/98	1900	UG/KG	J	2600	4
ButylBenzylPhthalate	85-68-7	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	J	2600	4
3,3'-Dichlorobenzidine	91-94-1	QCBLK177011-1	07/07/98	07/13/98	13000	UG/KG	U	13000	4
Benzo(a)Anthracene	56-55-3	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
Chrysene	218-01-9	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
bis(2-Ethylhexyl)Phthalate	117-81-7	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
di-N-OctylPhthalate	117-84-0	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
Benzo(b)Fluoranthene	205-99-2	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
Benzo(k)Fluoranthene	207-08-9	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
Benzo(a)Pyrene	50-32-8	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4

Quanterra Environmental Services

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352-1613

Project: 550.263

Category: Semivolatile
Method: EPA 8270
Matrix: SOLID

Client ID: B0P0V9

Sample Date : 06/11/98
Receipt Date : 06/17/98
Report Date : 07/15/98

Quanterra ID : 18261-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
Dibenz(a,h)Anthracene	53-70-3	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
Benzo(g,h,i)Perylene	191-24-2	QCBLK177011-1	07/07/98	07/13/98	2600	UG/KG	U	2600	4
Unknown-1	TIC-32	QCBLK177011-1	07/07/98	07/13/98	1800	UG/KG	J		4
Unknown-2	TIC-33	QCBLK177011-1	07/07/98	07/13/98	2100	UG/KG	J		4
Unknown-3	TIC-34	QCBLK177011-1	07/07/98	07/13/98	2000	UG/KG	J		4
Unknown-4	TIC-35	QCBLK177011-1	07/07/98	07/13/98	1700	UG/KG	J		4
Unknown-5	TIC-36	QCBLK177011-1	07/07/98	07/13/98	6600	UG/KG	J		4
Unknown-6	TIC-37	QCBLK177011-1	07/07/98	07/13/98	1900	UG/KG	J		4
Unknown-7	TIC-7	QCBLK177011-1	07/07/98	07/13/98	2400	UG/KG	J		4
Unknown-8	TIC-8	QCBLK177011-1	07/07/98	07/13/98	4100	UG/KG	J		4
Unknown-9	TIC-9	QCBLK177011-1	07/07/98	07/13/98	1200	UG/KG	J		4
Unknown-10	TIC-10	QCBLK177011-1	07/07/98	07/13/98	5400	UG/KG	J		4
Unknown-11	TIC-11	QCBLK177011-1	07/07/98	07/13/98	7800	UG/KG	J		4
Unknown-12	TIC-12	QCBLK177011-1	07/07/98	07/13/98	8300	UG/KG	J		4
Unknown-13	TIC-13	QCBLK177011-1	07/07/98	07/13/98	5000	UG/KG	J		4
Unknown-14	TIC-14	QCBLK177011-1	07/07/98	07/13/98	4800	UG/KG	J		4
Unknown-15	TIC-15	QCBLK177011-1	07/07/98	07/13/98	4900	UG/KG	J		4
Unknown-16	TIC-16	QCBLK177011-1	07/07/98	07/13/98	5400	UG/KG	J		4
Unknown-17	TIC-17	QCBLK177011-1	07/07/98	07/13/98	12000	UG/KG	J		4
Unknown-18	TIC-18	QCBLK177011-1	07/07/98	07/13/98	5900	UG/KG	J		4
Unknown-19	TIC-19	QCBLK177011-1	07/07/98	07/13/98	5200	UG/KG	J		4
Unknown-20	TIC-20	QCBLK177011-1	07/07/98	07/13/98	12000	UG/KG	J		4
Nitrobenzene-d5	4165-60-0	QCBLK177011-1	07/07/98	07/13/98	37	%REC			4
2-Fluorobiphenyl	321-60-8	QCBLK177011-1	07/07/98	07/13/98	0	%REC	D		4
Terphenyl-d14	1718-51-0	QCBLK177011-1	07/07/98	07/13/98	95	%REC			4
Phenol-d5	4165-62-2	QCBLK177011-1	07/07/98	07/13/98	0	%REC	D		4
2-Fluorophenol	367-12-4	QCBLK177011-1	07/07/98	07/13/98	0	%REC	D		4
2,4,6-Tribromophenol	118-79-6	QCBLK177011-1	07/07/98	07/13/98	24	%REC			4

Quanterra Environmental Services

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352-1613

Project: 550.263

Category: Semivolatile
Method: EPA 8270
Matrix: SOLID

Client ID: B0P0V9

Sample Date : 06/11/98
Receipt Date : 06/17/98
Report Date : 07/15/98

Quanterra ID : 18261-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual	Detection Limit	Dilution
Phenol	108-95-2	QCBLK177011-1	07/07/98	07/13/98	0	%REC	*		4
2-Chlorophenol	95-57-8	QCBLK177011-1	07/07/98	07/13/98	0	%REC	*		4
1,4-Dichlorobenzene	106-46-7	QCBLK177011-1	07/07/98	07/13/98	0	%REC	*		4
N-nitroso-di-n-propylamine	621-64-7	QCBLK177011-1	07/07/98	07/13/98	0	%REC	*		4
1,2,4-Trichlorobenzene	120-82-1	QCBLK177011-1	07/07/98	07/13/98	0	%REC	*		4
4-Chloro-3-Methylphenol	59-50-7	QCBLK177011-1	07/07/98	07/13/98	-35	%REC	*		4
Acenaphthene	83-32-9	QCBLK177011-1	07/07/98	07/13/98	0	%REC	*		4
4-Nitrophenol	100-02-7	QCBLK177011-1	07/07/98	07/13/98	0	%REC	*		4
2,4-Dinitrotoluene	121-14-2	QCBLK177011-1	07/07/98	07/13/98	0	%REC	*		4
Pentachlorophenol	87-86-5	QCBLK177011-1	07/07/98	07/13/98	0	%REC	*		4
Pyrene	129-00-0	QCBLK177011-1	07/07/98	07/13/98	-115	%REC	*		4
Nitrobenzene-d5	4165-60-0	QCBLK177011-1	07/07/98	07/13/98	35	%REC			4
2-Fluorobiphenyl	321-60-8	QCBLK177011-1	07/07/98	07/13/98	0	%REC	D		4
Terphenyl-d14	1718-51-0	QCBLK177011-1	07/07/98	07/13/98	73	%REC			4
Phenol-d5	4165-62-2	QCBLK177011-1	07/07/98	07/13/98	0	%REC	D		4
2-Fluorophenol	367-12-4	QCBLK177011-1	07/07/98	07/13/98	8	%REC	D		4
2,4,6-Tribromophenol	118-79-6	QCBLK177011-1	07/07/98	07/13/98	0	%REC	D		4

Quanterra Environmental Services

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352-1613

Project: 550.263

Category: Semivolatile
Method: EPA 8270
Matrix: SOLID

Client ID: B0P0V9

Sample Date : 06/11/98
Receipt Date : 06/17/98
Report Date : 07/15/98

Quanterra ID : 18261-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Phenol	108-95-2	QCBLK177011-1	07/07/98	07/13/98	0	%REC	*		4
2-Chlorophenol	95-57-8	QCBLK177011-1	07/07/98	07/13/98	0	%REC	*		4
1,4-Dichlorobenzene	106-46-7	QCBLK177011-1	07/07/98	07/13/98	0	%REC	*		4
N-nitroso-di-n-propylamine	621-64-7	QCBLK177011-1	07/07/98	07/13/98	0	%REC	*		4
1,2,4-Trichlorobenzene	120-82-1	QCBLK177011-1	07/07/98	07/13/98	0	%REC	*		4
4-Chloro-3-Methylphenol	59-50-7	QCBLK177011-1	07/07/98	07/13/98	21	%REC	*		4
Acenaphthene	83-32-9	QCBLK177011-1	07/07/98	07/13/98	0	%REC	*		4
4-Nitrophenol	100-02-7	QCBLK177011-1	07/07/98	07/13/98	45	%REC			4
2,4-Dinitrotoluene	121-14-2	QCBLK177011-1	07/07/98	07/13/98	0	%REC	*		4
Pentachlorophenol	87-86-5	QCBLK177011-1	07/07/98	07/13/98	0	%REC	*		4
Pyrene	129-00-0	QCBLK177011-1	07/07/98	07/13/98	28	%REC	*		4
Nitrobenzene-d5	4165-60-0	QCBLK177011-1	07/07/98	07/13/98	37	%REC			4
2-Fluorobiphenyl	321-60-8	QCBLK177011-1	07/07/98	07/13/98	0	%REC	D		4
Terphenyl-d14	1718-51-0	QCBLK177011-1	07/07/98	07/13/98	69	%REC			4
Phenol-d5	4165-62-2	QCBLK177011-1	07/07/98	07/13/98	0	%REC	D		4
2-Fluorophenol	367-12-[illegible]	QCBLK177011-1	07/07/98	07/13/98	0	%REC	D		4
2,4,6-Tribromophenol	118-79-6	QCBLK177011-1	07/07/98	07/13/98	16	%REC	D		4

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0P0V9

Lab Name: QUANTERRA MO Contract: 550-263

Lab Code: ITSL Case No.: S26101 SAS No.: SDG No.: W02428

Matrix: (soil/water) SOIL Lab Sample ID: 18261-001

Sample wt/vol: 30.20 (g/mL) G Lab File ID: H7736

Level: (low/med) LOW Date Received: 06/17/98

% Moisture: decanted: (Y/N) N Date Extracted: 07/07/98

Concentrated Extract Volume: 2000 (uL) Date Analyzed: 07/13/98

Injection Volume: 2.0(uL) Dilution Factor: 4.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	2600	U
111-44-4	bis(2-Chloroethyl)Ether	2600	U
95-57-8	2-Chlorophenol	2600	U
541-73-1	1,3-Dichlorobenzene	2600	U
106-46-7	1,4-Dichlorobenzene	2600	U
95-50-1	1,2-Dichlorobenzene	2600	U
95-48-7	2-Methylphenol	2600	U
108-60-1	2,2'-oxybis(1-Chloropropane)	2600	U
106-44-5	4-Methylphenol	2600	U
621-64-7	N-Nitroso-Di-n-Propylamine	2600	U
67-72-1	Hexachloroethane	2600	U
98-95-3	Nitrobenzene	2600	U
78-59-1	Isophorone	2600	U
88-75-5	2-Nitrophenol	2600	U
105-67-9	2,4-Dimethylphenol	2600	U
111-91-1	bis(2-Chloroethoxy)Methane	2600	U
120-83-2	2,4-Dichlorophenol	2600	U
120-82-1	1,2,4-Trichlorobenzene	2600	U
91-20-3	Naphthalene	2600	U
106-47-8	4-Chloroaniline	2600	U
87-68-3	Hexachlorobutadiene	2600	U
59-50-7	4-Chloro-3-Methylphenol	870	J
91-57-6	2-Methylnaphthalene	2600	U
77-47-4	Hexachlorocyclopentadiene	13000	U
88-06-2	2,4,6-Trichlorophenol	2600	U
95-95-4	2,4,5-Trichlorophenol	2600	U
91-58-7	2-Chloronaphthalene	2600	U
88-74-4	2-Nitroaniline	13000	U
131-11-3	Dimethyl Phthalate	2600	U
208-96-8	Acenaphthylene	2600	U
606-20-2	2,6-Dinitrotoluene	2600	U
99-09-2	3-Nitroaniline	13000	U
83-32-9	Acenaphthene	2600	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0P0V9

Lab Name: QUANTERRA MO Contract: 550-263

Lab Code: ITSL Case No.: S26101 SAS No.: SDG No.: W02428

Matrix: (soil/water) SOIL Lab Sample ID: 18261-001

Sample wt/vol: 30.20 (g/mL) G Lab File ID: H7736

Level: (low/med) LOW Date Received: 06/17/98

% Moisture: decanted: (Y/N) N Date Extracted: 07/07/98

Concentrated Extract Volume: 2000 (uL) Date Analyzed: 07/13/98

Injection Volume: 2.0(uL) Dilution Factor: 4.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	13000	U
100-02-7	4-Nitrophenol	13000	U
132-64-9	Dibenzofuran	2600	U
121-14-2	2,4-Dinitrotoluene	2600	U
84-66-2	Diethylphthalate	2600	U
7005-72-3	4-Chlorophenyl-phenylether	2600	U
86-73-7	Fluorene	2600	U
100-01-6	4-Nitroaniline	13000	U
534-52-1	4,6-Dinitro-2-Methylphenol	13000	U
86-30-6	N-Nitrosodiphenylamine (1)	2600	U
101-55-3	4-Bromophenyl-phenylether	2600	U
118-74-1	Hexachlorobenzene	2600	U
87-86-5	Pentachlorophenol	13000	U
85-01-8	Phenanthrene	2600	U
120-12-7	Anthracene	2600	U
86-74-8	Carbazole	2600	U
84-74-2	Di-n-Butylphthalate	2600	U
206-44-0	Fluoranthene	2600	U
129-00-0	Pyrene	1900	J
85-68-7	Butylbenzylphthalate	2600	J
91-94-1	3,3'-Dichlorobenzidine	13000	U
56-55-3	Benzo(a)Anthracene	2600	U
218-01-9	Chrysene	2600	U
117-81-7	bis(2-Ethylhexyl)Phthalate	2600	U
117-84-0	Di-n-Octyl Phthalate	2600	U
205-99-2	Benzo(b)Fluoranthene	2600	U
207-08-9	Benzo(k)Fluoranthene	2600	U
50-32-8	Benzo(a)Pyrene	2600	U
193-39-5	Indeno(1,2,3-cd)Pyrene	2600	U
53-70-3	Dibenz(a,h)Anthracene	2600	U
191-24-2	Benzo(g,h,i)Perylene	2600	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0P0V9

Lab Name: QUANTERRA MO Contract: 550-263

Lab Code: ITSL Case No.: S26101 SAS No.: SDG No.: W02428

Matrix: (soil/water) SOIL Lab Sample ID: 18261-001

Sample wt/vol: 30.20 (g/mL) G Lab File ID: H7736

Level: (low/med) LOW Date Received: 06/17/98

% Moisture: decanted: (Y/N) N Date Extracted: 07/07/98

Concentrated Extract Volume: 2000 (uL) Date Analyzed: 07/13/98

Injection Volume: 2.0(uL) Dilution Factor: 4.0

GPC Cleanup: (Y/N) N pH:

Number TICs found: 20

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.35	1800	J
2.	UNKNOWN	4.43	2100	J
3.	UNKNOWN	4.47	2000	J
4.	UNKNOWN	4.53	1700	J
5.	UNKNOWN	4.57	6600	J
6.	UNKNOWN	6.77	1900	J
7.	UNKNOWN	14.97	2400	J
8.	UNKNOWN	6.21	4100	J
9.	UNKNOWN	19.87	1200	J
10.	UNKNOWN	21.60	5400	J
11.	UNKNOWN	22.72	7800	J
12.	UNKNOWN	23.98	8300	J
13.	UNKNOWN	24.49	5000	J
14.	UNKNOWN	24.58	4800	J
15.	UNKNOWN	24.74	4900	J
16.	UNKNOWN	25.43	5400	J
17.	UNKNOWN	27.52	12000	J
18.	UNKNOWN	27.92	5900	J
19.	UNKNOWN	28.09	5200	J
20.	UNKNOWN	29.35	12000	J

Quanterra Environmental Services

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352-1613

Project: 550.263

Category: ICAP Metals
Method: EPA 6010
Matrix: SOLID

Client ID: B0P0V9

Sample Date : 06/11/98
Receipt Date : 06/17/98
Report Date : 07/14/98

Quanterra ID : 18261-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aluminum	7429-90-5	QCBLK177281-1	07/08/98	07/08/98	3570	MG/KG		20.0	1
Antimony	7440-36-0	QCBLK177281-1	07/08/98	07/08/98	2.9	MG/KG	UN	6.0	1
Barium	7440-39-3	QCBLK177281-1	07/08/98	07/08/98	40.5	MG/KG		20.0	1
Beryllium	7440-41-7	QCBLK177281-1	07/08/98	07/08/98	0.29	MG/KG	B	0.50	1
Cadmium	7440-43-9	QCBLK177281-1	07/08/98	07/08/98	0.32	MG/KG	B	0.50	1
Calcium	7440-70-2	QCBLK177281-1	07/08/98	07/08/98	5010	MG/KG	N	500	1
Chromium	7440-47-3	QCBLK177281-1	07/08/98	07/08/98	10	MG/KG	N	1.0	1
Cobalt	7440-48-4	QCBLK177281-1	07/08/98	07/08/98	3.4	MG/KG	B	5.0	1
Copper	7440-50-8	QCBLK177281-1	07/08/98	07/08/98	8.7	MG/KG		2.5	1
Iron	7439-89-6	QCBLK177281-1	07/08/98	07/08/98	9380	MG/KG		10.0	1
Magnesium	7439-95-4	QCBLK177281-1	07/08/98	07/08/98	2790	MG/KG	N	500	1
Manganese	7439-96-5	QCBLK177281-1	07/08/98	07/08/98	107	MG/KG	N	1.5	1
Nickel	7440-02-0	QCBLK177281-1	07/08/98	07/08/98	11.2	MG/KG		4.0	1
Potassium	7440-09-7	QCBLK177281-1	07/08/98	07/08/98	1820	MG/KG		500	1
Silver	7440-22-4	QCBLK177281-1	07/08/98	07/08/98	0.60	MG/KG	U	1.0	1
Sodium	7440-23-5	QCBLK177281-1	07/08/98	07/08/98	1290	MG/KG		500	1
Vanadium	7440-62-2	QCBLK177281-1	07/08/98	07/08/98	24.4	MG/KG		5.0	1
Zinc	7440-66-6	QCBLK177281-1	07/08/98	07/08/98	36.6	MG/KG		2.0	1

Quanterra Environmental Services

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352-1613

Project: 550.263

Category: ICAP Metals
Method: EPA 6010
Matrix: SOLID

Sample Date : 06/11/98
Receipt Date : 06/17/98
Report Date : 07/14/98

Client ID: B0P0V9

Quanterra ID : 18261-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aluminum	7429-90-5	QCBLK177281-1	07/08/98	07/08/98	1020	%REC			1
Antimony	7440-36-0	QCBLK177281-1	07/08/98	07/08/98	63	%REC	N		1
Barium	7440-39-3	QCBLK177281-1	07/08/98	07/08/98	99	%REC			1
Beryllium	7440-41-7	QCBLK177281-1	07/08/98	07/08/98	102	%REC			1
Cadmium	7440-43-9	QCBLK177281-1	07/08/98	07/08/98	112	%REC			1
Calcium	7440-70-2	QCBLK177281-1	07/08/98	07/08/98	118	%REC			1
Chromium	7440-47-3	QCBLK177281-1	07/08/98	07/08/98	129	%REC	N		1
Cobalt	7440-48-4	QCBLK177281-1	07/08/98	07/08/98	96	%REC			1
Copper	7440-50-8	QCBLK177281-1	07/08/98	07/08/98	102	%REC			1
Iron	7439-89-6	QCBLK177281-1	07/08/98	07/08/98	2278	%REC			1
Magnesium	7439-95-4	QCBLK177281-1	07/08/98	07/08/98	122	%REC	N		1
Manganese	7439-96-5	QCBLK177281-1	07/08/98	07/08/98	146	%REC	N		1
Nickel	7440-02-0	QCBLK177281-1	07/08/98	07/08/98	95	%REC			1
Potassium	7440-09-7	QCBLK177281-1	07/08/98	07/08/98	110	%REC			1
Silver	7440-22-4	QCBLK177281-1	07/08/98	07/08/98	85	%REC			1
Sodium	7440-23-5	QCBLK177281-1	07/08/98	07/08/98	104	%REC			1
Vanadium	7440-62-2	QCBLK177281-1	07/08/98	07/08/98	116	%REC			1
Zinc	7440-66-6	QCBLK177281-1	07/08/98	07/08/98	110	%REC			1

Quanterra Environmental Services

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352-1613

Project: 550.263

Category: ICAP Metals
Method: EPA 6010
Matrix: SOLID

Client ID: B0P0V9

Sample Date : 06/11/98
Receipt Date : 06/17/98
Report Date : 07/14/98

Quanterra ID : 18261-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aluminum	7429-90-5	QCBLK177281-1	07/08/98	07/08/98	109	%REC			1
Antimony	7440-36-0	QCBLK177281-1	07/08/98	07/08/98	74	%REC			1
Barium	7440-39-3	QCBLK177281-1	07/08/98	07/08/98	90	%REC			1
Beryllium	7440-41-7	QCBLK177281-1	07/08/98	07/08/98	100	%REC			1
Cadmium	7440-43-9	QCBLK177281-1	07/08/98	07/08/98	98	%REC			1
Calcium	7440-70-2	QCBLK177281-1	07/08/98	07/08/98	71	%REC			1
Chromium	7440-47-3	QCBLK177281-1	07/08/98	07/08/98	98	%REC			1
Cobalt	7440-48-4	QCBLK177281-1	07/08/98	07/08/98	92	%REC			1
Copper	7440-50-8	QCBLK177281-1	07/08/98	07/08/98	91	%REC			1
Iron	7439-89-6	QCBLK177281-1	07/08/98	07/08/98	-2538	%REC			1
Magnesium	7439-95-4	QCBLK177281-1	07/08/98	07/08/98	87	%REC			1
Manganese	7439-96-5	QCBLK177281-1	07/08/98	07/08/98	39	%REC			1
Nickel	7440-02-0	QCBLK177281-1	07/08/98	07/08/98	90	%REC			1
Potassium	7440-09-7	QCBLK177281-1	07/08/98	07/08/98	96	%REC			1
Silver	7440-22-4	QCBLK177281-1	07/08/98	07/08/98	89	%REC			1
Sodium	7440-23-5	QCBLK177281-1	07/08/98	07/08/98	103	%REC			1
Vanadium	7440-62-2	QCBLK177281-1	07/08/98	07/08/98	88	%REC			1
Zinc	7440-66-6	QCBLK177281-1	07/08/98	07/08/98	80	%REC			1

Quanterra Environmental Services

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352 1613

Project: 550.263

Category: Mercury
Method: EPA 7471
Matrix: SOLID

Sample Date : 06/11/98
Receipt Date : 06/17/98
Report Date : 07/15/98

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0P0V9	18261-001	Mercury	7439-97-6	QCBLK177106-1	07/06/98	07/06/98	0.017	MG/KG	U	0.033	1
B0P0V9	18261-001MS	Mercury	7439-97-6	QCBLK177106-1	07/06/98	07/06/98	105	%REC			1
B0P0V9	18261-001MSD	Mercury	7439-97-6	QCBLK177106-1	07/06/98	07/06/98	107	%REC			1
NA	QCLCS177106-1	Mercury	7439-97-6	QCBLK177106-1	07/06/98	07/06/98	100	%REC			1
NA	QCBLK177106-1	Mercury	7439-97-6	QCBLK177106-1	07/06/98	07/06/98	0.017	MG/KG	U	0.033	1

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: QUANTERRA_MO_____ Contract: 550.263___

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W02428_____

SOW No.: SW846

EPA Sample No.	Lab Sample ID
B0P0V9	18261-001
B0P0V9SD	18261-001SD
B0P0V9S	18261-001S

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: _____

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0P0V9

Lab Name: QUANTERRA MO Contract: 550.263

Lab Code: ITMO Case No.: SAS No.: SDG No.: W02428

Matrix (soil/water): SOIL Lab Sample ID: 18261-001

Level (low/med): LOW Date Received: 06/17/98

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3570			P
7440-36-0	Antimony	2.9	U	N	P
7440-39-3	Barium	40.5			P
7440-41-7	Beryllium	0.29	B		P
7440-43-9	Cadmium	0.32	B		P
7440-70-2	Calcium	5010		N	P
7440-47-3	Chromium	10		N	P
7440-48-4	Cobalt	3.4	B		P
7440-50-8	Copper	8.7			P
7439-89-6	Iron	9380			P
7439-95-4	Magnesium	2790		N	P
7439-96-5	Manganese	107		N	P
7439-97-6	Mercury	0.02	U		CV
7440-02-0	Nickel	11.2			P
7440-09-7	Potassium	1820			P
7440-22-4	Silver	0.60	U		P
7440-23-5	Sodium	1290			P
7440-62-2	Vanadium	24.4			P
7440-66-6	Zinc	36.6			P

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846