START 9613453.1266

0044656 W0909

Quanterra
Environmental Services

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

314 298-8566 Telephone
314 298-8757 Fax

CERTIFICATE OF ANALYSIS

APR 1996 RECEIVED Data Log In

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, Washington 99352

March 29, 1996

Attention: Joan Kessner

JUN 1996 RECEIVED EDMC

Project number	:	550.65
Date Received by Lab	:	February 22, 1996
Number of Samples	:	Two (2)
Sample Type	:	Other
SDG Number	:	W0909
Data Deliverable	:	Summary

I. Introduction

On February 22, 1996, two (2) other samples were received by Quanterra, Richland and transferred to Quanterra, St. Louis for chemical analysis. Upon receipt, the samples were given the following laboratory ID numbers to correspond with the specific client IDs:

St Louis ID	WHC ID	Richland ID	Matrix	Date of Receipt
10400-001	B0H695	60228401	Other	02/22/96
10400-002	B0H696	60228402	Other	02/22/96

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.

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Analyses requested: Semivolatiles by EPA 8270. Volatiles by EPA 8240. ICAP metals by EPA 6010. Mercury by EPA method 7471. Arsenic by EPA method 7060. Lead by EPA method 7421. Selenium by EPA method 7740. Thallium by EPA method 7841. Chloride, Fluoride, Nitrite, Nitrate and Phosphate by EPA method 300.0. Nitrate/Nitrite by EPA method 353.1.

III. Quality Control

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

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

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

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

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Metals

Percent solids was not determined for samples in SDG W0909. 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 sample.

The samples were prepared for Mercury by using 0.6 g and a final volume of 100 mls per the Quanterra SOP for method 7174. The LCS was prepped using 0.2 g and a final volume of 100 mls due to the high concentration of Mercury in the standard. See NCM # SL-2542.

All the Calcium data was flagged with an " E " because the percent difference for the serial dilution for Calcium (18.6) was greater than 10.

The recoveries of matrix spike and/or the matrix spike duplicate for the following list of elements were less than 80%, therefore all associated data was flagged with an " N ".

	% REC MS	% REC MSD
Mercury	37.6	45.9
Antimony	43.4	52.0
Cadmium	70.6	64.6
Lead	26.4	10.8
Selenium	71.2	54.4
Thallium	78.5	76.8

See NCM # SL-2540.

Wet Chemistry

The Relative Percent Difference could not be calculated due to the values being below the detection limits for the Fluoride, Phosphate, and Nitrite analyses on sample 10400-001.

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The Matrix Spike recovery for the Nitrate/Nitrite analysis by EPA method 353.1 was outside of the suggested limits of 75-125% for sample 10400-001, however the sample concentration was four times greater than the spike amount which makes the limits invalid.

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$\abbydave\hanw0909.nar

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2542 ~~2543~~ 3-8-9.

LOG #:

LABORATORY NONCONFORMANCE MEMO (NCM)

Quanterra Incorporated

Project ID/Client: 500.65 W0909

NCM Initiated by/Date: K. Clay 03-08-96 Project Manager: W. Price

Sample Numbers/QC batch or lot numbers: 10400-001, 001MS, 001MSD

Tests: HG/7471

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 _____ 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)

LCS prepared 0.2g → 100ml, new procedure requires 0.6g → 100ml for samples

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

Client notified by (name and date): _____

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

Client's name and response:

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

Project manager (signature and date): _____

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QUANTERRA LABORATORY NONCONFORMANCE MEMO

LOG #: 2542 ~~2543~~ 3-8-96

Corrective Action:

To be completed and reviewed by all associates involved

Problem Description/Root Cause

Author's initials and date: K. Clay 03-08-96

LCS prepped 0.2g —> 100ml, change in SOP requires 0.6g —> 100ml for samples

Corrective Actions (Short Term)

Author's initials and date: K. Clay 03-08-96

Discuss SOP changes with analyst

Corrective Actions to Prevent Reoccurrence (Long Term) Same as above

Corrective Action approved by (Supervisor/Group Leader) and date: [illegible] 3-8-96

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: [illegible] Date: 3-8-96

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 #: 2540

LABORATORY NONCONFORMANCE MEMO (NCM)

Quanterra Incorporated

Project ID/Client: 550.65 W0909

NCM Initiated by/Date: L. CLAY 03-08-96 Project Manager: W. Price

Sample Numbers/QC batch or lot numbers: 10400-001, 001MS, 001MSD, 002

Tests: HG/7471, Pb/7421, Se/7740, Tl/7841, Sb,Cd,Ag/6010

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 _____ 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) MS/MSD outside of limits

	MS %	MSD %	RPD		MS %	MSD %	RPD
Sb	43.4	52.0	18	Ag	53.8	70.1	23
Cd	70.6	64.6	8.9	Tl	78.5	76.8	2.2
Pb	26.4	10.8	84				
Hg	37.6	45.9	20				
Se	74.2	54.4	27				

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

Client notified by (name and date): _____

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

Client's name and response: _____

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

Project manager (signature and date): _____

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QUANTERRA LABORATORY NONCONFORMANCE MEMO

LOG #: 2540

Corrective Action:

To be completed and reviewed by all associates involved

Problem Description/Root Cause

Author's initials and date: K. Clay 03-08-96

MS/MSD recoveries less than 80% due to matrix

Corrective Actions (Short Term)

Author's initials and date: K Clay 03-08-96

Report data

Corrective Actions to Prevent Reoccurrence (Long Term)

None

Corrective Action approved by (Supervisor/Group Leader) and date: [illegible] 3-8-96

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: [illegible] Date: 3-8-96

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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Quanterra February 26, 1996 08:53 am
Account: 10722 Project: 550.65 Quanterra-Richland QAS No. 892 Rev. 0
Master Sample Login: 10400

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.
10400-001	B0H695	Solid	20-FEB-96 10:00	22-FEB-96 12:30	28-MAR-96	FED-EX	3*	R4713-002

TREAT AS A SOIL/NOTE: RICHLAND ID 60228401, MATRIX=RESIN

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
3	VI - Vial-40ml	VOA/8240/Q4	S	COLD	21-MAR-96	05-MAR-96	109Q	(215792:100 215793:99 215794:98)
1	PW - Plastic-4oz	AS/7060/Q4	S	COLD	21-MAR-96	18-AUG-96	S14B	(215798:94)
3		BNA/8270/Q4	S	COLD	21-MAR-96	05-MAR-96	S14B	(215800:92 215801:91 215802:90)
3		CL/300.0/Q4	S	COLD	21-MAR-96	19-MAR-96	S14B	(215795:97 215796:96 215797:95)
3		FL/300.0/Q4	S	COLD	21-MAR-96	19-MAR-96	S14B	(215795:97 215796:96 215797:95)
1		HG/7471/Q4	S	COLD	21-MAR-96	19-MAR-96	S14B	(215798:94)
1		ICAP/6010/Q4	S	COLD	21-MAR-96	18-AUG-96	S14B	(215798:94)
3		NO2/300.0/Q4	S	COLD	21-MAR-96	22-FEB-96	S14B	(215795:97 215796:96 215797:95)
3		NO3/300.0/Q4	S	COLD	21-MAR-96	22-FEB-96	S14B	(215795:97 215796:96 215797:95)
1		NO3/353.1/Q4	S	COLD	21-MAR-96	19-MAR-96	S14B	(215799:93)
3		OPHOS/300.0/Q4	S	COLD	21-MAR-96	22-FEB-96	S14B	(215795:97 215796:96 215797:95)
1		PB/7421/Q4	S	COLD	21-MAR-96	18-AUG-96	S14B	(215798:94)
1		SE/7740/Q4	S	COLD	21-MAR-96	18-AUG-96	S14B	(215798:94)
1		TL/7841/Q4	S	COLD	21-MAR-96	18-AUG-96	S14B	(215798:94)

10400-001DUP	B0H695	Solid	20-FEB-96 10:00	22-FEB-96 12:30	28-MAR-96	FED-EX	3*	R4713-002

TREAT AS A SOIL/NOTE: RICHLAND ID 60228401, MATRIX=RESIN

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
3	PW - Plastic-4oz	CL/300.0/Q4	S	COLD	21-MAR-96	19-MAR-96	S14B	(215795:97 215796:96 215797:95)
3		FL/300.0/Q4	S	COLD	21-MAR-96	19-MAR-96	S14B	(215795:97 215796:96 215797:95)
3		NO2/300.0/Q4	S	COLD	21-MAR-96	22-FEB-96	S14B	(215795:97 215796:96 215797:95)
3		NO3/300.0/Q4	S	COLD	21-MAR-96	22-FEB-96	S14B	(215795:97 215796:96 215797:95)
1		NO3/353.1/Q4	S	COLD	21-MAR-96	19-MAR-96	S14B	(215799:93)
3		OPHOS/300.0/Q4	S	COLD	21-MAR-96	22-FEB-96	S14B	(215795:97 215796:96 215797:95)

10400-001MS	B0H695	Solid	20-FEB-96 10:00	22-FEB-96 12:30	28-MAR-96	FED-EX	3*	R4713-002

TREAT AS A SOIL/NOTE: RICHLAND ID 60228401, MATRIX=RESIN

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
3	VI - Vial-40ml	VOA/8240/Q4	S	COLD	21-MAR-96	05-MAR-96	109Q	(215792:100 215793:99 215794:98)
1	PW - Plastic-4oz	AS/7060/Q4	S	COLD	21-MAR-96	18-AUG-96	S14B	(215798:94)
3		BNA/8270/Q4	S	COLD	21-MAR-96	05-MAR-96	S14B	(215800:92 215801:91 215802:90)
3		CL/300.0/Q4	S	COLD	21-MAR-96	19-MAR-96	S14B	(215795:97 215796:96 215797:95)
3		FL/300.0/Q4	S	COLD	21-MAR-96	19-MAR-96	S14B	(215795:97 215796:96 215797:95)
1		HG/7471/Q4	S	COLD	21-MAR-96	19-MAR-96	S14B	(215798:94)
1		ICAP/6010/Q4	S	COLD	21-MAR-96	18-AUG-96	S14B	(215798:94)
3		NO2/300.0/Q4	S	COLD	21-MAR-96	22-FEB-96	S14B	(215795:97 215796:96 215797:95)
3		NO3/300.0/Q4	S	COLD	21-MAR-96	22-FEB-96	S14B	(215795:97 215796:96 215797:95)
1		NO3/353.1/Q4	S	COLD	21-MAR-96	19-MAR-96	S14B	(215799:93)
3		OPHOS/300.0/Q4	S	COLD	21-MAR-96	22-FEB-96	S14B	(215795:97 215796:96 215797:95)
1		PB/7421/Q4	S	COLD	21-MAR-96	18-AUG-96	S14B	(215798:94)

3*=Sample has not been rad screened.

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Quanterra February 26, 1996 08:53 am
Account: 10722 Project: 550.65 Quanterra-Richland QAS No. 892 Rev. 0
Master Sample Login: 10400

Project Manager: W. Price

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

Sample Header Template: _____

Sample No. / #	Client ID / Container Type	C-Matrix / Analysis	Date: Collected / Class	Received / Preservative	Due / Anal. Due Date	Shipper / Hold Date	Rad Category / Site	Rad Sample No. / (Container Numbers:% Filled)
Comments / Data:								
1		SE/7740/Q4	S	COLD	21-MAR-96	18-AUG-96	S14B	(215798:94)
1		TL/7841/Q4	S	COLD	21-MAR-96	18-AUG-96	S14B	(215798:94)
10400-001MSD	B0H695	Solid	20-FEB-96 10:00	22-FEB-96 12:30	28-MAR-96	FED-EX	3*	R4713-002
TREAT AS A SOIL/NOTE: RICHLAND ID 60228401, MATRIX=RESIN								
3	VI - Vial-40ml	VOA/8240/Q4	S	COLD	21-MAR-96	05-MAR-96	109Q	(215792:100 215793:99 215794:98)
1	PW - Plastic-4oz	AS/7060/Q4	S	COLD	21-MAR-96	18-AUG-96	S14B	(215798:94)
3		BNA/8270/Q4	S	COLD	21-MAR-96	05-MAR-96	S14B	(215800:92 215801:91 215802:90)
1		HG/7471/Q4	S	COLD	21-MAR-96	19-MAR-96	S14B	(215798:94)
1		ICAP/6010/Q4	S	COLD	21-MAR-96	18-AUG-96	S14B	(215798:94)
1		PB/7421/Q4	S	COLD	21-MAR-96	18-AUG-96	S14B	(215798:94)
1		SE/7740/Q4	S	COLD	21-MAR-96	18-AUG-96	S14B	(215798:94)
1		TL/7841/Q4	S	COLD	21-MAR-96	18-AUG-96	S14B	(215798:94)
10400-002	B0H696	Solid	20-FEB-96 11:00	22-FEB-96 12:30	28-MAR-96	FED-EX	3*	R4713-001
TREAT AS A SOIL/NOTE: RICHLAND ID 60228402, MATRIX=RESIN								
3	VI - Vial-40ml	VOA/8240/Q4	S	COLD	21-MAR-96	05-MAR-96	109Q	(215803:100 215804:99 215805:98)
1	PW - Plastic-4oz	AS/7060/Q4	S	COLD	21-MAR-96	18-AUG-96	S14B	(215809:94)
3		BNA/8270/Q4	S	COLD	21-MAR-96	05-MAR-96	S14B	(215811:92 215812:91 215813:90)
3		CL/300.0/Q4	S	COLD	21-MAR-96	19-MAR-96	S14B	(215806:97 215807:96 215808:95)
3		FL/300.0/Q4	S	COLD	21-MAR-96	19-MAR-96	S14B	(215806:97 215807:96 215808:95)
1		HG/7471/Q4	S	COLD	21-MAR-96	19-MAR-96	S14B	(215809:94)
1		ICAP/6010/Q4	S	COLD	21-MAR-96	18-AUG-96	S14B	(215809:94)
3		NO2/300.0/Q4	S	COLD	21-MAR-96	22-FEB-96	S14B	(215806:97 215807:96 215808:95)
3		NO3/300.0/Q4	S	COLD	21-MAR-96	22-FEB-96	S14B	(215806:97 215807:96 215808:95)
1		NO3/353.1/Q4	S	COLD	21-MAR-96	19-MAR-96	S14B	(215810:93)
3		OPHOS/300.0/Q4	S	COLD	21-MAR-96	22-FEB-96	S14B	(215806:97 215807:96 215808:95)
1		PB/7421/Q4	S	COLD	21-MAR-96	18-AUG-96	S14B	(215809:94)
1		SE/7740/Q4	S	COLD	21-MAR-96	18-AUG-96	S14B	(215809:94)
1		TL/7841/Q4	S	COLD	21-MAR-96	18-AUG-96	S14B	(215809:94)

3*=Sample has not been rad screened.

9613453.1275
60000

Temp 5°c Cur # 6402

Chain of Custody Record

Go St Louis

Quanterra Environmental Services

QUA-4124-1

Client: Bechtel Hanford	Project Manager: Van Pettey	Date: 2-22-96	Chain Of Custody Number: 54243
Address:	Telephone Number (Area Code)/Fax Number:	Lab Number:	Page 1 of 1
City / State / Zip Code:	Site Contact:	Lab Contact:	
Project Name: SAF B96-030	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.:			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed): SEE COC	Special Instructions/ Conditions of Receipt
60228401 BOH 695	SEE			COC										
↓ 2 ↓ 696														

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-W0909

1. Relinquished By: Heidelberg Quanterra	Date: 2-22-96	Time: 16:00	1. Received By: [signature]	Date: 2-23-96	Time: 08:45
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

9613453.1276

Bechtel Hanford, Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Data Turnaround: ☐ Priority ■ Normal

Collector: K. Trapp	Company Contact: F. W. Gustafson	Telephone: (509) 372-9372
Project Designation: 200-UP-1 Pump and Treat - Spent Resin (1996)	Sampling Location: 200-UP-1 Pump and Treat	SAF No.: B96-030
Ice Chest No.: ER-50	Field Logbook No.: EFL-1127-6	Method of Shipment: Hand Delivered
Shipped To: Quanterra	Offsite Property No.: NA	Bill of Lading/Air Bill No.: NA
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: Maintain samples between 2°C and 6°C.		

SAMPLE ANALYSIS: 602284 SDG W0909

Sample No.	Matrix*	Date Sampled	Time Sampled	ICP Metals - TAL. AA Metals - As, Pb, Se, Tl, Hg.	VOA - TCL *1	Semi-VOA - TCL	Anions - F, Cl, PO_4, NO_2, NO_3	NO_2 - NO_3	*2 602285	Activity Scan			
Preservation				Cool 4°C	Cool 4°C	Cool 4°C	Cool 4°C	Cool 4°C	None	None			
Type of Container				A P/G	A Gs	aG	A G	A P/G	P/G	P			
No. of Container(s)				1	3	3	3	1	2	1			
Volume				60mL	40mL	60mL	60mL	60mL	1L	20mL			
B0H695 01	X	2/20/96	1000	X	X	X	X	X	X	X			
B0H696 02	X	2/20/96	1100	X	X	X	X	X	X	X			
				100	3X100	3X100	3X100	100					

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: K. Trapp / K. Trapp	Date/Time: 2/20/96 1250	Received By: B. Whitton	Date/Time: 2-20-96 1250
Relinquished By: B. Whitton	Date/Time: 2-22-96 1230	Received By: Naomi Stirling	Date/Time: 2-22-96 1230
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

*1 Due to sample matrix, zero headspace will not be obtained.

*2 Gross Alpha, Gross Beta, Tc-99, Total Uranium, Gamma Spec.

Sample Matrix - ion exchange resin.

Sample analysis for PO_4, NO_2, and NO_3 by EPA 300.0 is being requested for information only. The ERC Contractor acknowledges that the 48 hour hold time will not be met.

For VOA and semi-VOA analysis, the resin should be treated as a soil.

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

96134953.1277

00011

10400
4713
550.65

Client Sample Screening Results

22-Feb-96

2/22/96

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
BHI B0H0P8		2/22/96 12:30:00 PM	QUAD21A	2/22/96 2:35:30 PM	B0H0P8	30	20	0.61916667	65	1.2179167
	LIQUID		Bkg:	2/22/96 3:21:07 AM	BKG	800	38	0.0475	759	0.94875

Anl Date: 2/22/96 Tot Sa, Alq: 4.00E+00 , 1.00E+01 Alp; (Dpm/ 1.90E+00 (uCi/ 3.42E-04 (pCi/ 8.56E+01 ± 2.8E+01 CAT I 2.9E-01 Lab
Ppt mg: 4.4 Units: L , ml Bet; Alq): 2.14E+00 Sa): 3.85E-04 L|g): 9.64E+01 ± 2.4E+01 5.2E-01 Alq Lig

BHI B0H0R4		2/22/96 12:30:00 PM	QUAD21B	2/22/96 2:35:30 PM	B0H0R4	30	29	0.93166667	92	2.1866667
	LIQUID		Bkg:	2/22/96 3:21:07 AM	BKG	800	28	0.035	704	0.88

Anl Date: 2/22/96 Tot Sa, Alq: 4.00E+00 , 1.00E+01 Alp; (Dpm/ 2.89E+00 (uCi/ 5.21E-04 (pCi/ 1.30E+02 ± 2.9E+01 CAT I 1.9E-01 Lab
Ppt mg: 1.5 Units: L , ml Bet; Alq): 3.67E+00 Sa): 6.62E-04 L|g): 1.65E+02 ± 2.7E+01 3.0E-01 Alq Lig

BHI B0H0R6		2/22/96 12:30:00 PM	QUAD21C	2/22/96 2:35:30 PM	B0H0R6	30	24	0.7575	74	1.5116667
	LIQUID		Bkg:	2/22/96 3:21:07 AM	BKG	800	34	0.0425	764	0.955

Anl Date: 2/22/96 Tot Sa, Alq: 4.00E+00 , 1.00E+01 Alp; (Dpm/ 2.30E+00 (uCi/ 4.14E-04 (pCi/ 1.03E+02 ± 2.8E+01 CAT I 2.4E-01 Lab
Ppt mg: 4.1 Units: L , ml Bet; Alq): 2.56E+00 Sa): 4.61E-04 L|g): 1.15E+02 ± 2.5E+01 4.3E-01 Alq Lig

BHI B0H0S4		2/22/96 12:30:00 PM	QUAD21D	2/22/96 2:35:30 PM	B0H0S4	30	10	0.30333333	70	1.3433333
	LIQUID		Bkg:	2/22/96 3:21:07 AM	BKG	800	24	0.03	792	0.99

Anl Date: 2/22/96 Tot Sa, Alq: 4.00E+00 , 1.00E+01 Alp; (Dpm/ 9.04E-01 (uCi/ 1.63E-04 (pCi/ 4.07E+01 ± 2.4E+01 CAT I 6.1E-01 Lab
Ppt mg: 1.1 Units: L , ml Bet; Alq): 2.47E+00 Sa): 4.44E-04 L|g): 1.11E+02 ± 2.4E+01 4.5E-01 Alq Lig

BHI B0H0T6		2/22/96 12:30:00 PM	QUAD22A	2/22/96 2:35:34 PM	B0H0T6	30	1	-0.0104167	39	0.31625
	LIQUID		Bkg:	2/22/96 3:21:17 AM	BKG	800	35	0.04375	787	0.98375

Anl Date: 2/22/96 Tot Sa, Alq: 4.00E+00 , 1.00E+01 Alp; (Dpm/ -3.82E-02 (uCi/ -6.89E-06 (pCi/ -1.72E+00 ± 1.8E+01 CAT I 4.0E+00 Lab
Ppt mg: 0 Units: L , ml Bet; Alq): 5.94E-01 Sa): 1.07E-04 L|g): 2.68E+01 ± 1.8E+01 1.9E+00 Alq Lig

00012

9613453.1278

2/22/96

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
BHI B0H617		2/22/96 12:30:00 PM	QUAD22C	2/22/96 2:35:34 PM	B0H617	30	22	0.70083333	765	24.56
	LIQUID		Bkg:	2/22/96 3:21:17 AM	BKG	800	26	0.0325	752	0.94
Anl Date: 2/22/96	Tot Sa, Alq: 4.00E+00	, 1.00E+01	Alp; (Dpm/ 1.23E+00	(uCi/ 2.21E-04	(pCi/ 5.53E+01	± 2.3E+01	CAT I	4.5E-01	Lab	
Ppt mg: 1.1	Units: L	, ml	Bet; Alq): 4.54E+01	Sa): 8.18E-03	Lig): 2.04E+03	± 7.7E+01		2.4E-02	Alq Lig	
BHI B0H618		2/22/96 12:30:00 PM	QUAD22D	2/22/96 2:35:34 PM	B0H618	30	11	0.32166667	89	1.9766667
	LIQUID		Bkg:	2/22/96 3:21:17 AM	BKG	800	36	0.045	792	0.99
Anl Date: 2/22/96	Tot Sa, Alq: 4.00E+00	, 1.00E+01	Alp; (Dpm/ 9.06E-01	(uCi/ 1.63E-04	(pCi/ 4.08E+01	± 2.3E+01	CAT I	6.1E-01	Lab	
Ppt mg: 1.2	Units: L	, ml	Bet; Alq): 3.52E+00	Sa): 6.35E-04	Lig): 1.59E+02	± 2.6E+01		3.2E-01	Alq Lig	
10400001 BHI B0H695		2/22/96 12:30:00 PM	QUAD23A	2/22/96 2:35:23 PM	B0H695	30	578	19.2291667	12052	400.80083
	SOLID		Bkg:	2/22/96 3:21:26 AM	BKG	800	30	0.0375	746	0.9325
Anl Date: 2/22/96	Tot Sa, Alq: 9.08E+02	, 2.76E+01	Alp; (Dpm/ 6.54E+01	(uCi/ 9.69E-01	(pCi/ 1.07E+03	± 4.4E+01	CAT III	4.7E-02	Lab	
Ppt mg: 27.6	Units: g	, mg	Bet; Alq): 7.92E+02	Sa): 1.17E+01	Lig): 1.29E+04	± 1.2E+02		7.7E-03	Alq Lig	
10400002 BHI B0H696		2/22/96 12:30:00 PM	QUAD23B	2/22/96 2:35:23 PM	B0H696	30	199	6.58208333	9472	314.75583
	SOLID		Bkg:	2/22/96 3:21:26 AM	BKG	800	41	0.05125	782	0.9775
Anl Date: 2/22/96	Tot Sa, Alq: 8.70E+02	, 2.89E+01	Alp; (Dpm/ 1.68E+01	(uCi/ 2.28E-01	(pCi/ 2.63E+02	± 2.3E+01	CAT III	1.9E-01	Lab	
Ppt mg: 28.9	Units: g	, mg	Bet; Alq): 6.34E+02	Sa): 8.59E+00	Lig): 9.88E+03	± 1.0E+02		1.0E-02	Alq Lig	
BHI B0H6W2		2/22/96 12:30:00 PM	QUAD24C	2/22/96 2:10:01 PM	B0H6W2	30	16	0.48083333	107	2.6016667
	SOLID		Bkg:	2/22/96 3:21:13 AM	BKG	800	42	0.0525	772	0.965
Anl Date: 2/22/96	Tot Sa, Alq: 3.48E+02	, 9.68E+01	Alp; (Dpm/ 3.09E+00	(uCi/ 5.00E-03	(pCi/ 1.44E+01	± 5.7E+00	CAT I	3.5E+00	Lab	
Ppt mg: 96.8	Units: g	, mg	Bet; Alq): 5.42E+00	Sa): 8.78E-03	Lig): 2.52E+01	± 3.5E+00		4.0E+00	Alq Lig	
BHI B0H6W3		2/22/96 12:30:00 PM	QUAD24D	2/22/96 2:10:01 PM	B0H6W3	30	11	0.32541667	97	2.1820833
	SOLID		Bkg:	2/22/96 3:21:13 AM	BKG	800	33	0.04125	841	1.05125
Anl Date: 2/22/96	Tot Sa, Alq: 3.60E+02	, 8.43E+01	Alp; (Dpm/ 1.90E+00	(uCi/ 3.65E-03	(pCi/ 1.01E+01	± 6.0E+00	CAT I	4.9E+00	Lab	
Ppt mg: 84.3	Units: g	, mg	Bet; Alq): 4.61E+00	Sa): 8.86E-03	Lig): 2.46E+01	± 3.8E+00		4.1E+00	Alq Lig	

00013

96163534.1279

(R3) 2/22/96

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
BHI B0H6X0		2/22/96 12:30:00 PM	QUAD23D	2/22/96 2:54:34 PM	B0H6X0	10	5	0.46125	256	24.72375
	SOLID		Bkg:	2/22/96 3:21:26 AM	BKG	800	31	0.03875	701	0.87625
Ani Date: 2/22/96	Tot Sa, Alq: 3.84E+02	, 7.91E+01	Alp; (Dpm/ 1.39E+00	(uCi/ 3.04E-03	(pCi/ 7.91E+00	± 9.3E+00	CAT II	6.3E+00	Lab Alq Lig	
Ppt mg: 79.1	Units: g	, mg	Bet; Alq): 5.25E+01	Sa): 1.15E-01	Lig): 2.99E+02	± 1.9E+01		3.3E-01		
BHI B0H6X1		2/22/96 12:30:00 PM	QUAD24A	2/22/96 2:56:41 PM	B0H6X1	30	21	0.6475	132	3.385
	SOLID		Bkg:	2/22/96 3:21:13 AM	BKG	800	42	0.0525	812	1.015
Ani Date: 2/22/96	Tot Sa, Alq: 3.24E+02	, 8.53E+01	Alp; (Dpm/ 4.09E+00	(uCi/ 7.00E-03	(pCi/ 2.16E+01	± 6.9E+00	CAT I	2.3E+00	Lab Alq Lig	
Ppt mg: 85.3	Units: g	, mg	Bet; Alq): 7.20E+00	Sa): 1.23E-02	Lig): 3.80E+01	± 4.5E+00		2.6E+00		
BHI B0H6X2		2/22/96 12:30:00 PM	QUAD24A	2/22/96 2:10:01 PM	B0H6X2	30	13	0.38083333	151	4.0183333
	SOLID		Bkg:	2/22/96 3:21:13 AM	BKG	800	42	0.0525	812	1.015
Ani Date: 2/22/96	Tot Sa, Alq: 3.12E+02	, 6.81E+01	Alp; (Dpm/ 2.05E+00	(uCi/ 4.22E-03	(pCi/ 1.35E+01	± 7.1E+00	CAT I	3.7E+00	Lab Alq Lig	
Ppt mg: 68.1	Units: g	, mg	Bet; Alq): 8.59E+00	Sa): 1.77E-02	Lig): 5.68E+01	± 5.9E+00		1.8E+00		
BHI B0H6X3		2/22/96 12:30:00 PM	QUAD24B	2/22/96 2:10:01 PM	B0H6X3	30	8	0.20666667	107	2.5554167
	SOLID		Bkg:	2/22/96 3:21:13 AM	BKG	800	48	0.06	809	1.01125
Ani Date: 2/22/96	Tot Sa, Alq: 3.25E+02	, 7.21E+01	Alp; (Dpm/ 1.10E+00	(uCi/ 2.23E-03	(pCi/ 6.86E+00	± 6.3E+00	CAT I	7.3E+00	Lab Alq Lig	
Ppt mg: 72.1	Units: g	, mg	Bet; Alq): 5.39E+00	Sa): 1.09E-02	Lig): 3.37E+01	± 4.6E+00		3.0E+00		
BHI B0HCG8		2/22/96 12:30:00 PM	QUAD24B	2/22/96 2:56:41 PM	B0HCG8	30	16	0.47333333	66	1.18875
	SOLID		Bkg:	2/22/96 3:21:13 AM	BKG	800	48	0.06	809	1.01125
Ani Date: 2/22/96	Tot Sa, Alq: 1.10E+03	, 8.24E+01	Alp; (Dpm/ 2.96E+00	(uCi/ 1.78E-02	(pCi/ 1.62E+01	± 6.5E+00	CAT II	3.1E+00	Lab Alq Lig	
Ppt mg: 82.4	Units: g	, mg	Bet; Alq): 2.31E+00	Sa): 1.39E-02	Lig): 1.26E+01	± 3.2E+00		7.9E+00		
BHI B0HCG9		2/22/96 12:30:00 PM	QUAD24C	2/22/96 2:56:41 PM	B0HCG9	30	8	0.21416667	243	7.135
	SOLID		Bkg:	2/22/96 3:21:13 AM	BKG	800	42	0.0525	772	0.965
Ani Date: 2/22/96	Tot Sa, Alq: 1.10E+03	, 1.00E+01	Alp; (Dpm/ 6.57E-01	(uCi/ 3.26E-02	(pCi/ 2.96E+01	± 3.4E+01	CAT II	1.7E+00	Lab Alq Lig	
Ppt mg: 42.2	Units: g	, mg	Bet; Alq): 1.46E+01	Sa): 7.21E-01	Lig): 6.55E+02	± 4.8E+01		1.5E-01		

00014

96135453.1280

SAMPLE STATUS REPORT FOR N 6237. RAD SCREEN BOH696 TIME: 2/21/96 11:49
DISPATCHED: 2/16/96 9:49 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 2/20/96 12: 0

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
4271	TOT-ACT	4.24000E 03 pCi/G	N	Y	X60168

END OF REPORT

2620 ml = 2620 g for Resin

4240×10^{-12} Ci x 2620 = 11.1088 $\times 10^{-6}$ Ci

= 11 µCi

17 µCi + 11 µCi = 28 µCi shipment total

A_2 for Tc-99 = 24.3 Ci

for Ltd Qty $\frac{24.3}{1000}$ = .0243 Ci Ltd Qty

28 µCi < 24,300 µCi therefore shipment is Ltd. Qty.

SAMPLE STATUS REPORT FOR N 6236. RAD SCREEN BOH695 TIME: 2/21/96 11:49
DISPATCHED: 2/16/96 9:49 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 2/20/96 12: 0

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	6.45000E 03 pCi/G	N	Y	X60168

END OF REPORT

~~260~~ 2620 ml ≈ 2620 g for resin

$$\frac{6450 \times 10^{-12}\,Ci}{g} \times 2620\,g = 1.6899 \times 10^{-9}\,Ci$$
$$= 16.899 \times 10^{-6}\,Ci$$
$$\approx 17\,\mu Ci$$

$$10^{-6} = \mu$$

9613453.1283

THIS PACKAGE CONFORMS TO THE CONDITIONS AND LIMITATIONS SPECIFIED IN 49 CFR 173.421 FOR RADIOACTIVE MATERIAL, EXCEPTED PACKAGE-LIMITED QUANITITY OF MATERIAL, UN2910

BECHTEL HANFORD INC.

9613453.1284

POTENTIAL HAZARDS

HEALTH HAZARDS

Low-level radioactive material; little personal radiation hazard.
Many packages are not required to have radioactive materials labels or markings.
Some radioactive materials cannot be detected by commonly available instruments.

FIRE OR EXPLOSION

Some of these materials may burn, but none of them ignites readily.
Radioactivity does not change flammability or other properties of the materials

EMERGENCY ACTION

Keep unnecessary people away; isolate hazard area and deny entry.
Response actions may be performed prior to any radiation measurements.
Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide limited protection.
Notify Radiation Authority of accident conditions.
Detain uninjured persons, isolate equipment with suspected contamination, and delay cleanup until instruction of Radiation Authority.

FIRE

Do not move damaged containers; move undamaged containers out of fire zone.
Small Fires: Dry chemical, CO_2, water spray or regular foam.
Large Fires: Water spray, fog (flooding amounts).

SPILL OR LEAK

Do not touch damaged containers or spilled material.
Small Liquid Spills: Take up with sand, earth or other noncombustible absorbent material.
Cover powder spill with plastic sheet or tarp to minimize spreading.

FIRST AID

Use first aid treatment according to the nature of the injury.
Advise medical personnel that victim may be contaminated with low-level radioactive material.

Radioactive Material, excepted package - limited quantity of material, 7, UN2910

RECEIVED BY _____

RADIOACTIVE SHIPMENT RECORD

3. Page 1 of 1 — 3a

1. SHIP TO
Company: QUANTERRA
Address: 2800 GEORGE WASHINGTON WAY
City, State, Zip: RICHLAND WA 99352
Attention: KAREN ACTENBURGA
Phone: 375-3131 EXT 135

2. SHIP FROM U.S. DEPT. OF ENERGY C/O
Company: BHI HANFORD
Address: 4701-C 400 AREA
City, State, Zip: RICHLAND WA 99352
Contact: BILL WHITTEN 376-1878
Phone:

4. Ship [X] Prepaid [ ] Collect
Via: [X] Motor-Rail [ ] Air Pssgr [ ] Excl. Use [ ] Air Cargo [ ] UPS Surface [ ] Mail [X] Site Carrier
SHIPMENT AUTHORIZATION NUMBER:

5. HM Proper Shipping Name: Radioactive Material,

	excepted package - empty packaging	7	UN2910
	excepted package - instruments or articles	7	UN2910
X	excepted package - limited quantity of material	7	UN2910
	excepted packages - articles manufactured from natural or depleted uranium or natural thorium	7	UN2910
	Special Form, n.o.s.	7	UN2974
	Low Specific Activity, n.o.s.	7	UN2912
	n.o.s.	7	UN2982
	Fissile, n.o.s.	7	UN2918
	(other)		

6. Markings Applied: Package Orientation [ ]; Gross Weight [X]; Radioactive - LSA [ ]; Type A [ ]; Type B [ ]

7. For Normal Form Identify
Physical Form: [ ] Liquid [ ] Gas [X] Solid
Chemical Form: [ ] Metal [ ] Oxide [X] Elemental [ ] Nitrate [ ] Mixture
Other:

8. Additional RAM Desc.: Limited Quantity Radioactive Material [X]; Highway Route Controlled Quantity [ ]

9. Placards Applied [ ] Yes [X] No
If Rail Specify Placards:
Route Plan [ ] Yes [X] No

10. EMERGENCY RESPONSE
Telephone: (509) 373-3800
Emergency Response Guide(s): # 61

11a. TYPE PACKAGE: Strong Tight [X]; Type A [ ]; Type B [ ]; Type B(U) [ ]; Type B(M) [ ]

11b. CONSTRUCTION: Box, FB [ ]; Wood [ ]; Steel [ ]; Drum [ ]; Cask [ ]; Other: POLY COOLER

11c. FISSILE CLASS: Non-Fissile [ ]; Fissile Exempt [X]; Fissile I [ ]; Fissile II [ ]; Fissile III [ ]; Gms Fissile: < 15 gms

11d. Labels Applied: Empty [ ]; Radioactive White I [ ]; Radioactive Yellow II [ ]; Radioactive Yellow III [ ]; Subsidiary Hazard [ ]

Warning -- Fissile Class III Shipment. Do Not Load More Than ____ Packages Per Vehicle. In Loading and Storage Areas, Keep at Least 20 Feet From Other Packages Bearing Radioactive Labels.

12.

No. Pkgs.	Model Package	COC/Spec	Serial No.	Seal No.	Isotopes	T.I.	Curies/Pkg	Gr. Wt.
1	STRONG TIGHT	N/A	N/A	N/A	Tc99 U238 U235	N/A	28 µCi	41 lbs
POLY COOLER # ER-50	CONTAINS SAMPLES OF SPENT RESIN							
IN GLASS JARS. THE JARS ARE PACKED ON WET ICE AND								
VERMICULITE # BOH695 BOH696								
(Shipper may describe package in detail on one of the unused lines above)					TOTALS	N/A	28 µCi	41 lbs

13. This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation, according to the applicable federal, state, local and international regulations for the transportation of hazardous materials.
Certifier's Signature On behalf of DOE-RL: J. D. Franklin for Franklin
Date: 2-22-96
Organization: FIELD SAMPLING
Complete Cost Code (Inc. End Function): X6C156

14. Surface Dose Rate of Package: [X] <0.5 or N/A mrem/hr (N + β γ)
Dose Rate at 1 Meter from Surface of Package: [X] <0.5 or N/A mrem/hr (N + β γ)
Smears of Outer Container: [X] <22 dpm β γ/cm²; [X] <2.2 dpm α/cm²; [X] <Tbl. 2-2 HSRCM Onsite Limits
TRUCK LOAD OR EXCLUSIVE USE: Surface [X] <200 mrem/hr (N + β γ); @ 6 feet [X] <10 mrem/hr (N + β γ); @ Cab or sleeper [X] <2 mrem/hr (N + β γ)
Additional Data and Instructions (inc. Readings on Internal Packaging): None
Signature - Radiation Monitoring: [signature]
Bldg.: 4701-C
Survey No.: I-200-1084
Date: 02/22/96

15. PICKUP OF SHIPMENT
Vehicle: ID-2598
Driver: B.T. WHITTEN
RECEIPT
Signature: Bill Whitten
Date: 2-22-96

16. Shipment has been inspected and verified to be in compliance with DOT regulations
Authorized Signature: M. G. [signature]
Printed Name: M. A. SAMS
Date: 2-22-96

17. AIR TRANSPORT CERTIFICATION
CARGO AIRCRAFT: [ ] Cargo Aircraft Only Labels Applied
PASSENGER AIRCRAFT: [ ] 1. Ltd Qty [ ] 2. <3 T.I. [ ] 3. Research/Medical Diagnosis [ ] 4. Human Medical Research
Pkg. Dimensions: NA

18. OFFSITE AUTHORIZATION
B/L: RMW9851
Date Shipped: 2-22-96
Routing: BHI vehicle
ETA: 2-22-96
Surveyed By:
Date:
Approved for Shipment Offsite: M. G. [signature]
Date: 2-22-96

Karen Actenburga 2-22-96

Figure 1

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 2/22/96 Client Name BHI

Project/Client # B96-030 Batch or Case # _____

Cooler ID (if noted on outside of cooler) ER50

1. Condition of shipping container? O.K.
2. Custody Seals on cooler intact? Yes [X] No [ ]
3. Custody Seals dated and signed? Yes [X] No [ ]
4. Chain of Custody record is taped on inside of cooler lid? Yes [ ] No [X]
5. Vermiculite/packing material is: Wet [X] Dry [ ] _____
6. Each sample is in a plastic bag? Yes [X] No [ ] _____
7. Number of sample containers in cooler: 28
8. Samples have:
   - X tape
   - X custody seals
   - ___ hazard labels
   - ___ appropriate sample labels
9. Samples are:
   - X in good condition
   - ___ broken
   - ___ other
   - ___ leaking
   - ___ have air bubbles
10. Coolant Present? Yes [X] No [ ] Sample Temperature 4°C
11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #(s) n/a
    Request for Analysis #(s) _____
    Airbill # _____ Carrier n/a
12. Have any anomalies been identified above? Yes [ ] No [X]
13. Memos have been initiated for all anomalies identified above? Yes [ ]

Printed Name/Signature Karen Stirling Date/Time 2-22-96 1230

9613453.1287

Quanterra Environmental Services

C.C. and C.O.C.
COPIED TO: BWLWP
DATE 2-23-96
12:15
m

Login No.: 10400

Condition Upon Receipt Variance Report
St. Louis Laboratory

Client: IT-Richland

Project No: 550.65

Shipper/No: FedEx 1978630061

Date: 2-23-96 Time: 0845

Initiated by: Fred Mitchell

RFA/COC Numbers: 54243

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: 5°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) Fred Mitchell Date: 2-23-96

Project Management Review: Abby Wolder Date: 2-24-96

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

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

9613453.1288

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: VOA-TCL
Method: EPA 8240
Matrix: SOLID

Client ID: B0H695

Sample Date : 02/20/96
Receipt Date : 02/22/96
Report Date : 03/22/96

Quanterra ID : 10400-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Chloromethane	74-87-3	QCBLK93369-1	03/04/96	03/04/96	20	UG/KG	U	20	2
Bromomethane	74-83-9	QCBLK93369-1	03/04/96	03/04/96	20	UG/KG	U	20	2
Vinyl Chloride	75-01-4	QCBLK93369-1	03/04/96	03/04/96	20	UG/KG	U	20	2
Chloroethane	75-00-3	QCBLK93369-1	03/04/96	03/04/96	20	UG/KG	U	20	2
Methylene Chloride	75-09-2	QCBLK93369-1	03/04/96	03/04/96	19	UG/KG	B	10	2
Acetone	67-64-1	QCBLK93369-1	03/04/96	03/04/96	41	UG/KG	B	40	2
Carbon Disulfide	75-15-0	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
1,1-Dichloroethene	75-35-4	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
1,1-Dichloroethane	75-34-3	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
1,2-Dichloroethene (total)	540-59-0	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
Chloroform	67-66-3	QCBLK93369-1	03/04/96	03/04/96	6	UG/KG	J	10	2
1,2-Dichloroethane	107-06-2	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
2-Butanone	78-93-3	QCBLK93369-1	03/04/96	03/04/96	40	UG/KG	U	40	2
1,1,1-Trichloroethane	71-55-6	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
Carbon Tetrachloride	56-23-5	QCBLK93369-1	03/04/96	03/04/96	89	UG/KG		10	2
Bromodichloromethane	75-27-4	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
1,2-Dichloropropane	78-87-5	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
cis-1,3-Dichloropropene	10061-01-5	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
Trichloroethene	79-01-6	QCBLK93369-1	03/04/96	03/04/96	8	UG/KG	J	10	2
Dibromochloromethane	124-48-1	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
1,1,2-Trichloroethane	79-00-5	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
Benzene	71-43-2	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
trans-1,3-Dichloropropene	10061-02-6	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
Bromoform	75-25-2	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
4-Methyl-2-Pentanone	108-10-1	QCBLK93369-1	03/04/96	03/04/96	40	UG/KG	U	40	2
2-Hexanone	591-78-6	QCBLK93369-1	03/04/96	03/04/96	40	UG/KG	U	40	2
Tetrachloroethene	127-18-4	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
1,1,2,2-Tetrachloroethane	79-34-5	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
Toluene	108-88-3	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
Chlorobenzene	108-90-7	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
EthylBenzene	100-41-4	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
Styrene	100-42-5	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
Xylene (total)	1330-20-7	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
Toluene-d8 (SURR)	2037-26-5	QCBLK93369-1	03/04/96	03/04/96	87	%REC			2
Bromofluorobenzene (SURR)	460-00-4	QCBLK93369-1	03/04/96	03/04/96	80	%REC			2
1,2-Dichloroethane-d4 (SURR)	17070-07-0	QCBLK93369-1	03/04/96	03/04/96	97	%REC			2

9613453.1289

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: VOA-TCL
Method: EPA 8240
Matrix: SOLID

Sample Date : 02/20/96
Receipt Date : 02/22/96
Report Date : 03/22/96

Client ID: B0H695

Quanterra ID : 10400-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
1,1-Dichloroethene	75-35-4	QCBLK93369-1	03/04/96	03/04/96	141	%REC			2
Trichloroethene	79-01-6	QCBLK93369-1	03/04/96	03/04/96	94	%REC			2
Benzene	71-43-2	QCBLK93369-1	03/04/96	03/04/96	98	%REC			2
Toluene	108-88-3	QCBLK93369-1	03/04/96	03/04/96	83	%REC			2
Chlorobenzene	108-90-7	QCBLK93369-1	03/04/96	03/04/96	90	%REC			2
Toluene-d8 (SURR)	2037-26-5	QCBLK93369-1	03/04/96	03/04/96	84	%REC			2
Bromofluorobenzene (SURR)	460-00-4	QCBLK93369-1	03/04/96	03/04/96	81	%REC			2
1,2-Dichloroethane-d4 (SURR)	17070-07-0	QCBLK93369-1	03/04/96	03/04/96	96	%REC			2

9613453.1290

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: VOA-TCL
Method: EPA 8240
Matrix: SOLID

Sample Date : 02/20/96
Receipt Date : 02/22/96
Report Date : 03/22/96

Client ID: B0H695

Quanterra ID : 10400-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
1,1-Dichloroethene	75-35-4	QCBLK93369-1	03/04/96	03/04/96	156	%REC			2
Trichloroethene	79-01-6	QCBLK93369-1	03/04/96	03/04/96	98	%REC			2
Benzene	71-43-2	QCBLK93369-1	03/04/96	03/04/96	102	%REC			2
Toluene	108-88-3	QCBLK93369-1	03/04/96	03/04/96	82	%REC			2
Chlorobenzene	108-90-7	QCBLK93369-1	03/04/96	03/04/96	96	%REC			2
Toluene-d8 (SURR)	2037-26-5	QCBLK93369-1	03/04/96	03/04/96	85	%REC			2
Bromofluorobenzene (SURR)	460-00-4	QCBLK93369-1	03/04/96	03/04/96	79	%REC			2
1,2-Dichloroethane-d4 (SURR)	17070-07-0	QCBLK93369-1	03/04/96	03/04/96	100	%REC			2

9613453.1291

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: VOA-TCL
Method: EPA 8240
Matrix: SOLID

Client ID: B0H696

Sample Date : 02/20/96
Receipt Date : 02/22/96
Report Date : 03/22/96

Quanterra ID : 10400-002

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Chloromethane	74-87-3	QCBLK93369-1	03/04/96	03/04/96	20	UG/KG	U	20	2
Bromomethane	74-83-9	QCBLK93369-1	03/04/96	03/04/96	20	UG/KG	U	20	2
Vinyl Chloride	75-01-4	QCBLK93369-1	03/04/96	03/04/96	20	UG/KG	U	20	2
Chloroethane	75-00-3	QCBLK93369-1	03/04/96	03/04/96	20	UG/KG	U	20	2
Methylene Chloride	75-09-2	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
Acetone	67-64-1	QCBLK93369-1	03/04/96	03/04/96	13	UG/KG	BJ	40	2
Carbon Disulfide	75-15-0	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
1,1-Dichloroethene	75-35-4	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
1,1-Dichloroethane	75-34-3	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
1,2-Dichloroethene (total)	540-59-0	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
Chloroform	67-66-3	QCBLK93369-1	03/04/96	03/04/96	14	UG/KG		10	2
1,2-Dichloroethane	107-06-2	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
2-Butanone	78-93-3	QCBLK93369-1	03/04/96	03/04/96	40	UG/KG	U	40	2
1,1,1-Trichloroethane	71-55-6	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
Carbon Tetrachloride	56-23-5	QCBLK93369-1	03/04/96	03/04/96	160	UG/KG		10	2
Bromodichloromethane	75-27-4	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
1,2-Dichloropropane	78-87-5	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
cis-1,3-Dichloropropene	10061-01-5	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
Trichloroethene	79-01-6	QCBLK93369-1	03/04/96	03/04/96	11	UG/KG		10	2
Dibromochloromethane	124-48-1	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
1,1,2-Trichloroethane	79-00-5	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
Benzene	71-43-2	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
trans-1,3-Dichloropropene	10061-02-6	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
Bromoform	75-25-2	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
4-Methyl-2-Pentanone	108-10-1	QCBLK93369-1	03/04/96	03/04/96	40	UG/KG	U	40	2
2-Hexanone	591-78-6	QCBLK93369-1	03/04/96	03/04/96	40	UG/KG	U	40	2
Tetrachloroethene	127-18-4	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
1,1,2,2-Tetrachloroethane	79-34-5	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
Toluene	108-88-3	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
Chlorobenzene	108-90-7	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
EthylBenzene	100-41-4	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
Styrene	100-42-5	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
Xylene (total)	1330-20-7	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	2
Toluene-d8 (SURR)	2037-26-5	QCBLK93369-1	03/04/96	03/04/96	94	%REC			2
Bromofluorobenzene (SURR)	460-00-4	QCBLK93369-1	03/04/96	03/04/96	89	%REC			2
1,2-Dichloroethane-d4 (SURR)	17070-07-0	QCBLK93369-1	03/04/96	03/04/96	94	%REC			2

9613453.1292

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Volatiles
Method: EPA 8240
Matrix: SOLID

Client ID: NA

Sample Date : NA
Receipt Date : NA
Report Date : 03/22/96

Quanterra ID : QCBLK93369-1

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Chloromethane	74-87-3	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	1
Bromomethane	74-83-9	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	1
Vinyl Chloride	75-01-4	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	1
Chloroethane	75-00-3	QCBLK93369-1	03/04/96	03/04/96	10	UG/KG	U	10	1
Methylene Chloride	75-09-2	QCBLK93369-1	03/04/96	03/04/96	7	UG/KG		5	1
Acetone	67-64-1	QCBLK93369-1	03/04/96	03/04/96	9	UG/KG	J	20	1
Carbon Disulfide	75-15-0	QCBLK93369-1	03/04/96	03/04/96	5	UG/KG	U	5	1
1,1-Dichloroethene	75-35-4	QCBLK93369-1	03/04/96	03/04/96	5	UG/KG	U	5	1
1,1-Dichloroethane	75-34-3	QCBLK93369-1	03/04/96	03/04/96	5	UG/KG	U	5	1
1,2-Dichloroethene (total)	540-59-0	QCBLK93369-1	03/04/96	03/04/96	5	UG/KG	U	5	1
Chloroform	67-66-3	QCBLK93369-1	03/04/96	03/04/96	5	UG/KG	U	5	1
1,2-Dichloroethane	107-06-2	QCBLK93369-1	03/04/96	03/04/96	5	UG/KG	U	5	1
2-Butanone	78-93-3	QCBLK93369-1	03/04/96	03/04/96	20	UG/KG	U	20	1
1,1,1-Trichloroethane	71-55-6	QCBLK93369-1	03/04/96	03/04/96	5	UG/KG	U	5	1
Carbon Tetrachloride	56-23-5	QCBLK93369-1	03/04/96	03/04/96	5	UG/KG	U	5	1
Bromodichloromethane	75-27-4	QCBLK93369-1	03/04/96	03/04/96	5	UG/KG	U	5	1
1,2-Dichloropropane	78-87-5	QCBLK93369-1	03/04/96	03/04/96	5	UG/KG	U	5	1
cis-1,3-Dichloropropene	10061-01-5	QCBLK93369-1	03/04/96	03/04/96	5	UG/KG	U	5	1
Trichloroethene	79-01-6	QCBLK93369-1	03/04/96	03/04/96	5	UG/KG	U	5	1
Dibromochloromethane	124-48-1	QCBLK93369-1	03/04/96	03/04/96	5	UG/KG	U	5	1
1,1,2-Trichloroethane	79-00-5	QCBLK93369-1	03/04/96	03/04/96	5	UG/KG	U	5	1
Benzene	71-43-2	QCBLK93369-1	03/04/96	03/04/96	5	UG/KG	U	5	1
trans-1,3-Dichloropropene	10061-02-6	QCBLK93369-1	03/04/96	03/04/96	5	UG/KG	U	5	1
Bromoform	75-25-2	QCBLK93369-1	03/04/96	03/04/96	5	UG/KG	U	5	1
4-Methyl-2-Pentanone	108-10-1	QCBLK93369-1	03/04/96	03/04/96	20	UG/KG	U	20	1
2-Hexanone	591-78-6	QCBLK93369-1	03/04/96	03/04/96	20	UG/KG	U	20	1
Tetrachloroethene	127-18-4	QCBLK93369-1	03/04/96	03/04/96	5	UG/KG	U	5	1
1,1,2,2-Tetrachloroethane	79-34-5	QCBLK93369-1	03/04/96	03/04/96	5	UG/KG	U	5	1
Toluene	108-88-3	QCBLK93369-1	03/04/96	03/04/96	5	UG/KG	U	5	1
Chlorobenzene	108-90-7	QCBLK93369-1	03/04/96	03/04/96	5	UG/KG	U	5	1
EthylBenzene	100-41-4	QCBLK93369-1	03/04/96	03/04/96	5	UG/KG	U	5	1
Styrene	100-42-5	QCBLK93369-1	03/04/96	03/04/96	5	UG/KG	U	5	1
Xylene (total)	1330-20-7	QCBLK93369-1	03/04/96	03/04/96	5	UG/KG	U	5	1
Toluene-d8 (SURR)	2037-26-5	QCBLK93369-1	03/04/96	03/04/96	100	%REC			1
Bromofluorobenzene (SURR)	460-00-4	QCBLK93369-1	03/04/96	03/04/96	102	%REC			1
1,2-Dichloroethane-d4 (SURR)	17070-07-0	QCBLK93369-1	03/04/96	03/04/96	99	%REC			1

9613453.1293

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Volatiles
Method: EPA 8240
Matrix: SOLID

Client ID: NA

Sample Date : NA
Receipt Date : NA
Report Date : 03/22/96

Quanterra ID : QCLCS93369-1

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
1,1-Dichloroethene	75-35-4	QCBLK93369-1	03/04/96	03/04/96	124	%REC			1
Trichloroethene	79-01-6	QCBLK93369-1	03/04/96	03/04/96	93	%REC			1
Benzene	71-43-2	QCBLK93369-1	03/04/96	03/04/96	94	%REC			1
Toluene	108-88-3	QCBLK93369-1	03/04/96	03/04/96	93	%REC			1
Chlorobenzene	108-90-7	QCBLK93369-1	03/04/96	03/04/96	94	%REC			1
Toluene-d8 (SURR)	2037-26-5	QCBLK93369-1	03/04/96	03/04/96	102	%REC			1
Bromofluorobenzene (SURR)	460-00-4	QCBLK93369-1	03/04/96	03/04/96	101	%REC			1
1,2-Dichloroethane-d4 (SURR)	17070-07-0	QCBLK93369-1	03/04/96	03/04/96	100	%REC			1

9613453.1294

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0H695

Lab Name: QUANTERRA MO Contract: 550-65

Lab Code: ITMO Case No.: V40001 SDG No.: W0909

Matrix: (soil/water) SOIL Lab Sample ID: 10400-001

Sample wt/vol: 2.50 (g/mL) G Lab File ID: B7582

Level: (low/med) LOW Date Received: 02/22/96

% Moisture: not dec. Date Analyzed: 03/04/96

Column: (pack/cap) CAP Dilution Factor: 2.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	20	U
74-83-9	Bromomethane	20	U
75-01-4	Vinyl Chloride	20	U
75-00-3	Chloroethane	20	U
75-09-2	Methylene Chloride	19	B
67-64-1	Acetone	41	B
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	6	J
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	40	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	89	
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	8	J
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	40	U
591-78-6	2-Hexanone	40	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

9613453.1295

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0H695

Lab Name: QUANTERRA MO Contract: 550-65

Lab Code: ITMO Case No.: V40001 SDG No.: W0909

Matrix: (soil/water) SOIL Lab Sample ID: 10400-001

Sample wt/vol: 2.50 (g/mL) G Lab File ID: B7582

Level: (low/med) LOW Date Received: 02/22/96

% Moisture: not dec. Date Analyzed: 03/04/96

Column (pack/cap) CAP Dilution Factor: 2.0

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

9613453.1296

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0H696

Lab Name: QUANTERRA MO Contract: 550-65

Lab Code: ITMO Case No.: V40001 SDG No.: W0909

Matrix: (soil/water) SOIL Lab Sample ID: 10400-002

Sample wt/vol: 2.50 (g/mL) G Lab File ID: B7577

Level: (low/med) LOW Date Received: 02/22/96

% Moisture: not dec. Date Analyzed: 03/04/96

Column: (pack/cap) CAP Dilution Factor: 2.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	20	U
74-83-9	Bromomethane	20	U
75-01-4	Vinyl Chloride	20	U
75-00-3	Chloroethane	20	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	13	BJ
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	14	
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	40	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	160	
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	11	
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	40	U
591-78-6	2-Hexanone	40	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

9613453.1297

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0H696

Lab Name: QUANTERRA MO Contract: 550-65

Lab Code: ITMO Case No.: V40001 SDG No.: W0909

Matrix: (soil/water) SOIL Lab Sample ID: 10400-002

Sample wt/vol: 2.50 (g/mL) G Lab File ID: B7577

Level: (low/med) LOW Date Received: 02/22/96

% Moisture: not dec. Date Analyzed: 03/04/96

Column (pack/cap) CAP Dilution Factor: 2.0

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

9613453.1298

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0H695MS

Lab Name: QUANTERRA MO Contract: 550-65

Lab Code: ITMO Case No.: V40001 SDG No.: W0909

Matrix: (soil/water) SOIL Lab Sample ID: 10400-001MS

Sample wt/vol: 2.50 (g/mL) G Lab File ID: B7580

Level: (low/med) LOW Date Received: 02/22/96

% Moisture: not dec. Date Analyzed: 03/04/96

Column: (pack/cap) CAP Dilution Factor: 2.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	20	U
74-83-9	Bromomethane	20	U
75-01-4	Vinyl Chloride	20	U
75-00-3	Chloroethane	20	U
75-09-2	Methylene Chloride	12	B
67-64-1	Acetone	28	BJ
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	140	
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	6	J
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	40	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	110	
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	100	
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	98	
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	40	U
591-78-6	2-Hexanone	40	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	83	
108-90-7	Chlorobenzene	90	
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

9613453.1299

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0H695MSD

Lab Name: QUANTERRA MO Contract: 550-65

Lab Code: ITMO Case No.: V40001 SDG No.: W0909

Matrix: (soil/water) SOIL Lab Sample ID: 10400-001MSD

Sample wt/vol: 2.50 (g/mL) G Lab File ID: B7581

Level: (low/med) LOW Date Received: 02/22/96

% Moisture: not dec. Date Analyzed: 03/04/96

Column: (pack/cap) CAP Dilution Factor: 2.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	20	U
74-83-9	Bromomethane	20	U
75-01-4	Vinyl Chloride	20	U
75-00-3	Chloroethane	20	U
75-09-2	Methylene Chloride	16	B
67-64-1	Acetone	34	BJ
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	160	
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	6	J
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	40	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	120	
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	110	
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	100	
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	40	U
591-78-6	2-Hexanone	40	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	82	
108-90-7	Chlorobenzene	96	
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

9613453.1300

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK01

Lab Name: QUANTERRA MO Contract: 550-65

Lab Code: ITMO Case No.: V40001 SDG No.: W0909

Matrix: (soil/water) SOIL Lab Sample ID: QCBLK93369

Sample wt/vol: 5.00 (g/mL) G Lab File ID: B7574

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 03/04/96

Column: (pack/cap) CAP Dilution Factor: 1.0

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

9613453.1301

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK01

Lab Name: QUANTERRA MO Contract: 550-65

Lab Code: ITMO Case No.: V40001 SDG No.: W0909

Matrix: (soil/water) SOIL Lab Sample ID: QCBLK93369

Sample wt/vol: 5.00 (g/mL) G Lab File ID: B7574

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 03/04/96

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

9613453.1302

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VSPK01

Lab Name: QUANTERRA MO Contract: 550-65

Lab Code: ITMO Case No.: V40001 SDG No.: W0909

Matrix: (soil/water) SOIL Lab Sample ID: QCSPK93369

Sample wt/vol: 5.00 (g/mL) G Lab File ID: B7575

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 03/04/96

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	4	BJ
67-64-1	Acetone	9	BJ
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	62	
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	46	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	47	
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	46	
108-90-7	Chlorobenzene	47	
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

9613453.1303

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Semi-VOA-TCL
Method: EPA 8270
Matrix: SOLID

Sample Date : 02/20/96
Receipt Date : 02/22/96
Report Date : 03/29/96

Client ID: BOH695

Quanterra ID : 10400-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Phenol	108-95-2	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
bis(2-Chloroethyl)Ether	111-44-4	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
2-Chlorophenol	95-57-8	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
1,3-Dichlorobenzene	541-73-1	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
1,4-Dichlorobenzene	106-46-7	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
1,2-Dichlorobenzene	95-50-1	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
2-Methylphenol	95-48-7	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
bis(2-Chloroisopropyl)Ether	108-60-1	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
4-Methylphenol	106-44-5	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
N-nitroso-di-n-propylamine	621-64-7	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Hexachloroethane	67-72-1	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Nitrobenzene	98-95-3	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Isophorone	78-59-1	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
2-Nitrophenol	88-75-5	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
2,4-Dimethylphenol	105-67-9	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
bis(2-Chloroethoxy)Methane	111-91-1	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
2,4-Dichlorophenol	120-83-2	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
1,2,4-Trichlorobenzene	120-82-1	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Naphthalene	91-20-3	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
4-Chloroaniline	106-47-8	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Hexachlorobutadiene	87-68-3	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
4-Chloro-3-Methylphenol	59-50-7	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
2-Methylnaphthalene	91-57-6	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Hexachlorocyclopentadiene	77-47-4	QCBLK92870-1	03/04/96	03/11/96	24000	UG/KG	U	24000	1
2,4,6-Trichlorophenol	88-06-2	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
2,4,5-Trichlorophenol	95-95-4	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
2-Chloronaphthalene	91-58-7	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
2-Nitroaniline	88-74-4	QCBLK92870-1	03/04/96	03/11/96	24000	UG/KG	U	24000	1
DimethylPhthalate	131-11-3	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Acenaphthylene	208-96-8	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
2,6-Dinitrotoluene	606-20-2	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
3-Nitroaniline	99-09-2	QCBLK92870-1	03/04/96	03/11/96	24000	UG/KG	U	24000	1
Acenaphthene	83-32-9	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
2,4-Dinitrophenol	51-28-5	QCBLK92870-1	03/04/96	03/11/96	24000	UG/KG	U	24000	1
4-Nitrophenol	100-02-7	QCBLK92870-1	03/04/96	03/11/96	24000	UG/KG	U	24000	1
Dibenzofuran	132-64-9	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
2,4-Dinitrotoluene	121-14-2	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Diethylphthalate	84-66-2	QCBLK92870-1	03/04/96	03/11/96	2700	UG/KG	J	5000	1
4-Chlorophenyl-PhenylEther	7005-72-3	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Fluorene	86-73-7	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
4-Nitroaniline	100-01-6	QCBLK92870-1	03/04/96	03/11/96	24000	UG/KG	U	24000	1
4,6-Dinitro-2-Methylphenol	534-52-1	QCBLK92870-1	03/04/96	03/11/96	24000	UG/KG	U	24000	1
n-Nitrosodiphenylamine	86-30-6	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
4-Bromophenyl-Phenyl Ether	101-55-3	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Hexachlorobenzene	118-74-1	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Pentachlorophenol	87-86-5	QCBLK92870-1	03/04/96	03/11/96	24000	UG/KG	U	24000	1
Phenanthrene	85-01-8	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Anthracene	120-12-7	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Carbazole	86-74-8	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Di-N-Butylphthalate	84-74-2	QCBLK92870-1	03/04/96	03/11/96	1600	UG/KG	BJ	5000	1
Fluoranthene	206-44-0	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Pyrene	129-00-0	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
ButylBenzylPhthalate	85-68-7	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
3,3'-Dichlorobenzidine	91-94-1	QCBLK92870-1	03/04/96	03/11/96	24000	UG/KG	U	24000	1
Benzo(a)Anthracene	56-55-3	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Chrysene	218-01-9	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
bis(2-Ethylhexyl)Phthalate	117-81-7	QCBLK92870-1	03/04/96	03/11/96	960	UG/KG	BJ	5000	1
di-N-OctylPhthalate	117-84-0	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Benzo(b)Fluoranthene	205-99-2	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Benzo(k)Fluoranthene	207-08-9	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Benzo(a)Pyrene	50-32-8	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1

9613453.1304

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Semi-VOA-TCL
Method: EPA 8270
Matrix: SOLID

Client ID: BOH695

Sample Date : 02/20/96
Receipt Date : 02/22/96
Report Date : 03/29/96

Quanterra ID : 10400-001

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	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Dibenz(a,h)Anthracene	53-70-3	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Benzo(g,h,i)Perylene	191-24-2	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Aldol Condensation	TIC-4	QCBLK92870-1	03/04/96	03/11/96	53000	UG/KG	BJ		1
Unknown-1	TIC-32	QCBLK92870-1	03/04/96	03/11/96	1400	UG/KG	J		1
Unknown-2	TIC-33	QCBLK92870-1	03/04/96	03/11/96	1700	UG/KG	J		1
Unknown-3	TIC-34	QCBLK92870-1	03/04/96	03/11/96	2400	UG/KG	J		1
Unknown-4	TIC-35	QCBLK92870-1	03/04/96	03/11/96	3300	UG/KG	J		1
Nitrobenzene-d5	4165-60-0	QCBLK92870-1	03/04/96	03/11/96	62	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK92870-1	03/04/96	03/11/96	53	%REC			1
Terphenyl-d14	1718-51-0	QCBLK92870-1	03/04/96	03/11/96	51	%REC			1
Phenol-d5	13127-88-3	QCBLK92870-1	03/04/96	03/11/96	63	%REC			1
2-Fluorophenol	367-12-4	QCBLK92870-1	03/04/96	03/11/96	55	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK92870-1	03/04/96	03/11/96	47	%REC			1

9613453.1305

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Semi-VOA-TCL
Method: EPA 8270
Matrix: SOLID

Sample Date : 02/20/96
Receipt Date : 02/22/96
Report Date : 03/29/96

Client ID: B0H695

Quanterra ID : 10400-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Phenol	108-95-2	QCBLK92870-1	03/04/96	03/11/96	64	%REC			1
2-Chlorophenol	95-57-8	QCBLK92870-1	03/04/96	03/11/96	66	%REC			1
1,4-Dichlorobenzene	106-46-7	QCBLK92870-1	03/04/96	03/11/96	58	%REC			1
N-nitroso-di-n-propylamine	621-64-7	QCBLK92870-1	03/04/96	03/11/96	65	%REC			1
1,2,4-Trichlorobenzene	120-82-1	QCBLK92870-1	03/04/96	03/11/96	63	%REC			1
4-Chloro-3-Methylphenol	59-50-7	QCBLK92870-1	03/04/96	03/11/96	73	%REC			1
Acenaphthene	83-32-9	QCBLK92870-1	03/04/96	03/11/96	62	%REC			1
4-Nitrophenol	100-02-7	QCBLK92870-1	03/04/96	03/11/96	65	%REC			1
2,4-Dinitrotoluene	121-14-2	QCBLK92870-1	03/04/96	03/11/96	69	%REC			1
Pentachlorophenol	87-86-5	QCBLK92870-1	03/04/96	03/11/96	45	%REC			1
Pyrene	129-00-0	QCBLK92870-1	03/04/96	03/11/96	67	%REC			1
Nitrobenzene-d5	4165-60-0	QCBLK92870-1	03/04/96	03/11/96	65	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK92870-1	03/04/96	03/11/96	57	%REC			1
Terphenyl-d14	1718-51-0	QCBLK92870-1	03/04/96	03/11/96	63	%REC			1
Phenol-d5	13127-88-3	QCBLK92870-1	03/04/96	03/11/96	67	%REC			1
2-Fluorophenol	367-12-4	QCBLK92870-1	03/04/96	03/11/96	60	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK92870-1	03/04/96	03/11/96	60	%REC			1

9613453.1306

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Semi-VOA-TCL
Method: EPA 8270
Matrix: SOLID

Sample Date : 02/20/96
Receipt Date : 02/22/96
Report Date : 03/29/96

Client ID: BOH695

Quanterra ID : 10400-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Phenol	108-95-2	QCBLK92870-1	03/04/96	03/11/96	70	%REC			1
2-Chlorophenol	95-57-8	QCBLK92870-1	03/04/96	03/11/96	75	%REC			1
1,4-Dichlorobenzene	106-46-7	QCBLK92870-1	03/04/96	03/11/96	64	%REC			1
N-nitroso-di-n-propylamine	621-64-7	QCBLK92870-1	03/04/96	03/11/96	71	%REC			1
1,2,4-Trichlorobenzene	120-82-1	QCBLK92870-1	03/04/96	03/11/96	66	%REC			1
4-Chloro-3-Methylphenol	59-50-7	QCBLK92870-1	03/04/96	03/11/96	74	%REC			1
Acenaphthene	83-32-9	QCBLK92870-1	03/04/96	03/11/96	64	%REC			1
4-Nitrophenol	100-02-7	QCBLK92870-1	03/04/96	03/11/96	63	%REC			1
2,4-Dinitrotoluene	121-14-2	QCBLK92870-1	03/04/96	03/11/96	73	%REC			1
Pentachlorophenol	87-86-5	QCBLK92870-1	03/04/96	03/11/96	42	%REC			1
Pyrene	129-00-0	QCBLK92870-1	03/04/96	03/11/96	68	%REC			1
Nitrobenzene-d5	4165-60-0	QCBLK92870-1	03/04/96	03/11/96	69	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK92870-1	03/04/96	03/11/96	63	%REC			1
Terphenyl-d14	1718-51-0	QCBLK92870-1	03/04/96	03/11/96	64	%REC			1
Phenol-d5	13127-88-3	QCBLK92870-1	03/04/96	03/11/96	74	%REC			1
2-Fluorophenol	367-12-4	QCBLK92870-1	03/04/96	03/11/96	64	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK92870-1	03/04/96	03/11/96	61	%REC			1

9613453.1307

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Semi-VOA-TCL
Method: EPA 8270
Matrix: SOLID

Sample Date : 02/20/96
Receipt Date : 02/22/96
Report Date : 03/29/96

Client ID: BOH696

Quanterra ID : 10400-002

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Phenol	108-95-2	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
bis(2-Chloroethyl)Ether	111-44-4	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
2-Chlorophenol	95-57-8	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
1,3-Dichlorobenzene	541-73-1	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
1,4-Dichlorobenzene	106-46-7	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
1,2-Dichlorobenzene	95-50-1	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
2-Methylphenol	95-48-7	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
bis(2-Chloroisopropyl)Ether	108-60-1	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
4-Methylphenol	106-44-5	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
N-nitroso-di-n-propylamine	621-64-7	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Hexachloroethane	67-72-1	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Nitrobenzene	98-95-3	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Isophorone	78-59-1	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
2-Nitrophenol	88-75-5	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
2,4-Dimethylphenol	105-67-9	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
bis(2-Chloroethoxy)Methane	111-91-1	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
2,4-Dichlorophenol	120-83-2	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
1,2,4-Trichlorobenzene	120-82-1	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Naphthalene	91-20-3	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
4-Chloroaniline	106-47-8	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Hexachlorobutadiene	87-68-3	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
4-Chloro-3-Methylphenol	59-50-7	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
2-Methylnaphthalene	91-57-6	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Hexachlorocyclopentadiene	77-47-4	QCBLK92870-1	03/04/96	03/11/96	24000	UG/KG	U	24000	1
2,4,6-Trichlorophenol	88-06-2	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
2,4,5-Trichlorophenol	95-95-4	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
2-Chloronaphthalene	91-58-7	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
2-Nitroaniline	88-74-4	QCBLK92870-1	03/04/96	03/11/96	24000	UG/KG	U	24000	1
DimethylPhthalate	131-11-3	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Acenaphthylene	208-96-8	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
2,6-Dinitrotoluene	606-20-2	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
3-Nitroaniline	99-09-2	QCBLK92870-1	03/04/96	03/11/96	24000	UG/KG	U	24000	1
Acenaphthene	83-32-9	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
2,4-Dinitrophenol	51-28-5	QCBLK92870-1	03/04/96	03/11/96	24000	UG/KG	U	24000	1
4-Nitrophenol	100-02-7	QCBLK92870-1	03/04/96	03/11/96	24000	UG/KG	U	24000	1
Dibenzofuran	132-64-9	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
2,4-Dinitrotoluene	121-14-2	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Diethylphthalate	84-66-2	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
4-Chlorophenyl-PhenylEther	7005-72-3	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Fluorene	86-73-7	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
4-Nitroaniline	100-01-6	QCBLK92870-1	03/04/96	03/11/96	24000	UG/KG	U	24000	1
4,6-Dinitro-2-Methylphenol	534-52-1	QCBLK92870-1	03/04/96	03/11/96	24000	UG/KG	U	24000	1
n-Nitrosodiphenylamine	86-30-6	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
4-Bromophenyl-Phenyl Ether	101-55-3	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Hexachlorobenzene	118-74-1	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Pentachlorophenol	87-86-5	QCBLK92870-1	03/04/96	03/11/96	24000	UG/KG	U	24000	1
Phenanthrene	85-01-8	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Anthracene	120-12-7	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Carbazole	86-74-8	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Di-N-Butylphthalate	84-74-2	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Fluoranthene	206-44-0	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Pyrene	129-00-0	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
ButylBenzylPhthalate	85-68-7	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
3,3'-Dichlorobenzidine	91-94-1	QCBLK92870-1	03/04/96	03/11/96	24000	UG/KG	U	24000	1
Benzo(a)Anthracene	56-55-3	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Chrysene	218-01-9	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
bis(2-Ethylhexyl)Phthalate	117-81-7	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
di-N-OctylPhthalate	117-84-0	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Benzo(b)Fluoranthene	205-99-2	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Benzo(k)Fluoranthene	207-08-9	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Benzo(a)Pyrene	50-32-8	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1

9613453.1308

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Semi-VOA-TCL
Method: EPA 8270
Matrix: SOLID

Sample Date : 02/20/96
Receipt Date : 02/22/96
Report Date : 03/29/96

Client ID: BOH696

Quanterra ID : 10400-002

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	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Dibenz(a,h)Anthracene	53-70-3	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Benzo(g,h,i)Perylene	191-24-2	QCBLK92870-1	03/04/96	03/11/96	5000	UG/KG	U	5000	1
Aldol Condensation	TIC-4	QCBLK92870-1	03/04/96	03/11/96	62000	UG/KG	BJ		1
Nitrobenzene-d5	4165-60-0	QCBLK92870-1	03/04/96	03/11/96	73	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK92870-1	03/04/96	03/11/96	62	%REC			1
Terphenyl-d14	1718-51-0	QCBLK92870-1	03/04/96	03/11/96	66	%REC			1
Phenol-d5	13127-88-3	QCBLK92870-1	03/04/96	03/11/96	73	%REC			1
2-Fluorophenol	367-12-4	QCBLK92870-1	03/04/96	03/11/96	64	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK92870-1	03/04/96	03/11/96	50	%REC			1

9613453.1309

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0H695

Lab Name: QUANTERRA MO Contract: 550-65

Lab Code: ITMO Case No.: S40001 SAS No.: SDG No.: W0909

Matrix: (soil/water) SOIL Lab Sample ID: 10400-001

Sample wt/vol: 2.00 (g/mL) G Lab File ID: A2776

Level: (low/med) LOW Date Received: 02/22/96

% Moisture: not dec. dec. Date Extracted: 03/04/96

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/11/96

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	5000	U
111-44-4	bis(2-Chloroethyl)Ether	5000	U
95-57-8	2-Chlorophenol	5000	U
541-73-1	1,3-Dichlorobenzene	5000	U
106-46-7	1,4-Dichlorobenzene	5000	U
95-50-1	1,2-Dichlorobenzene	5000	U
95-48-7	2-Methylphenol	5000	U
108-60-1	2,2'-oxybis(1-Chloropropane)	5000	U
106-44-5	4-Methylphenol	5000	U
621-64-7	N-Nitroso-Di-n-Propylamine	5000	U
67-72-1	Hexachloroethane	5000	U
98-95-3	Nitrobenzene	5000	U
78-59-1	Isophorone	5000	U
88-75-5	2-Nitrophenol	5000	U
105-67-9	2,4-Dimethylphenol	5000	U
111-91-1	bis(2-Chloroethoxy)Methane	5000	U
120-83-2	2,4-Dichlorophenol	5000	U
120-82-1	1,2,4-Trichlorobenzene	5000	U
91-20-3	Naphthalene	5000	U
106-47-8	4-Chloroaniline	5000	U
87-68-3	Hexachlorobutadiene	5000	U
59-50-7	4-Chloro-3-Methylphenol	5000	U
91-57-6	2-Methylnaphthalene	5000	U
77-47-4	Hexachlorocyclopentadiene	24000	U
88-06-2	2,4,6-Trichlorophenol	5000	U
95-95-4	2,4,5-Trichlorophenol	5000	U
91-58-7	2-Chloronaphthalene	5000	U
88-74-4	2-Nitroaniline	24000	U
131-11-3	Dimethyl Phthalate	5000	U
208-96-8	Acenaphthylene	5000	U
606-20-2	2,6-Dinitrotoluene	5000	U

9613453.1310

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0H695

Lab Name: QUANTERRA MO Contract: 550-65

Lab Code: ITMO Case No.: S40001 SAS No.: SDG No.: W0909

Matrix: (soil/water) SOIL Lab Sample ID: 10400-001

Sample wt/vol: 2.00 (g/mL) G Lab File ID: A2776

Level: (low/med) LOW Date Received: 02/22/96

% Moisture: not dec. dec. Date Extracted: 03/04/96

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/11/96

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	24000	U
83-32-9	Acenaphthene	5000	U
51-28-5	2,4-Dinitrophenol	24000	U
100-02-7	4-Nitrophenol	24000	U
132-64-9	Dibenzofuran	5000	U
121-14-2	2,4-Dinitrotoluene	5000	U
84-66-2	Diethylphthalate	2700	J
7005-72-3	4-Chlorophenyl-phenylether	5000	U
86-73-7	Fluorene	5000	U
100-01-6	4-Nitroaniline	24000	U
534-52-1	4,6-Dinitro-2-Methylphenol	24000	U
86-30-6	N-Nitrosodiphenylamine (1)	5000	U
101-55-3	4-Bromophenyl-phenylether	5000	U
118-74-1	Hexachlorobenzene	5000	U
87-86-5	Pentachlorophenol	24000	U
85-01-8	Phenanthrene	5000	U
120-12-7	Anthracene	5000	U
86-74-8	Carbazole	5000	U
84-74-2	Di-n-Butylphthalate	1600	BJ
206-44-0	Fluoranthene	5000	U
129-00-0	Pyrene	5000	U
85-68-7	Butylbenzylphthalate	5000	U
91-94-1	3,3'-Dichlorobenzidine	24000	U
56-55-3	Benzo(a)Anthracene	5000	U
218-01-9	Chrysene	5000	U
117-81-7	bis(2-Ethylhexyl)Phthalate	960	BJ
117-84-0	Di-n-Octyl Phthalate	5000	U
205-99-2	Benzo(b)Fluoranthene	5000	U
207-08-9	Benzo(k)Fluoranthene	5000	U
50-32-8	Benzo(a)Pyrene	5000	U
193-39-5	Indeno(1,2,3-cd)Pyrene	5000	U
53-70-3	Dibenz(a,h)Anthracene	5000	U
191-24-2	Benzo(g,h,i)Perylene	5000	U

(1) - Cannot be separated from Diphenylamine

9613453.1311

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0H695

Lab Name: QUANTERRA MO Contract: 550-65

Lab Code: ITMO Case No.: S40001 SAS No.: SDG No.: W0909

Matrix: (soil/water) SOIL Lab Sample ID: 10400-001

Sample wt/vol: 2.00 (g/mL) G Lab File ID: A2776

Level: (low/med) LOW Date Received: 02/22/96

% Moisture: not dec. dec. Date Extracted: 03/04/96

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/11/96

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.00

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 0	Aldol Condensation	4.15	53000	ABJ
2.	UNKNOWN	23.84	1400	J
3.	UNKNOWN	25.63	1700	J
4.	UNKNOWN	27.79	2400	J
5.	UNKNOWN	28.88	3300	J

9613453.1312

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0H696

Lab Name: QUANTERRA MO Contract: 550-65

Lab Code: ITMO Case No.: S40001 SAS No.: SDG No.: W0909

Matrix: (soil/water) SOIL Lab Sample ID: 10400-002

Sample wt/vol: 2.00 (g/mL) G Lab File ID: A2779

Level: (low/med) LOW Date Received: 02/22/96

% Moisture: not dec. dec. Date Extracted: 03/04/96

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/11/96

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	5000	U
111-44-4	bis(2-Chloroethyl)Ether	5000	U
95-57-8	2-Chlorophenol	5000	U
541-73-1	1,3-Dichlorobenzene	5000	U
106-46-7	1,4-Dichlorobenzene	5000	U
95-50-1	1,2-Dichlorobenzene	5000	U
95-48-7	2-Methylphenol	5000	U
108-60-1	2,2'-oxybis(1-Chloropropane)	5000	U
106-44-5	4-Methylphenol	5000	U
621-64-7	N-Nitroso-Di-n-Propylamine	5000	U
67-72-1	Hexachloroethane	5000	U
98-95-3	Nitrobenzene	5000	U
78-59-1	Isophorone	5000	U
88-75-5	2-Nitrophenol	5000	U
105-67-9	2,4-Dimethylphenol	5000	U
111-91-1	bis(2-Chloroethoxy)Methane	5000	U
120-83-2	2,4-Dichlorophenol	5000	U
120-82-1	1,2,4-Trichlorobenzene	5000	U
91-20-3	Naphthalene	5000	U
106-47-8	4-Chloroaniline	5000	U
87-68-3	Hexachlorobutadiene	5000	U
59-50-7	4-Chloro-3-Methylphenol	5000	U
91-57-6	2-Methylnaphthalene	5000	U
77-47-4	Hexachlorocyclopentadiene	24000	U
88-06-2	2,4,6-Trichlorophenol	5000	U
95-95-4	2,4,5-Trichlorophenol	5000	U
91-58-7	2-Chloronaphthalene	5000	U
88-74-4	2-Nitroaniline	24000	U
131-11-3	Dimethyl Phthalate	5000	U
208-96-8	Acenaphthylene	5000	U
606-20-2	2,6-Dinitrotoluene	5000	U

9613453.1313

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0H696

Lab Name: QUANTERRA MO Contract: 550-65

Lab Code: ITMO Case No.: S40001 SAS No.: SDG No.: W0909

Matrix: (soil/water) SOIL Lab Sample ID: 10400-002

Sample wt/vol: 2.00 (g/mL) G Lab File ID: A2779

Level: (low/med) LOW Date Received: 02/22/96

% Moisture: not dec. dec. Date Extracted: 03/04/96

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/11/96

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	24000	U
83-32-9	Acenaphthene	5000	U
51-28-5	2,4-Dinitrophenol	24000	U
100-02-7	4-Nitrophenol	24000	U
132-64-9	Dibenzofuran	5000	U
121-14-2	2,4-Dinitrotoluene	5000	U
84-66-2	Diethylphthalate	5000	U
7005-72-3	4-Chlorophenyl-phenylether	5000	U
86-73-7	Fluorene	5000	U
100-01-6	4-Nitroaniline	24000	U
534-52-1	4,6-Dinitro-2-Methylphenol	24000	U
86-30-6	N-Nitrosodiphenylamine (1)	5000	U
101-55-3	4-Bromophenyl-phenylether	5000	U
118-74-1	Hexachlorobenzene	5000	U
87-86-5	Pentachlorophenol	24000	U
85-01-8	Phenanthrene	5000	U
120-12-7	Anthracene	5000	U
86-74-8	Carbazole	5000	U
84-74-2	Di-n-Butylphthalate	5000	U
206-44-0	Fluoranthene	5000	U
129-00-0	Pyrene	5000	U
85-68-7	Butylbenzylphthalate	5000	U
91-94-1	3,3'-Dichlorobenzidine	24000	U
56-55-3	Benzo(a)Anthracene	5000	U
218-01-9	Chrysene	5000	U
117-81-7	bis(2-Ethylhexyl)Phthalate	5000	U
117-84-0	Di-n-Octyl Phthalate	5000	U
205-99-2	Benzo(b)Fluoranthene	5000	U
207-08-9	Benzo(k)Fluoranthene	5000	U
50-32-8	Benzo(a)Pyrene	5000	U
193-39-5	Indeno(1,2,3-cd)Pyrene	5000	U
53-70-3	Dibenz(a,h)Anthracene	5000	U
191-24-2	Benzo(g,h,i)Perylene	5000	U

(1) - Cannot be separated from Diphenylamine

9613453.1314

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0H696

Lab Name: QUANTERRA MO Contract: 550-65

Lab Code: ITMO Case No.: S40001 SAS No.: SDG No.: W0909

Matrix: (soil/water) SOIL Lab Sample ID: 10400-002

Sample wt/vol: 2.00 (g/mL) G Lab File ID: A2779

Level: (low/med) LOW Date Received: 02/22/96

% Moisture: not dec. dec. Date Extracted: 03/04/96

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/11/96

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.00

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 0	Aldol Condensation	4.18	62000	ABJ

9613453.1315

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: ICAP Metals-TAL
Method: EPA 6010
Matrix: SOLID

Sample Date : 02/20/96
Receipt Date : 02/22/96
Report Date : 03/22/96

Client ID: BOH695

Quanterra ID : 10400-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aluminum	7429-90-5	QCBLK93135-1	03/01/96	03/04/96	70.6	MG/KG		20.0	1
Antimony	7440-36-0	QCBLK93135-1	03/01/96	03/04/96	3.2	MG/KG	U	6.0	1
Barium	7440-39-3	QCBLK93135-1	03/01/96	03/04/96	0.59	MG/KG	B	20.0	1
Beryllium	7440-41-7	QCBLK93135-1	03/01/96	03/04/96	0.06	MG/KG	U	0.50	1
Cadmium	7440-43-9	QCBLK93135-1	03/01/96	03/04/96	0.34	MG/KG	U	0.50	1
Calcium	7440-70-2	QCBLK93135-1	03/01/96	03/04/96	250	MG/KG	B	500	1
Chromium	7440-47-3	QCBLK93135-1	03/01/96	03/04/96	20.2	MG/KG		1.0	1
Cobalt	7440-48-4	QCBLK93135-1	03/01/96	03/04/96	1.3	MG/KG	B	5.0	1
Copper	7440-50-8	QCBLK93135-1	03/01/96	03/04/96	5.2	MG/KG		2.5	1
Iron	7439-89-6	QCBLK93135-1	03/01/96	03/04/96	221	MG/KG		10.0	1
Magnesium	7439-95-4	QCBLK93135-1	03/01/96	03/04/96	28.7	MG/KG	B	500	1
Manganese	7439-96-5	QCBLK93135-1	03/01/96	03/04/96	0.11	MG/KG	U	1.5	1
Nickel	7440-02-0	QCBLK93135-1	03/01/96	03/04/96	1.6	MG/KG	U	4.0	1
Potassium	7440-09-7	QCBLK93135-1	03/01/96	03/04/96	201	MG/KG	U	500	1
Silver	7440-22-4	QCBLK93135-1	03/01/96	03/04/96	0.50	MG/KG	U	1.0	1
Sodium	7440-23-5	QCBLK93135-1	03/01/96	03/04/96	21.6	MG/KG	B	500	1
Vanadium	7440-62-2	QCBLK93135-1	03/01/96	03/04/96	8.8	MG/KG		5.0	1
Zinc	7440-66-6	QCBLK93135-1	03/01/96	03/04/96	2.5	MG/KG		2.0	1

9613453.1316

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: ICAP Metals-TAL
Method: EPA 6010
Matrix: SOLID

Sample Date : 02/20/96
Receipt Date : 02/22/96
Report Date : 03/28/96

Client ID: B0H695

Quanterra ID : 10400-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Antimony	7440-36-0	QCBLK93135-1	03/01/96	03/04/96	43	%REC			1
Barium	7440-39-3	QCBLK93135-1	03/01/96	03/04/96	95	%REC			1
Beryllium	7440-41-7	QCBLK93135-1	03/01/96	03/04/96	86	%REC			1
Cadmium	7440-43-9	QCBLK93135-1	03/01/96	03/04/96	71	%REC			1
Chromium	7440-47-3	QCBLK93135-1	03/01/96	03/04/96	99	%REC			1
Cobalt	7440-48-4	QCBLK93135-1	03/01/96	03/04/96	94	%REC			1
Copper	7440-50-8	QCBLK93135-1	03/01/96	03/04/96	114	%REC			1
Manganese	7439-96-5	QCBLK93135-1	03/01/96	03/04/96	93	%REC			1
Nickel	7440-02-0	QCBLK93135-1	03/01/96	03/04/96	96	%REC			1
Silver	7440-22-4	QCBLK93135-1	03/01/96	03/04/96	56	%REC			1
Vanadium	7440-62-2	QCBLK93135-1	03/01/96	03/04/96	96	%REC			1
Zinc	7440-66-6	QCBLK93135-1	03/01/96	03/04/96	87	%REC			1

9613453.1317

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: ICAP Metals-TAL
Method: EPA 6010
Matrix: SOLID

Client ID: B0H695

Sample Date : 02/20/96
Receipt Date : 02/22/96
Report Date : 03/22/96

Quanterra ID : 10400-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Antimony	7440-36-0	QCBLK93135-1	03/01/96	03/04/96	52	%REC			1
Barium	7440-39-3	QCBLK93135-1	03/01/96	03/04/96	96	%REC			1
Beryllium	7440-41-7	QCBLK93135-1	03/01/96	03/04/96	88	%REC			1
Cadmium	7440-43-9	QCBLK93135-1	03/01/96	03/04/96	65	%REC			1
Chromium	7440-47-3	QCBLK93135-1	03/01/96	03/04/96	99	%REC			1
Cobalt	7440-48-4	QCBLK93135-1	03/01/96	03/04/96	93	%REC			1
Copper	7440-50-8	QCBLK93135-1	03/01/96	03/04/96	108	%REC			1
Manganese	7439-96-5	QCBLK93135-1	03/01/96	03/04/96	94	%REC			1
Nickel	7440-02-0	QCBLK93135-1	03/01/96	03/04/96	94	%REC			1
Silver	7440-22-4	QCBLK93135-1	03/01/96	03/04/96	70	%REC			1
Vanadium	7440-62-2	QCBLK93135-1	03/01/96	03/04/96	96	%REC			1
Zinc	7440-66-6	QCBLK93135-1	03/01/96	03/04/96	86	%REC			1

9613453.1318

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: ICAP Metals-TAL
Method: EPA 6010
Matrix: SOLID

Client ID: BOH696

Sample Date : 02/20/96
Receipt Date : 02/22/96
Report Date : 03/22/96

Quanterra ID : 10400-002

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aluminum	7429-90-5	QCBLK93135-1	03/01/96	03/04/96	4.2	MG/KG	B	20.0	1
Antimony	7440-36-0	QCBLK93135-1	03/01/96	03/04/96	3.2	MG/KG	U	6.0	1
Barium	7440-39-3	QCBLK93135-1	03/01/96	03/04/96	0.33	MG/KG	B	20.0	1
Beryllium	7440-41-7	QCBLK93135-1	03/01/96	03/04/96	0.06	MG/KG	U	0.50	1
Cadmium	7440-43-9	QCBLK93135-1	03/01/96	03/04/96	0.34	MG/KG	U	0.50	1
Calcium	7440-70-2	QCBLK93135-1	03/01/96	03/04/96	190	MG/KG	B	500	1
Chromium	7440-47-3	QCBLK93135-1	03/01/96	03/04/96	15.3	MG/KG		1.0	1
Cobalt	7440-48-4	QCBLK93135-1	03/01/96	03/04/96	0.36	MG/KG	U	5.0	1
Copper	7440-50-8	QCBLK93135-1	03/01/96	03/04/96	0.62	MG/KG	U	2.5	1
Iron	7439-89-6	QCBLK93135-1	03/01/96	03/04/96	12.9	MG/KG		10.0	1
Magnesium	7439-95-4	QCBLK93135-1	03/01/96	03/04/96	18.6	MG/KG	B	500	1
Manganese	7439-96-5	QCBLK93135-1	03/01/96	03/04/96	0.11	MG/KG	U	1.5	1
Nickel	7440-02-0	QCBLK93135-1	03/01/96	03/04/96	1.6	MG/KG	U	4.0	1
Potassium	7440-09-7	QCBLK93135-1	03/01/96	03/04/96	201	MG/KG	U	500	1
Silver	7440-22-4	QCBLK93135-1	03/01/96	03/04/96	0.50	MG/KG	U	1.0	1
Sodium	7440-23-5	QCBLK93135-1	03/01/96	03/04/96	19.6	MG/KG	B	500	1
Vanadium	7440-62-2	QCBLK93135-1	03/01/96	03/04/96	8.7	MG/KG		5.0	1
Zinc	7440-66-6	QCBLK93135-1	03/01/96	03/04/96	58.2	MG/KG		2.0	1

9613453.1319

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Arsenic
Method: EPA 7060
Matrix: SOLID

Sample Date : 02/20/96
Receipt Date : 02/22/96
Report Date : 03/22/96

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0H695	10400-001	Arsenic	7440-38-2	QCBLK93150-1	03/01/96	03/04/96	0.59	MG/KG	B	1.0	1
B0H695	10400-001MS	Arsenic	7440-38-2	QCBLK93150-1	03/01/96	03/04/96	99	%REC			1
B0H695	10400-001MSD	Arsenic	7440-38-2	QCBLK93150-1	03/01/96	03/04/96	102	%REC			1
B0H696	10400-002	Arsenic	7440-38-2	QCBLK93150-1	03/01/96	03/04/96	0.21	MG/KG	B	1.0	1
NA	QCBLK93150-1	Arsenic	7440-38-2	QCBLK93150-1	03/01/96	03/04/96	0.090	MG/KG	U	1.0	1
NA	QCLCS93150-1	Arsenic	7440-38-2	QCBLK93150-1	03/01/96	03/04/96	107	%REC			20

9613453.1320

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Lead
Method: EPA 7421
Matrix: SOLID

Sample Date : 02/20/96
Receipt Date : 02/22/96
Report Date : 03/28/96

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0H695	10400-001	Lead	7439-92-1	QCBLK93150-1	03/01/96	03/04/96	0.10	MG/KG	U	0.30	1
B0H695	10400-001MS	Lead	7439-92-1	QCBLK93150-1	03/01/96	03/04/96	26	%REC			1
B0H695	10400-001MSD	Lead	7439-92-1	QCBLK93150-1	03/01/96	03/04/96	11	%REC			1
B0H696	10400-002	Lead	7439-92-1	QCBLK93150-1	03/01/96	03/04/96	0.10	MG/KG	U	0.30	1
NA	QCBLK93150-1	Lead	7439-92-1	QCBLK93150-1	03/01/96	03/04/96	-0.16	MG/KG	B	0.30	1
NA	QCLCS93150-1	Lead	7439-92-1	QCBLK93150-1	03/01/96	03/04/96	79	%REC			20

9613453.1321

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Selenium
Method: EPA 7740
Matrix: SOLID

Sample Date : 02/20/96
Receipt Date : 02/22/96
Report Date : 03/22/96

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0H695	10400-001	Selenium	7782-49-2	QCBLK93150-1	03/01/96	03/04/96	3.2	MG/KG		0.50	1
B0H695	10400-001MS	Selenium	7782-49-2	QCBLK93150-1	03/01/96	03/04/96	71	%REC			1
B0H695	10400-001MSD	Selenium	7782-49-2	QCBLK93150-1	03/01/96	03/04/96	54	%REC			1
B0H696	10400-002	Selenium	7782-49-2	QCBLK93150-1	03/01/96	03/04/96	3.9	MG/KG		0.50	1
NA	QCBLK93150-1	Selenium	7782-49-2	QCBLK93150-1	03/01/96	03/04/96	0.11	MG/KG	U	0.50	1
NA	QCLCS93150-1	Selenium	7782-49-2	QCBLK93150-1	03/01/96	03/04/96	102	%REC			40

9613453.1322

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Thallium
Method: EPA 7841
Matrix: SOLID

Sample Date : 02/20/96
Receipt Date : 02/22/96
Report Date : 03/28/96

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0H695	10400-001	Thallium	7440-28-0	QCBLK93150-1	03/01/96	03/04/96	0.10	MG/KG	U	1.0	1
B0H695	10400-001MS	Thallium	7440-28-0	QCBLK93150-1	03/01/96	03/04/96	78	%REC			1
B0H695	10400-001MSD	Thallium	7440-28-0	QCBLK93150-1	03/01/96	03/04/96	77	%REC			1
B0H696	10400-002	Thallium	7440-28-0	QCBLK93150-1	03/01/96	03/04/96	0.10	MG/KG	U	1.0	1
NA	QCBLK93150-1	Thallium	7440-28-0	QCBLK93150-1	03/01/96	03/04/96	0.10	MG/KG	U	1.0	1
NA	QCLCS93150-1	Thallium	7440-28-0	QCBLK93150-1	03/01/96	03/04/96	121	%REC			40

9613453.1323

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Mercury
Method: EPA 7471
Matrix: SOLID

Sample Date : 02/20/96
Receipt Date : 02/22/96
Report Date : 03/22/96

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0H695	10400-001	Mercury	7439-97-6	QCBLK93628-1	03/07/96	03/07/96	0.02	MG/KG	U	0.033	1
B0H695	10400-001MS	Mercury	7439-97-6	QCBLK93628-1	03/07/96	03/07/96	38	%REC			1
B0H695	10400-001MSD	Mercury	7439-97-6	QCBLK93628-1	03/07/96	03/07/96	46	%REC			1
B0H696	10400-002	Mercury	7439-97-6	QCBLK93628-1	03/07/96	03/07/96	0.02	MG/KG	U	0.033	1
NA	QCBLK93628-1	Mercury	7439-97-6	QCBLK93628-1	03/07/96	03/07/96	0.017	MG/KG	U	0.033	1
NA	QCLCS93628-1	Mercury	7439-97-6	QCBLK93628-1	03/07/96	03/07/96	104	%REC			1

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0H695

Lab Name: QUANTERRA_MO Contract: 550.65

Lab Code: ITMO Case No.: SAS No.: SDG No.: W0909

Matrix (soil/water): SOIL Lab Sample ID: 10400-001

Level (low/med): LOW Date Received: 02/22/96

% 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	70.6			P
7440-36-0	Antimony	3.2	U	N	P
7440-38-2	Arsenic	0.59	B		F
7440-39-3	Barium	0.59	B		P
7440-41-7	Beryllium	0.06	U		P
7440-43-9	Cadmium	0.34	U	N	P
7440-70-2	Calcium	250	B	E	P
7440-47-3	Chromium	20.2			P
7440-48-4	Cobalt	1.3	B		P
7440-50-8	Copper	5.2			P
7439-89-6	Iron	221			P
7439-92-1	Lead	0.10	U	N	F
7439-95-4	Magnesium	28.7	B		P
7439-96-5	Manganese	0.11	U		P
7439-97-6	Mercury	0.02	U	N	CV
7440-02-0	Nickel	1.6	U		P
7440-09-7	Potassium	201	U		P
7782-49-2	Selenium	3.2		N	F
7440-22-4	Silver	0.50	U	N	P
7440-23-5	Sodium	21.6	B		P
7440-28-0	Thallium	0.10	U	N	F
7440-62-2	Vanadium	8.8			P
7440-66-6	Zinc	2.5			P

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

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U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0H696

Lab Name: QUANTERRA MO Contract: 550.65

Lab Code: ITMO Case No.: SAS No.: SDG No.: W0909

Matrix (soil/water): SOIL Lab Sample ID: 10400-002

Level (low/med): LOW Date Received: 02/22/96

% 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	4.2	B		P
7440-36-0	Antimony	3.2	U	N	P
7440-38-2	Arsenic	0.21	B		F
7440-39-3	Barium	0.33	B		P
7440-41-7	Beryllium	0.06	U		P
7440-43-9	Cadmium	0.34	U	N	P
7440-70-2	Calcium	190	B	E	P
7440-47-3	Chromium	15.3			P
7440-48-4	Cobalt	0.36	U		P
7440-50-8	Copper	0.62	U		P
7439-89-6	Iron	12.9			P
7439-92-1	Lead	0.10	U	N	F
7439-95-4	Magnesium	18.6	B		P
7439-96-5	Manganese	0.11	U		P
7439-97-6	Mercury	0.02	U	N	CV
7440-02-0	Nickel	1.6	U		P
7440-09-7	Potassium	201	U		P
7782-49-2	Selenium	3.9		N	F
7440-22-4	Silver	0.50	U	N	P
7440-23-5	Sodium	19.6	B		P
7440-28-0	Thallium	0.10	U	N	F
7440-62-2	Vanadium	8.7			P
7440-66-6	Zinc	58.2			P

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

9613453.1326

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Chloride
Method: EPA 300.0
Matrix: SOLID

Sample Date : 02/20/96
Receipt Date : 02/22/96
Report Date : 03/22/96

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0H695	10400-001	Chloride	16887-00-6	QCBLK92581-1	02/26/96	02/26/96	3.33	UG/G		1.97	1
B0H695	10400-001DUP	Chloride	16887-00-6	QCBLK92581-1	02/26/96	02/26/96	2.88	UG/G		1.98	1
B0H695	10400-001MS	Chloride	16887-00-6	QCBLK92581-1	02/26/96	02/26/96	104	%REC			5
B0H696	10400-002	Chloride	16887-00-6	QCBLK92581-1	02/26/96	02/26/96	3.03	UG/G		1.98	1
NA	QCBLK92581-1	Chloride	16887-00-6	QCBLK92581-1	02/26/96	02/26/96	2.00	UG/G	U	2.00	1
NA	QCLCS92581-1	Chloride	16887-00-6	QCBLK92581-1	02/26/96	02/26/96	89	%REC			1

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Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Fluoride
Method: EPA 300.0
Matrix: SOLID

Sample Date : 02/20/96
Receipt Date : 02/22/96
Report Date : 03/22/96

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0H695	10400-001	Fluoride	16984-48-8	QCBLK92581-1	02/26/96	02/26/96	0.98	UG/G	U	0.98	1
B0H695	10400-001DUP	Fluoride	16984-48-8	QCBLK92581-1	02/26/96	02/26/96	0.99	UG/G	U	0.99	1
B0H695	10400-001MS	Fluoride	16984-48-8	QCBLK92581-1	02/26/96	02/26/96	99	%REC			1
B0H696	10400-002	Fluoride	16984-48-8	QCBLK92581-1	02/26/96	02/26/96	0.99	UG/G	U	0.99	1
NA	QCBLK92581-1	Fluoride	16984-48-8	QCBLK92581-1	02/26/96	02/26/96	1.00	UG/G	U	1.00	1
NA	QCLCS92581-1	Fluoride	16984-48-8	QCBLK92581-1	02/26/96	02/26/96	93	%REC			1

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Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Nitrate
Method: EPA 300.0
Matrix: SOLID

Sample Date : 02/20/96
Receipt Date : 02/22/96
Report Date : 03/22/96

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0H695	10400-001	Nitrate	NO3-N	QCBLK92581-1	02/26/96	02/26/96	13.4	UG/G		0.39	2
B0H695	10400-001DUP	Nitrate	NO3-N	QCBLK92581-1	02/26/96	02/26/96	12.5	UG/G		0.40	2
B0H695	10400-001MS	Nitrate	NO3-N	QCBLK92581-1	02/26/96	02/26/96	109	%REC			5
B0H696	10400-002	Nitrate	NO3-N	QCBLK92581-1	02/26/96	02/26/96	12.9	UG/G		0.40	2
NA	QCBLK92581-1	Nitrate	NO3-N	QCBLK92581-1	02/26/96	02/26/96	0.20	UG/G	U	0.20	1
NA	QCLCS92581-1	Nitrate	NO3-N	QCBLK92581-1	02/26/96	02/26/96	98	%REC			1

9613453.1329

Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Nitrite-N
Method: EPA 300.0
Matrix: SOLID

Sample Date : 02/20/96
Receipt Date : 02/22/96
Report Date : 03/22/96

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0H695	10400-001	Nitrite-N	14797-65-0	QCBLK92581-1	02/26/96	02/26/96	0.20	UG/G	U	0.20	1
B0H695	10400-001DUP	Nitrite-N	14797-65-0	QCBLK92581-1	02/26/96	02/26/96	0.20	UG/G	U	0.20	1
B0H695	10400-001MS	Nitrite-N	14797-65-0	QCBLK92581-1	02/26/96	02/26/96	117	%REC			5
B0H696	10400-002	Nitrite-N	14797-65-0	QCBLK92581-1	02/26/96	02/26/96	0.20	UG/G	U	0.20	1
NA	QCBLK92581-1	Nitrite-N	14797-65-0	QCBLK92581-1	02/26/96	02/26/96	0.20	UG/G	U	0.20	1
NA	QCLCS92581-1	Nitrite-N	14797-65-0	QCBLK92581-1	02/26/96	02/26/96	80	%REC			1

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Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: Orthophosphate
Method: EPA 300.0
Matrix: SOLID

Sample Date : 02/20/96
Receipt Date : 02/22/96
Report Date : 03/22/96

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0H695	10400-001	Ortho-Phosphate	14265-44-2	QCBLK92581-1	02/26/96	02/26/96	4.91	UG/G	U	4.91	1
B0H695	10400-001DUP	Ortho-Phosphate	14265-44-2	QCBLK92581-1	02/26/96	02/26/96	4.94	UG/G	U	4.94	1
B0H695	10400-001MS	Ortho-Phosphate	14265-44-2	QCBLK92581-1	02/26/96	02/26/96	103	%REC			1
B0H696	10400-002	Ortho-Phosphate	14265-44-2	QCBLK92581-1	02/26/96	02/26/96	4.94	UG/G	U	4.94	1
NA	QCBLK92581-1	Ortho-Phosphate	14265-44-2	QCBLK92581-1	02/26/96	02/26/96	5.00	UG/G	U	5.00	1
NA	QCLCS92581-1	Ortho-Phosphate	14265-44-2	QCBLK92581-1	02/26/96	02/26/96	106	%REC			1

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Quanterra-Richland
3350 George Washington Way
Richland, WA 99352

Project: 550.65

Category: NO2-NO3
Method: EPA 353.1
Matrix: SOLID

Sample Date : 02/20/96
Receipt Date : 02/22/96
Report Date : 03/22/96

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0H695	10400-001	Nitrate/Nitrite	NO2+NO3-N	QCBLK92527-2	02/26/96	02/26/96	1490	UG/G		248	500
B0H695	10400-001DUP	Nitrate/Nitrite	NO2+NO3-N	QCBLK92527-2	02/26/96	02/26/96	1530	UG/G		247	500
B0H695	10400-001MS	Nitrate/Nitrite	NO2+NO3-N	QCBLK92527-2	02/26/96	02/26/96	1080	%REC			500
B0H696	10400-002	Nitrate/Nitrite	NO2+NO3-N	QCBLK92527-2	02/26/96	02/26/96	1840	UG/G		248	500
NA	QCBLK92527-2	Nitrate/Nitrite	NO2+NO3-N	QCBLK92527-2	02/26/96	02/26/96	0.50	UG/G	U	0.50	1
NA	QCLCS92527-2	Nitrate/Nitrite	NO2+NO3-N	QCBLK92527-2	02/26/96	02/26/96	105	%REC			1

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W0909
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Quanterra
Environmental Services

Quanterra Incorporated
2800 George Washington Way
Richland, Washington 99352

509 375-3131 Telephone
509 375-5590 Fax

CERTIFICATE OF ANALYSIS

APR 1996
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Data
Log In

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

April 15, 1996

Attention: Joan Kessner

SAF Number	:	B96-030
Date SDG Closed	:	March 7, 1996
Number of Samples	:	Two (2)
Sample Type	:	Other
SDG Number	:	W0909
Data Deliverable	:	Summary

I. Introduction

On February 22, 1996, two "other" matrix 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, Inc. (BHI) specific IDs:

QTESRL ID#	BHI ID#	MATRIX	DATE OF RECEIPT
60228501	B0H695	OTHER	02/22/96
60228502	B0H696	OTHER	02/22/96

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:

Gamma Spectroscopy
Gamma Scan by method RICHRC-5017
Gas Proportional Counting
Gross Alpha by method ITAS-RD-3222
Gross Beta by method ITAS-RD-3222
Liquid Scintillation Counting
Technetium-99 by method ITAS-IT-RS-0001
Total Uranium
Total Uranium by method RICHRC-5058

III. Quality Control

The analytical results for each analysis performed under SDG W0909 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, except for gross alpha and gross beta where the quality control sample results are reported as pCi/sample.

IV. Comments

Gamma Spectroscopy

Gamma Scan by method RICHRC-5017

The Fe-59 RDL was not met on the batch samples or the blank. The blank achieved detection limit was 0.085 pCi/L; the RDL is 0.05 pCi/L. Achieved detection limits for other isotopes also exceed the RDL in the batch samples. High sample screening activity required a reduction in sample volumes as well as reduced count times, resulting in increased MDAs. The blank meets all other RDL requirements; therefore, the batch data are accepted. K-40, Nb-95, Cd-109, Xe-131M, Xe-133, and Hg-203 were detected in sample B0H695 and Xe-131M was detected in the duplicate of sample B0H696. However, none of the isotopes listed are reported. Hg-203 is not reported since it is suspected to be a summation peak. Nb-95 is suspected to be attributed to interference with Pa-234M, due to high U-238; Xe-131M is attributed to interference with U-235; Xe-133 is attributed to interference with Th-231; and Cd-109 is a known phantom caused by x-ray interference from the detector cave liners. K-40 is not reported since the error is greater than the associated result. Sample B0H696 and its

duplicate do not meet the three sigma control limit for Co-58, Fe-59, and Eu-154. The cause is suspected to be normal statistical variation of results less than the achieved MDAs. All other isotopes, including those detected, meet the duplicate acceptance criteria; therefore the data are accepted. The recovery for Ra-226 in the LCS is biased low (67%). The cause is under investigation; Ra-226 is being monitored for all counts utilizing the reusable standard (CAL790) to determine if an overall low bias exists. The data are reported based on an acceptable recovery for Cs-137. Cd-109 and U-238DLP are detected in the batch blank but are not reported. Cd-109 is a known phantom as described above and the error is greater than the result for U-238DLP. Both the batch blank and the LCS were counted for 1000 minutes, while the client samples and duplicate were counted for 500 minutes due to high screening activity. It is normal procedure to extend the count times to 1000 minutes, in an effort to meet RDLs, when a 25ml geometry is used for counting. In this case, the high activity of the samples also required a reduced count time. The technician has been instructed, however, to reduce the QC count times to match those of the samples when volumes and count times are changed to accommodate sample activities, within reason. Except as noted, the LCS, batch blank, sample and sample duplicate (B0H696) results are within contractual requirements.

Gas Proportional Counting

Gross Alpha by method ITAS-RD-3222

The QC and batch samples were recounted since duplicate agreement was at 3.8σ on the original count. The recount data again showed 3.8σ for duplicate agreement. The cause is suspected to be a matrix effect--non-homogeneity of the sample matrix. The recount result for sample B0H695 and its duplicate are both within 1.7σ of the respective original result and the difference between the measured activity of the sample and its duplicate is 16%. All other QC requirements are met, therefore, the data are accepted and reported. Count times were reduced to 50 minutes for sample B0H695 and its duplicate due to high screening activity. The batch blank, LCS, and sample B0H696 were counted for 100 minutes. Except as noted, the LCS, batch blank, sample and sample duplicate (B0H695) results are within contractual requirements.

Gross Beta by method ITAS-RD-3222

Count times were reduced to 10 minutes for sample B0H695, B0H696, and the duplicate of sample B0H695 due to high screening activity. The QC samples were counted for 50 minutes. The measured activity is greater than the achieved MDA for each sample and the duplicate. The LCS, batch blank, sample and sample duplicate (B0H695) results are within contractual requirements.

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Environmental Services

Liquid Scintillation Counting

Technetium-99 by method ITAS-IT-RS-0001
The matrix spike recovery is indeterminable since the sample result is approximately 38 times greater than the spike that was added. The high matrix spike recovery is attributed to a matrix effect--high sample activity. The batch is accepted based on acceptable results for all other quality control parameters. Except as noted, the matrix spike, LCS, batch blank, sample and sample duplicate (B0H696) results are within contractual requirements.

Total Uranium

Total Uranium by method RICHRC-5058
The batch was reanalyzed due to evidence of contamination in the batch blank on the original analysis. The reanalysis data are accepted and reported. Sample B0H696 and its duplicate are outside the three sigma control limit due to a matrix effect--non-homogeneous sample matrix. All other quality control parameters are met, therefore the batch data are accepted. Except as noted, the matrix spike, LCS, batch blank, sample and sample duplicate (B0H696) 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:

Suzanne Gaines
Project Manager

FOR
S.G.
4-15-96

9613453.1336

Quanterra Environmental Services

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0909
LAB SAMPLE ID:	60228501	MATRIX:	OTHER
CLIENT ID:	B0H695	DATE RECEIVED:	2/22/96 12:30:00 PM

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
AM-241.	2.73E+01	4.6E+00	5.4E+00	N/A	pCi/g	N/A	RICHRC5017
CO-58.	-4.27E-01	2.4E-01	2.5E-01	3.87E-01	pCi/g	N/A	RICHRC5017
CO-60.	1.07E+01	4.3E-01	1.2E+00	N/A	pCi/g	N/A	RICHRC5017
CS-137DA.	-5.61E-02	2.0E-01	2.0E-01	3.14E-01	pCi/g	N/A	RICHRC5017
EU-152.	1.23E-01	4.4E-01	4.4E-01	7.12E-01	pCi/g	N/A	RICHRC5017
EU-154.	6.59E-02	3.1E-01	3.1E-01	5.17E-01	pCi/g	N/A	RICHRC5017
EU-155.	2.62E+01	1.2E+00	2.9E+00	2.05E+00	pCi/g	N/A	RICHRC5017
FE-59.	-9.52E-02	3.5E-01	3.5E-01	5.82E-01	pCi/g	N/A	RICHRC5017
U-235.	4.29E+02	3.5E+00	4.3E+01	N/A	pCi/g	N/A	RICHRC5017
U-238DLP.	7.01E+03	3.7E+01	7.0E+02	N/A	pCi/g	N/A	RICHRC5017
ALPHA	2.02E+03	8.5E+01	1.8E+02	7.34E+00	pCi/g	100.00%	RD3222
BETA	1.65E+04	4.0E+02	1.3E+03	4.37E+01	pCi/g	100.00%	RD3222
TC-99	5.40E+04	1.2E+02	6.0E+03	7.00E-01	pCi/g	100.00%	ITAS-IT-RS-0001
TOTAL-URANIUM	3.05E+04	N/A	4.3E+03	6.98E-02	ug/g	N/A	RICHRC5058

Number of Results: 14

9613453.1337

Quanterra
Environmental Services

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0909
LAB SAMPLE ID:	60228502	MATRIX:	OTHER
CLIENT ID:	B0H696	DATE RECEIVED:	2/22/96 12:30:00 PM

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
CO-58.	-6.19E-02	6.0E-02	6.0E-02	9.25E-02	pCi/g	N/A	RICHRC5017
CO-60.	2.34E-02	5.5E-02	5.5E-02	1.00E-01	pCi/g	N/A	RICHRC5017
CS-137DA.	7.42E-02	4.8E-02	4.9E-02	8.89E-02	pCi/g	N/A	RICHRC5017
EU-152.	1.46E-01	1.0E-01	1.0E-01	1.85E-01	pCi/g	N/A	RICHRC5017
EU-154.	-1.59E-01	1.4E-01	1.5E-01	2.27E-01	pCi/g	N/A	RICHRC5017
EU-155.	-5.29E-02	2.7E-01	2.7E-01	4.40E-01	pCi/g	N/A	RICHRC5017
FE-59.	1.34E-01	1.2E-01	1.2E-01	2.23E-01	pCi/g	N/A	RICHRC5017
U-235.	2.33E+00	5.8E-01	6.3E-01	N/A	pCi/g	N/A	RICHRC5017
U-238DLP.	3.12E+01	6.4E+00	7.1E+00	N/A	pCi/g	N/A	RICHRC5017
ALPHA	4.36E+01	9.0E+00	9.6E+00	4.57E+00	pCi/g	100.00%	RD3222
BETA	7.25E+03	2.6E+02	5.9E+02	4.34E+01	pCi/g	100.00%	RD3222
TC-99	5.46E+04	1.2E+02	6.1E+03	7.00E-01	pCi/g	100.00%	ITAS-IT-RS-0001
TOTAL-URANIUM	1.54E+02	N/A	2.1E+01	6.98E-01	ug/g	N/A	RICHRC5058

Number of Results: 13

9613453.1338

Quanterra Data Review Checklist
RADIOCHEMISTRY

Work Order number (s): 602285

Client ID: BHI 4-2-96

Due Date: ~~4/2/96~~ 4-6-96

Lab Sample Number or SDG: W9909

Method Test Parameters: Gamma

Matrix: Other

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? NCM		✓		✓
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? NCM	✓	Fe59 ✓		✓
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? NCM	Cs137 ✓	Ra226 ✓		✓
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? NCM	✓	✓		✓
D. Other				
1. Are all Nonconformances included and noted?	✓			✓
2. Are all required forms filed out?	✓			✓
3. Correct methodology used?	✓			✓
4. Transcription checked?	✓			✓
5. Were all calculations checked at a minimum frequency?	✓			✓
6. Units checked?	✓			✓

Comments on any "No' response: _____

First Level Review: [signature] Date: 4-2-96

Second Level Review: [signature] Date: 4-12-96

Form #: LS-038,2 /96, Rev.4

9613453.1339

314

QUANTERRA LABORATORY NONCONFORMANCE MEMO (NCM)

LOG #: RD-96-_____

Project ID: BHI NCM Initiated by: Paul Kengema

Sample Numbers: P022851B P022851S

Tests: Gamma

Matrix: Other W0909

Analytical Area (check appropriate area):

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

Nonconformance (check appropriate area):

Holding Time Violations (exceeded by _____ days)

Category I: Laboratory Independent

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

Category II: Laboratory Dependent

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

Category III: Analysis Reruns (QA/QC)

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

Category IV: Analysis Reruns (Confirmation)

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

Quality Assurance/Quality Control

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

Incorrect or Incomplete Client Deliverable

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

Reported detection limits elevated due to:

- ☐ 24. Sample matrix
- ☐ 25. Insufficient sample volume
- ☐ 26. Other (complete description required)
- ☒ 27. ***Other (specify):*** 1B MDA > CL
  1S Ra226 DA low bias at 67% expected

Comments/Explanation: QC counted 1000 min
Samples counted 500 minutes
1B-isotopes marked detected not reported
Cd109, U238 DLP

Notification (check appropriate area):

Client notified by (name and date): _____

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

Client's name and response: _____

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

Project Manager (signature and date): [signature] 4-12-96

000017

9613453.1340

QUANTERRA LABORATORY NONCONFORMANCE MEMO (NCM)

LOG#: RD-96-_____

Corrective Action

Root Cause Initial and date: MK 4-2-96

(1) Isotopes not reported – Cd109 – known phantom; U238 DEP error) result
(2) 1S – low bias Razze DA – uncertain cause, under investigation
(3) QC counted longer than samples – If a 25ml geometry is used the routine count time is 1000 min to meet MDA, in this case the high activity of samples required reduced volume to 25ml & reduced count times

Corrective Action Initial and Date: MK 4-2-96

Data accepted with these exceptions.

Responsibility for performing CA assigned to: _____

Actions to prevent recurrence Initial and Date: MK 4-2-96

Tech instructed to reduce QC count time to match that of samples when volume or count time changed to accommodate sample activity variation. Monitoring Razze activity whenever Cal 790 counted to determine if an overall low bias exists.

First Level Supervisor: Joel Kempema Date: 4-2-96

Responsible Manager: W. Mackeller Date: 4/16/96

Quality Assurance Review

☑ Anomaly ☐ Deficiency ☐ Rerun

☐ Further action required: _____

Assigned to: _____

QA signature: Beverly Johnson Date: 4/16/96

Corrective Action Verification

☑ Verified

☐ Cannot Verify (specify reason): _____

Nonconformance Memo Closure

QA signature/date: Beverly Johnson 4/16/96

3B

9613453.1341

QUANTERRA LABORATORY NONCONFORMANCE MEMO (NCM)

LOG #: RD-96-_____

Project ID: BHI NCM Initiated by: Paul Kempema

Sample Numbers: 60228501, 60228502, C0228502

Tests: Gamma

Matrix: Other W0909

Analytical Area (check appropriate area):

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

Nonconformance (check appropriate area):

Holding Time Violations (exceeded by _____ days)

Category I: Laboratory Independent

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

Category II: Laboratory Dependent

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

Category III: Analysis Reruns (QA/QC)

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

Category IV: Analysis Reruns (Confirmation)

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

Quality Assurance/Quality Control

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

Incorrect or Incomplete Client Deliverable

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

Reported detection limits elevated due to:

- ☐ 24. Sample matrix
- ☐ 25. Insufficient sample volume
- ☒ 26. Other (complete description required) All isotopes not detected
- ☒ 27. *Other (specify):* Isotopes marked detected but not reported

Comments/Explanation: #01 – K40, Pb195, Cd109, Xe131m, Xe133, Hg203
#02 – none
#C-02 (dup) – Xe131m

Notification (check appropriate area):

Client notified by (name and date): _____

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

Client's name and response: _____

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

Project Manager (signature and date): [signature] 4-12 96

9613453.1342

QUANTERRA LABORATORY NONCONFORMANCE MEMO (NCM)

LOG#: RD-96-

Corrective Action

Root Cause Initial and date: MK 4-2-96

① High sample screening activity caused reduced sample aliquant, reduced count time resulting in increased MDAs.

② Isotopes Not Reported - Cd109 (known phantom), K40 (error > result), Nb95 is (Pa234m interference) Xe131M (U235 interference) Xe133 (Th231 interference) Hg203 (phantom suspected to be a summation peak)

Corrective Action Initial and Date: MK 4-2-96

Data accepted with these exceptions.

Responsibility for performing CA assigned to:

Actions to prevent recurrence Initial and Date:

First Level Supervisor: Joel Kempema Date: 4-2-96

Responsible Manager: W. MacKellar Date: 4/16/96

Quality Assurance Review

☑ Anomaly ☐ Deficiency ☐ Rerun

☐ Further action required:

Assigned to:

QA signature: Beverly A. Grain Date: 4/16/96

Corrective Action Verification

☑ Verified

☐ Cannot Verify (specify reason):

Nonconformance Memo Closure

QA signature/date: Beverly A. Grain 4/16/96

9613453.1343

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QUANTERRA LABORATORY NONCONFORMANCE MEMO (NCM)

LOG #: RD-96-

Project ID: BHI

NCM Initiated by: [illegible]

Sample Numbers: 60228502 C0228502

Tests: Gamma

Matrix: Other W0909

Analytical Area (check appropriate area):

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

Nonconformance (check appropriate area):

Holding Time Violations (exceeded by _____ days)

Category I: Laboratory Independent

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

Category II: Laboratory Dependent

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

Category III: Analysis Reruns (QA/QC)

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

Category IV: Analysis Reruns (Confirmation)

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

Quality Assurance/Quality Control

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

Incorrect or Incomplete Client Deliverable

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

Reported detection limits elevated due to:

- ☐ 24. Sample matrix
- ☐ 25. Insufficient sample volume
- ☐ 26. Other (complete description required)
- ☒ 27. ***Other (specify):*** Many isotopes not detected in sample or dup > 30 error

Comments/Explanation:

U235

U238DCP both detected & agree within 1σ

Notification (check appropriate area):

Client notified by (name and date):

- ☐ in writing
- ☐ by facsimile
- ☐ by telephone
- ☑ other (explain) case presented

Client's name and response:

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

Project Manager (signature and date): [illegible] 4-12-96

000021

9613453.1344

QUANTERRA LABORATORY NONCONFORMANCE MEMO (NCM)

LOG#: RD-96-_____

Corrective Action

Root Cause Initial and date: JK 4-2-96

Normal statistical variation of results less than MDA

Corrective Action Initial and Date: JK 4-2-96

Duplicate data accepted

Responsibility for performing CA assigned to: _____

Actions to prevent recurrence Initial and Date: _____

First Level Supervisor: [signature] Date: 4-2-96

Responsible Manager: W. MacKellar Date: 4/16/96

Quality Assurance Review

☑ Anomaly ☐ Deficiency ☐ Rerun

☐ Further action required: _____

Assigned to: _____

QA signature: [signature] Date: 4/16/96

Corrective Action Verification

☑ Verified

☐ Cannot Verify (specify reason): _____

Nonconformance Memo Closure

QA signature/date: [signature] 4/16/96

9613453.1345

Quanterra Data Review Checklist
RADIOCHEMISTRY

Work Order number (s):	602285
Client ID:	BHI
Due Date:	4/6/96
Lab Sample Number or SDG:	W0909
Method Test Parameters:	α
Matrix:	Other

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?	NCM —			✓
2. Are all required forms filed out?	—			✓
3. Correct methodology used?	—			✓
4. Transcription checked? (ET) 4/4/96	✓			TTR ✓
5. Were all calculations checked at a minimum frequency?	—			✓
6. Units checked?	✓			✓

Comments on any "No' response: _____

First Level Review: [signature] Date: 4-4-96

Second Level Review: [signature] Date: 4-15-96

Form #: LS-038,2 /96, Rev.4

Report recount results for samples + QC.

QUANTERRA LABORATORY NONCONFORMANCE MEMO (NCM)

LOG #: RD-96-_____

Project ID: BHI NCM Initiated by: Joel Mengema

Sample Numbers: 60228501, C0228501, 60228502 +QC

Tests: Alpha

Matrix: Other WO909

Analytical Area (check appropriate area):

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

Nonconformance (check appropriate area):

Holding Time Violations (exceeded by _____ days)

Category I: Laboratory Independent

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

Category II: Laboratory Dependent

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

Category III: Analysis Reruns (QA/QC)

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

Category IV: Analysis Reruns (Confirmation)

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

Quality Assurance/Quality Control

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

Incorrect or Incomplete Client Deliverable

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

Reported detection limits elevated due to:

- ☐ 24. Sample matrix
- ☐ 25. Insufficient sample volume
- ☐ 26. Other (complete description required)
- ☒ 27. ***Other (specify):*** All samples + QC recounted

Comments/Explanation: Duplicate agreement at 4.3 σ error. TTR 4-4-96

Notification (check appropriate area):

Client notified by (name and date): _____

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

Client's name and response: _____

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

Project Manager (signature and date): [signature] 4-15-96

9613453.1347

QUANTERRA LABORATORY NONCONFORMANCE MEMO (NCM)

LOG#: RD-96-_____

Corrective Action

Root Cause Initial and date: JK 4-4-96

~~Surge~~ Suspect some non-homogeneity of sample

Corrective Action Initial and Date: JK 4-4-96

Result data accepted to report. Difference in results is ≈16%. Discuss in case narrative. Results 01 + C01 avg ≈ 2000 pCi/g.

Responsibility for performing CA assigned to: _____

Actions to prevent recurrence Initial and Date: _____

First Level Supervisor: Joel Kengeman Date: 4-4-96

Responsible Manager: W. Mackellar Date: 4/16/96

Quality Assurance Review

☑ Anomaly 4/16/96 ☐ Deficiency ~~☐ Rerun~~

☐ Further action required: _____

Assigned to: _____

QA signature: Beverly [illegible] Date: 4/16/96

Corrective Action Verification

☑ Verified

☐ Cannot Verify (specify reason): _____

Nonconformance Memo Closure

QA signature/date: Beverly [illegible] 4/16/96

9613453.1348

Quanterra Data Review Checklist
RADIOCHEMISTRY

Work Order number (s):	602285
Client ID:	BHI
Due Date:	4/6/96
Lab Sample Number or SDG:	W0909
Method Test Parameters:	B
Matrix:	Other

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?	AFR 4-2-96 ✓			✓
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 Linit 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? (4) 3/27/96	✓			MC ✓
5. Were all calculations checked at a minimum frequency?	✓			✓
6. Units checked?	✓			✓

Comments on any "No' response: Sample activities > MDA

First Level Review: [signature] Date: 4-2-96

Second Level Review: [signature] Date: 4-15-96

Form #: LS-038,2 /96, Rev.4

9613453.1349

Quanterra Data Review Checklist
RADIOCHEMISTRY

Work Order number (s): 602285 603167

Client ID: BHI, USE

Due Date: 4-6-96

Lab Sample Number or SDG: W0909, 6456

Method Test Parameters: Tc-99

Matrix: Other / AIR

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? NCM		—		✓
10. Duplicate sample results and yield meet acceptance criteria?	—			✓
D. Other				
1. Are all Nonconformances included and noted?	BHI — NCM			✓
2. Are all required forms filed out?	—			✓
3. Correct methodology used?	—			✓
4. Transcription checked?	JM 4-2-96			✓
5. Were all calculations checked at a minimum frequency?	—			✓
6. Units checked?	—			✓

Comments on any "No' response: _____

First Level Review: Joel Kempema Date: 4-2-96

Second Level Review: Stephen J Lowenthal Date: 4-4-96

Form #: LS-038,2 /96, Rev.4

9613453.1350

316

QUANTERRA LABORATORY NONCONFORMANCE MEMO (NCM)

LOG #: RD-96-_____

Project ID: BHI
NCM Initiated by: Joel T Kempema
Sample Numbers: A0228501
Tests: Tc99
Matrix: Other W0909

Analytical Area (check appropriate area):

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

Nonconformance (check appropriate area):

Holding Time Violations (exceeded by _____ days)

Category I: Laboratory Independent

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

Category II: Laboratory Dependent

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

Category III: Analysis Reruns (QA/QC)

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

Category IV: Analysis Reruns (Confirmation)

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

Quality Assurance/Quality Control

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

Incorrect or Incomplete Client Deliverable

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

Reported detection limits elevated due to:

- ☐ 24. Sample matrix
- ☐ 25. Insufficient sample volume
- ☐ 26. Other (complete description required)
- ☒ 27. ***Other (specify):*** MS result outside acceptance criteria

Comments/Explanation: _____

Notification (check appropriate area):

Client notified by (name and date): _____

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

Client's name and response: _____

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

Project Manager (signature and date): Stephen Koenkemeyer 4-4-96

000028

9613453.1351

QUANTERRA LABORATORY NONCONFORMANCE MEMO (NCM)

LOG#: RD-96-_____

Corrective Action

Root Cause Initial and date: JRC 4-2-96

high activity of sample - 38X activity of spiked added

Corrective Action Initial and Date: JRC 4-2-96

Data accepted w/o MS acceptable.

Responsibility for performing CA assigned to: _____

Actions to prevent recurrence Initial and Date: _____

First Level Supervisor: Joel Kempenen Date: 4-2-96

Responsible Manager: W. MacKellar Date: 4/16/96

Quality Assurance Review

☑ Anomaly ☐ Deficiency ☐ Rerun

☐ Further action required: _____

Assigned to: _____

QA signature: Beverly Allen Date: 4/16/96

Corrective Action Verification

☑ Verified

☐ Cannot Verify (specify reason): _____

Nonconformance Memo Closure

QA signature/date: Beverly Allen 4/16/96

9613453.1352

Quanterra Data Review Checklist
RADIOCHEMISTRY

Work Order number (s): L02285

Client ID: BHI

Due Date: 4-7-96

Lab Sample Number or SDG: W0909

Method Test Parameters: uranium

Matrix: other

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?	NCM			✓
2. Are all required forms filed out?	✓			✓
3. Correct methodology used?	✓			✓
4. Transcription checked? PK	✓			✓
5. Were all calculations checked at a minimum frequency?	✓			✓
6. Units checked?	✓			✓

Comments on any "No' response: _____

First Level Review: Pam Kempton Date: 4-5-96

Second Level Review: Stephen J. Kowalczyk Date: 4-15-96

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

9613453.1353

157

QUANTERRA LABORATORY NONCONFORMANCE MEMO (NCM)

LOG #: RD-96-_____

Project ID: BHS

NCM Initiated by: PKenitzer 4-5-96

Sample Numbers: 602285

Tests: Uranium

Matrix: other W0909

Analytical Area (check appropriate area):

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

Nonconformance (check appropriate area):

Holding Time Violations (exceeded by _____ days)

Category I: Laboratory Independent

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

Category II: Laboratory Dependent

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

Category III: Analysis Reruns (QA/QC)

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

Category IV: Analysis Reruns (Confirmation)

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

Quality Assurance/Quality Control

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

Incorrect or Incomplete Client Deliverable

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

Reported detection limits elevated due to:

- ☐ 24. Sample matrix
- ☐ 25. Insufficient sample volume
- ☒ 26. Other (complete description required)
- ☒ 27. *Other (specify):* sample & dup out of 3σ limits

Comments/Explanation: _____

Notification (check appropriate area):

Client notified by (name and date): _____

- ☐ in writing
- ☐ by facsimile
- ☐ by telephone
- ☑ other (explain) CASR NEGATIVE

Client's name and response: _____

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

Project Manager (signature and date): [signature] 4-15-96

000031

9613453.1354

QUANTERRA LABORATORY NONCONFORMANCE MEMO (NCM)

LOG#: RD-96-_____

Corrective Action

Root Cause Initial and date: _____

1) Samples reanalyzed because of blank contamination - ~~account~~ PK 4-5-96 reanalysis good - no contamination in blank
2) on reanalysis sample + dup outside 3σ limits. Matrix effect inconsistent matrix

Corrective Action Initial and Date: PK 4-5-96

reanalysis - watch for popping on hot plates

Reanalysis data accepted pk 4-5-96

Responsibility for performing CA assigned to: _____

Actions to prevent recurrence Initial and Date: _____

First Level Supervisor: Pam Kenitzer Date: ~~5-4-96~~ 4-5-96 ~~4-5-96~~

Responsible Manager: W. Markell Date: 4/16 PC

Quality Assurance Review

☑ Anomaly 4/16/96 ☐ Deficiency ☑ Rerun

☐ Further action required: _____

Assigned to: _____

QA signature: [signature] Date: 4/16/96

Corrective Action Verification

☑ Verified

☐ Cannot Verify (specify reason): _____

Nonconformance Memo Closure

QA signature/date: [signature] 4/16/96

9613453.1355

CHAIN OF

CUSTODY FORMS

Bechtel Hanford, Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround
☐ Priority
■ Normal

Collector K. Trapp	Company Contact F. W. Gustafson	Telephone (509) 372-9372
Project Designation 200-UP-1 Pump and Treat - Spent Resin (1996)	Sampling Location 200-UP-1 Pump and Treat	SAF No. B96-030
Ice Chest No. ER-50	Field Logbook No. EFL-1127-6	Method of Shipment Hand Delivered
Shipped To Quanterra	Offsite Property No. NA	Bill of Lading/Air Bill No. NA
Possible Sample Hazards/Remarks		

Special Handling and/or Storage
Maintain samples between 2°C and 6°C.

SAMPLE ANALYSIS 602284 SDG W0909

Sample No.	Matrix*	Date Sampled	Time Sampled	ICP Metals - TAL. AA Metals - As, Pb, Se, Tl, Hg.	VOA - TCL *1	Semi-VOA - TCL	Anions - F, Cl, PO_4, NO_2, NO_3	NO_2 - NO_3	*2 602285	Activity Scan			
Preservation				Cool 4°C	Cool 4°C	Cool 4°C	Cool 4°C	Cool 4°C	None	None			
Type of Container				P/G	Gs	aG	G	P/G	P/G	P			
No. of Container(s)				1	3	3	3	1	2	1			
Volume				60mL	40mL	60mL	60mL	60mL	1L	20mL			
B0H695 01	X	2/20/96	1000	X	X	X	X	X	X	X			
B0H696 02	X	2/20/96	1100	X	X	X	X	X	X	X			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time 1250	Received By	Date/Time 1250
K. Trapp / K. Trapp	2/20/96	B. Whitton	2-20-96
Relinquished By	Date/Time 1230	Received By	Date/Time 1230
B. Whitton	2-22-96		2-22-96
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
*1 Due to sample matrix, zero headspace will not be obtained.
*2 Gross Alpha, Gross Beta, Tc-99, Total Uranium, Gamma Spec.

Sample Matrix - ion exchange resin.

Sample analysis for PO_4, NO_2, and NO_3 by EPA 300.0 is being requested for information only. The ERC Contractor acknowledges that the 48 hour hold time will not be met.

For VOA and semi-VOA analysis, the resin should be treated as a soil.

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

9613453.1356

000034

SAMPLE STATUS REPORT FOR N 6237. RAD SCREEN BOH696 TIME: 2/21/96 11:49
DISPATCHED: 2/16/96 9:49 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 2/20/96 12: 0

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	4.24000E 03 pCi/G	N	Y	X60168

END OF REPORT

2620 ml = 2620 g for Rabbit

4240×10^{-12} Ci x 2620 = 11.1088×10^{-6} Ci

= 11 μCi

17 μCi + 11 μCi = 28 μCi shipment total

A_2 for Tc-99 = 24.3 Ci

for Ltd Qty $\frac{24.3}{1000}$ = .0243 Ci Ltd Qty

28 μCi < 24,300 μCi therefore shipment is Ltd. Qty.

SAMPLE STATUS REPORT FOR N 6236. RAD SCREEN BOH695 TIME: 2/21/96 11:49
DISPATCHED: 2/16/96 9:49 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 2/20/96 12: 0

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	6.45000E 03 pCi/G	N	Y	X60168

END OF REPORT

~~260~~ 2620 ml ≈ 2620 g for resin

$$\frac{6450 \times 10^{-12}\,Ci}{g} \times 2620\,g = 1.6899 \times 10^{-9}\,Ci$$
$$= 16.899 \times 10^{-6}\,Ci$$
$$\approx 17\,\mu Ci$$

$$10^{-6} = \mu$$

9613453.1359

THIS PACKAGE CONFORMS TO THE CONDITIONS AND LIMITATIONS SPECIFIED IN 49 CFR 173.421 FOR RADIOACTIVE MATERIAL, EXCEPTED PACKAGE-LIMITED QUANITITY OF MATERIAL, UN2910

BECHTEL HANFORD INC.

9613453.1360

POTENTIAL HAZARDS

HEALTH HAZARDS

Low-level radioactive material; little personal radiation hazard.
Many packages are not required to have radioactive materials labels or markings.
Some radioactive materials cannot be detected by commonly available instruments.

FIRE OR EXPLOSION

Some of these materials may burn, but none of them ignites readily.
Radioactivity does not change flammability or other properties of the materials

EMERGENCY ACTION

Keep unnecessary people away; isolate hazard area and deny entry.
Response actions may be performed prior to any radiation measurements.
Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide limited protection.
Notify Radiation Authority of accident conditions.
Detain uninjured persons, isolate equipment with suspected contamination, and delay cleanup until instruction of Radiation Authority.

FIRE

Do not move damaged containers; move undamaged containers out of fire zone.
Small Fires: Dry chemical, CO_2, water spray or regular foam.
Large Fires: Water spray, fog (flooding amounts).

SPILL OR LEAK

Do not touch damaged containers or spilled material.
Small Liquid Spills: Take up with sand, earth or other noncombustible absorbent material.
Cover powder spill with plastic sheet or tarp to minimize spreading.

FIRST AID

Use first aid treatment according to the nature of the injury.
Advise medical personnel that victim may be contaminated with low-level radioactive material.

Radioactive Material, excepted package - limited quantity of material, 7, UN2910

9613453.1361

RECEIVED BY

RADIOACTIVE SHIPMENT RECORD

3. Page 1 of 1 | 3

1. SHIP TO
Company: QUANTERRA
Address: 2800 GEORGE WASHINGTON WAY
City, State, Zip: RICHLAND WA 99352
Attention: KAREN ACTENBURGA
Phone: 375-3131 EXT 135

2. SHIP FROM U.S. DEPT. OF ENERGY C/O
Company: BHI HANFORD
Address: 4701-C 400 AREA
City, State, Zip: RICHLAND WA 99352
Contact: BILL WHITTEN 376-1878
Phone:

4. Ship [X] Prepaid [ ] Collec

Via: [X] Motor ~~Rail~~ [ ] Air Psgr [ ] Excl. Use [ ] Air Cargo [ ] UPS Surface [ ] Mail [X] Site Carrier

SHIPMENT AUTHORIZATION NUMBER:

5. HM Proper Shipping Name: Radioactive Material,

	Proper Shipping Name	Class	Identification
	excepted package - empty packaging	7	UN2910
	excepted package - instruments or articles	7	UN2910
X	excepted package - limited quantity of material	7	UN2910
	excepted package - articles manufactured from natural or depleted uranium or natural thorium	7	UN2910
	Special Form, n.o.s.	7	UN2974
	Low Specific Activity, n.o.s.	7	UN2912
	n.o.s.	7	UN2982
	Fissile, n.o.s.	7	UN2918
	(other)		

6. Markings Applied
Package Orientation [ ]
Gross Weight [X]
Radioactive - LSA [ ]
Type A [ ]
Type B [ ]

7. For Normal Form
Identify
Physical Form: [ ] Liquid [ ] Gas [X] Solid
Chemical Form: [ ] Metal [ ] Oxide [X] Elemental [ ] Nitrate [ ] Mixture
Other:

8. Additional RAM Desc.
Limited Quantity Radioactive Material [X]
Highway Route Controlled Quantity [ ]

9. Placards Applied [ ] Yes [X] No
If Rail Specify Placards
Route Plan [ ] Yes [X] No

10. EMERGENCY RESPONSE
Telephone (509) 373-3800
Emergency Response Guide(s): #61

11a. TYPE PACKAGE
Strong Tight [X]
Type A [ ]
Type B [ ]
Type B(U) [ ]
Type B(M) [ ]

11b. CONSTRUCTION
[ ] Box, FB
[ ] Wood
[ ] Steel
[ ] Drum
[ ] Cask
Other: POLY COOLER

11c. FISSILE CLASS
Non-Fissile [ ]
Fissile Exempt [X]
Fissile I [ ]
Fissile II [ ]
Fissile III [ ]
Gms Fissile: <15gms

11d. Labels Applied
Empty [ ]
Radioactive White I [ ]
Radioactive Yellow II [ ]
Radioactive Yellow III [ ]
Subsidiary Hazard [ ]

Warning -- Fissile Class III Shipment. Do Not Load More Than ____ Packages Per Vehicle. In Loading and Storage Areas, Keep at Least 20 Feet From Other Packages Bearing Radioactive Labels.

12.

No. Pkgs.	Model Package	COC/Spec	Serial No.	Seal No.	Isotopes	T.I.	Curies/Pkg	Gr. Wt.
1	STRONG TIGHT	N/A	N/A	N/A	Tc99 U238 U235	N/A	28μCi	41 lbs
POLY COOLER # EK-50	CONTAINS SAMPLES OF	SPENT RESIN						
IN GLASS JARS. THE	JARS ARE PACKED ON	WET ICE AND						
VERMICULITE # BOA695	BOA696							
					TOTALS	N/A	28μCi	41 lbs

(Shipper may describe package in detail on one of the unused lines above)

13. This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation, according to the applicable federal, state, local and international regulations for the transportation of hazardous materials.

Certifier's Signature: J. D. Franklin On behalf of DOE-RL | Date: 2-22-96 | Organization: FIELD SAMPLING | Complete Cost Code (Inc. End Function): X60126

14. Surface Dose Rate of Package: [X] <0.5 or N/A mrem/hr (N+β γ)
Dose Rate at 1 Meter from Surface of Package: [X] <0.5 or N/A mrem/hr (N+β γ)
Smears of Outer Container: [X] <22 dpm β γ/cm² [X] <2.2 dpm α/cm² [X] <Tbl. 2-2 HSRCM Onsite Limits
TRUCK LOAD OR EXCLUSIVE USE: Surface [X] <200 mrem/hr (N+β γ); @ 6 feet [X] <10 mrem/hr (N+β γ); @ Cab or sleeper [X] <2 mrem/hr (N+β γ)

Additional Data and Instructions (inc. Readings on Internal Packaging): None

Signature - Radiation Monitoring: [signature] | Bldg. 4701-C | Survey No. I-200-1084 | Date 02/22/96

15. PICKUP OF SHIPMENT: Vehicle ID-2598 | Driver B.T. WHITTEN
RECEIPT: Signature [signature] | Date 2-22-96

16. Shipment has been inspected and verified to be in compliance with DOT regulations
Authorized Signature: M. A. Sams | Printed Name: M.A. SAMS | Date 2-22-96

17. AIR TRANSPORT CERTIFICATION
CARGO AIRCRAFT: [ ] Cargo Aircraft Only Labels Applied
PASSENGER AIRCRAFT: [ ] 1. Ltd Qty [ ] 2. <3 T.I. [ ] 3. Research/Medical Diagnosis [ ] 4. Human Medical Research
Pkg. Dimensions: NA

18. OFFSITE AUTHORIZATION
B/L: RMW98S1 | Date Shipped: 2-22-96 | Routing: BHI VEHICLE | ETA: 2-22-96
Surveyed By: | Date: | Approved for Shipment Offsite: M. A. Sams | Date: 2-22-96

Karen Ashenberg 2-22-96

SDG W0909

Figure 1

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 2/22/96 Client Name BHI

Project/Client # B96-030 Batch or Case # _____

Cooler ID (if noted on outside of cooler) ER50

1. Condition of shipping container? O.K.
2. Custody Seals on cooler intact? Yes [X] No [ ]
3. Custody Seals dated and signed? Yes [X] No [ ]
4. Chain of Custody record is taped on inside of cooler lid? Yes [ ] No [X]
5. Vermiculite/packing material is: Wet [X] Dry [ ] _____
6. Each sample is in a plastic bag? Yes [X] No [ ] _____
7. Number of sample containers in cooler: 28
8. Samples have:
   - X tape
   - X custody seals
   - ___ hazard labels
   - ___ appropriate sample labels
9. Samples are:
   - X in good condition
   - ___ broken
   - ___ other
   - ___ leaking
   - ___ have air bubbles
10. Coolant Present? Yes [X] No [ ] Sample Temperature 4°C
11. The following paperwork should be accounted for (N/A if not applicable):

    Chain of Custody #(s) n/a

    Request for Analysis #(s) ✓

    Airbill # ✓ Carrier n/a
12. Have any anomalies been identified above? Yes [ ] No [X]
13. Memos have been initiated for all anomalies identified above? Yes [ ]

Printed Name/Signature Karen Stittenberg Date/Time 2-22-96 1230

602284 Chem
602285 Rad

(R) 2/21/96

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
BHI B0H617		2/22/96 12:30:00 PM	QUAD22C	2/22/96 2:35:34 PM	B0H617	30	22	0.70083333	765	24.56
	LIQUID		Bkg:	2/22/96 3:21:17 AM	BKG	800	26	0.0325	752	0.94

Anl Date: 2/22/96	Tot Sa, Alq: 4.00E+00	, 1.00E+01	Alp;	(Dpm/ 1.23E+00	(uCi/ 2.21E-04	(pCi/ 5.53E+01	± 2.3E+01	CAT I	4.5E-01	Lab
Ppt mg: 1.1	Units: L	, ml	Bet;	Alq): 4.54E+01	Sa): 8.18E-03	L|g): 2.04E+03	± 7.7E+01		2.4E-02	Alq L|g

BHI B0H618		2/22/96 12:30:00 PM	QUAD22D	2/22/96 2:35:34 PM	B0H618	30	11	0.32166667	89	1.9766667
	LIQUID		Bkg:	2/22/96 3:21:17 AM	BKG	800	36	0.045	792	0.99

Anl Date: 2/22/96	Tot Sa, Alq: 4.00E+00	, 1.00E+01	Alp;	(Dpm/ 9.06E-01	(uCi/ 1.63E-04	(pCi/ 4.08E+01	± 2.3E+01	CAT I	6.1E-01	Lab
Ppt mg: 1.2	Units: L	, ml	Bet;	Alq): 3.52E+00	Sa): 6.35E-04	L|g): 1.59E+02	± 2.6E+01		3.2E-01	Alq L|g

BHI B0H695		2/22/96 12:30:00 PM	QUAD23A	2/22/96 2:35:23 PM	B0H695	30	578	19.2291667	12052	400.80083
01	SOLID		Bkg:	2/22/96 3:21:26 AM	BKG	800	30	0.0375	746	0.9325

Anl Date: 2/22/96	Tot Sa, Alq: 9.08E+02	, 2.76E+01	Alp;	(Dpm/ 6.54E+01	(uCi/ 9.69E-01	(pCi/ 1.07E+03	± 4.4E+01	CAT III	4.7E-02	Lab
Ppt mg: 27.6	Units: g	, mg	Bet;	Alq): 7.92E+02	Sa): 1.17E+01	L|g): 1.29E+04	± 1.2E+02		7.7E-03	Alq L|g

BHI B0H696		2/22/96 12:30:00 PM	QUAD23B	2/22/96 2:35:23 PM	B0H696	30	199	6.58208333	9472	314.75583
02	SOLID		Bkg:	2/22/96 3:21:26 AM	BKG	800	41	0.05125	782	0.9775

Anl Date: 2/22/96	Tot Sa, Alq: 8.70E+02	, 2.89E+01	Alp;	(Dpm/ 1.68E+01	(uCi/ 2.28E-01	(pCi/ 2.63E+02	± 2.3E+01	CAT III	1.9E-01	Lab
Ppt mg: 28.9	Units: g	, mg	Bet;	Alq): 6.34E+02	Sa): 8.59E+00	L|g): 9.88E+03	± 1.0E+02		1.0E-02	Alq L|g

BHI B0H6W2		2/22/96 12:30:00 PM	QUAD24C	2/22/96 2:10:01 PM	B0H6W2	30	16	0.48083333	107	2.6016667
	SOLID		Bkg:	2/22/96 3:21:13 AM	BKG	800	42	0.0525	772	0.965

Anl Date: 2/22/96	Tot Sa, Alq: 3.48E+02	, 9.68E+01	Alp;	(Dpm/ 3.09E+00	(uCi/ 5.00E-03	(pCi/ 1.44E+01	± 5.7E+00	CAT I	3.5E+00	Lab
Ppt mg: 96.8	Units: g	, mg	Bet;	Alq): 5.42E+00	Sa): 8.78E-03	L|g): 2.52E+01	± 3.5E+00		4.0E+00	Alq L|g

BHI B0H6W3		2/22/96 12:30:00 PM	QUAD24D	2/22/96 2:10:01 PM	B0H6W3	30	11	0.32541667	97	2.1820833
	SOLID		Bkg:	2/22/96 3:21:13 AM	BKG	800	33	0.04125	841	1.05125

Anl Date: 2/22/96	Tot Sa, Alq: 3.60E+02	, 8.43E+01	Alp;	(Dpm/ 1.90E+00	(uCi/ 3.65E-03	(pCi/ 1.01E+01	± 6.0E+00	CAT I	4.9E+00	Lab
Ppt mg: 84.3	Units: g	, mg	Bet;	Alq): 4.61E+00	Sa): 8.86E-03	L|g): 2.46E+01	± 3.8E+00		4.1E+00	Alq L|g

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9613453.1363

9613453.1369 *** GAMMA ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

23-Feb-1996
Page 1

CUSTOMER: BHI SAF

SAMPLE DELIVERY GROUP W0909

MATRIX : OTHER B96-030

BATCH NUMBER 02-285

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	P0228517B P0228515				
1)	60228501 ~~C0228501~~		BHI	BOH695	CAT ~~III~~ SAMPLES, CHECK ON THEM DURING COUNTING
2)	60228502 C0228502		BHI	BOH696	COUNT TIMES VARY

ACTIONS (Initial & Date)

1) INITIATED RD2800 JH 2/23/96

2) PREP LAB RECEIVED gw 3-7-96 RICHRC5013 RD3222

3) SAMPLE REMAINDER STORED gw 3-15-96

4) SEPARATION LAB RECEIVED NA RICHRC5017

5) COUNTING/MEASUREMENT LAB RICHRS0007_0 JH 3-15-96

6) DATA REVIEWED AND ANALYTICAL PREP STORED JR 4-2-96 RICHRC0002

000042

4-6-96

*** ALPHA ***

9613453.1365

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

23-Feb-1996
Page 1

CUSTOMER: BHI SAF

SAMPLE DELIVERY GROUP W0909

MATRIX : OTHER B96-030

BATCH NUMBER 02-285

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	P0228518				CAT III
	P0228515	EQEG 1091		10.095 ± 0.0868530PM	
1)	60228501		BHI	BOH695	COUNTING TIMES VARY
	C0228501	DUP			
2)	60228502		BHI	BOH696	

ACTIONS (Initial & Date)

RICHRD0003-8

1) INITIATED RD2800 JH 2/23/96

2) PREP LAB RECEIVED JH 3-7-96 RICHRC5013

3) SAMPLE REMAINDER STORED JH 3-18-96

4) SEPARATION LAB RECEIVED NA

RD3222

5) COUNTING/MEASUREMENT LAB JH 3-18-96

6) DATA REVIEWED AND ANALYTICAL PREP STORED MR 4-2-96 RICHRC002 Rev 0

9613453.1366 *** BETA ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

23-Feb-1996
Page 1

CUSTOMER: BHI SAF

SAMPLE DELIVERY GROUP W0909

MATRIX : OTHER B96-030

BATCH NUMBER 02-285

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	P0228518 P0228515	EQAU 477			CAT III
1)	60228501 C0228501	DUP	BHI	BOH695	COUNT TIMES VARY
2)	60228502		BHI	BOH696	

ACTIONS (Initial & Date)

RD4607 1

1) INITIATED RD2800 JH 2/23/96

2) PREP LAB RECEIVED JN 3-7-96 RICHRS013

3) SAMPLE REMAINDER STORED JN 3-18-96 RD 3202

4) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB 3-18-96

6) DATA REVIEWED AND ANALYTICAL PREP STORED TRK 4-2-96 TRK 4-2-96 RICHRC0002 Rev.

Jul 4-6-96

9613453.1367 *** TC-99 ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

23-Feb-1996
Page 1

CUSTOMER: BHI SAF

SAMPLE DELIVERY GROUP W0909

MATRIX : OTHER B96-030

BATCH NUMBER 02-285

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	P022851N	P022851B		A0228501	
	P022852N	P022851S		C0228502	
1)	60228501		BHI	B0H695	
2)	60228502		BHI	B0H696	

ACTIONS (Initial & Date)

1) INITIATED RD2800 JH 2/23/96

2) PREP LAB RECEIVED 3/15/96 mm

3) SAMPLE REMAINDER STORED 3/20/96 mm

4) SEPARATION LAB RECEIVED 3/15/96 mm
ITAS-IT-RS-0001

5) COUNTING/MEASUREMENT LAB 3/29/96
RD4600 Rev 1

6) DATA REVIEWED AND ANALYTICAL PREP STORED

9613453.1368 *** URANIUM ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

23-Feb-1996
Page 1

CUSTOMER: BHI SAF SAMPLE DELIVERY GROUP W0909

MATRIX : OTHER B96-030 BATCH NUMBER 02-285

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	P0228501B P0228515 EQIK175				
1)	60228501 C0228501 DUP		BHI	BOH695	SAMPLES WERE DILUTED TO 100ml AFTER BOMBING
2)	60228502 A0228502 EQIK176		BHI	BOH696	

ACTIONS (Initial & Date)

1) INITIATED RD2800 JH 2/23/96

2) PREP LAB RECEIVED JN 3-15-96 RICH RC5019

3) SAMPLE REMAINDER STORED JN 3-21-96

4) SEPARATION LAB RECEIVED N/A

5) COUNTING/MEASUREMENT LAB RICH RC 5058 JH 4/2/96 JH 4/2/96

6) DATA REVIEWED AND ANALYTICAL PREP STORED JC 4-5-96