W01938

Quanterra
Environmental Services

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

314 298-8566 Telephone
314 298-8757 Fax

CASE NARRATIVE

0049081

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, Washington 99352

October 30, 1997

Attention: Joan Kessner

NOV 1997 RECEIVED Data Log In

APR 1998 RECEIVED EDMC

Project number	:	550.230
Date Received by Lab	:	September 22, 1997
Number of Samples	:	One (1)
Sample Type	:	Water
SDG Number	:	W01938
Data Deliverable	:	Summary

I. Introduction

On September 22, 1997, one (1) water sample was received by Quanterra, Richland and was transferred to Quanterra, St. Louis for chemical analysis. Upon receipt, the sample was given the following laboratory ID number to correspond with the specific client ID:

St. Louis ID	BHI ID	Richland ID	Matrix	Date of Receipt
15936-001	B0L3Y6	70936801	Water	09/22/97

II. Analytical Results/ Methodology

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

Analyses requested: Volatiles by EPA 8260. Appendix IX Volatiles by EPA 8240. Total Residual Chlorine by EPA Method 330.1. Sulfate by EPA Method 375.4. pH by EPA Method 150.1. ICAP Metals by EPA Method 6010. Arsenic by EPA Method 7060. Acrylamide by EPA Method 8316. Total Suspended Solids by EPA Method 160.1. Total Dissolved Solids by EPA Method 160.2.

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 were performed per the protocol for each analyte in this SDG. Total Residual Chlorine, Total Dissolved Solids, Total Suspended Solids, and pH require only a Sample Duplicate for matrix QC.

IV. Definitions

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

QCBLK- Quality Control Blank, Method Blank
QCLCS- Quality Control Laboratory Control Sample, Blank Spike

V. Comments

Shipping and Receiving
There were no variances associated with sample receipt.

Volatiles-8260
VBLK01 has Methylene Chloride at 26ppb, which is greater than the limit of % times the reporting limit for common lab contaminates (5ppb). Methylene Chloride was found in the sample at 25 ppb. See NCM 3717.

Appendix IX Volatiles-8240
There are no comments or nonconformances associated with this analysis.

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

Metals
The recoveries of the Cadmium matrix spike (79.6%) and the matrix spike duplicate (78.3%) were less than 80%, therefore all associated data was flagged with a "N".

Wet Chemistry
Due to a log in error, the residual chloride, pH, TSS and TDS were analyzed after holding time had expired. See NCM 3705.

Quanterra
Environmental Services

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

Reviewed and approved:

Wade H. Price
Project Manager
e:\\price$\hanford\hanw1938.nar

LOG #: _____

LABORATORY NONCONFORMANCE MEMO (NCM)

Quanterra Incorporated

Project ID/Client: [illegible]

NCM Initiated by/Date: [illegible] Project Manager: [illegible]

Sample Numbers/QC batch or lot numbers: [illegible]

Tests: VOA/32[illegible]

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) Blank contamination

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

Client notified by (name and date): [illegible]

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

Client's name and response: _____

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

Project manager (signature and date): [illegible] 10/30/97

000004A

QUANTERRA LABORATORY NONCONFORMANCE MEMO

LOG #: 3717

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

Problem Description/Root Cause Author's initials and date: MW 10-16-97

Blank VBLKC1 has methylene chloride @ 26 ppb (25.65) (over the 5x limit for lab contaminants)

Sample 159316 has a "hit" for methylene chloride @ 25 ppb

LCS has methylene chloride at 23.99 ppb.

Corrective Actions (Short Term) Author's initials and date: 10-16-97

Report as is.

Corrective Actions to Prevent Reoccurrence (Long Term)

~~None.~~ (1) Real time review to allow reanalysis of method blank or samples run with non-compliant method blank (2) Sample load to allow reanalyses w/ holding time when required

Corrective Action approved by (Supervisor/Group Leader) and date:

Additional Comments:

(3) Continued efforts to reduce lab contamination

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

Date Corrective Action is to be completed:

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

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

☐ Further action required:

Further action assigned to:

QA signature: M Wunder Date: 10/16/97

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.

000004B

LOG #: 3705

LABORATORY NONCONFORMANCE MEMO (NCM)

Quanterra Incorporated

Project ID/Client: 550.230

NCM Initiated by/Date: K Blaw 10-13 Project Manager: W Pace

Sample Numbers/QC batch or lot numbers: 15936-001, 154804, 154805

Tests: TSS, TDS

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 2 days)

Category I. Laboratory Independent

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

Category II. Laboratory Dependent

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

Category III: Analysis Reruns (QA/QC)

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

Category IV: Analysis Reruns (Confirmation)

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

Category V: Analysis Reruns (Dilution)

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

Quality Assurance/Quality Control

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

Incorrect or Incomplete Client Deliverable

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

Reported Detection Limits Elevated Due to:

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

Miscellaneous

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

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

Client notified by (name and date): _____

- ☐ 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): W Pace 10/30/97

000004C

QUANTERRA LABORATORY NONCONFORMANCE MEMO

LOG #: 3705

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

Problem Description/Root Cause Author's initials and date: KB 10-13

Sample 15936 was logged in for TSS TDS on 9-30. It had a hold date of 9-29.

Corrective Actions (Short Term) Author's initials and date: KB 10-13

As soon as the log-in error was discovered the analysis was run.

Corrective Actions to Prevent Reoccurrence (Long Term) Log-in samples as soon as they arrive.

Need mechanism to notify lab if samples received and login is not timely.

Corrective Action approved by (Supervisor/Group Leader) and date: [illegible] 10-14-97

Additional Comments:

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

Date Corrective Action is to be completed: _____

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

❑ Anomaly ❑ Deficiency ❑ Notified Ops/Sys Manager (Initials) _____

❑ Further action required: _____

Further action assigned to: _____

QA signature: _____ Date: _____

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

❑ Verification not required or requested

❑ Verified / CA completed on: _____ by _____

❑ Cannot verify (specify reason) _____

Verified by: _____ Date: _____

Nonconformance Memo Closure:

QA signature: _____ Date: _____

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

000004D

Quanterra September 30, 1997 02:39 pm
Account: 10722 Project: 550.230 Quanterra-Richland QAS No. 550.23 Rev. 0
Master Sample Login: 15936

Project Manager: W. Price

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

Sample Header Template:

Sample No. / # / Data:	Client ID / Container Type	C-Matrix / Analysis	Date: Collected	Received	Due	Shipper	Rad Category / Class	Rad Sample No. / Preservative	Comments / Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
15936-001	B0L3Y6	Water	22-SEP-97 09:00	22-SEP-97 13:48	22-OCT-97	AIRBORNE	1	Screening not Required				
RICHLAND ID 70936801												
3	VI - Vial-40ml	VOA/8260/Q4					S	HCL	20-OCT-97	06-OCT-97	109Q	(334201:89 334202:88 334203:87)
3		VOA/APPIX/Q4					S	HCL	20-OCT-97	06-OCT-97	109Q	(334198:92 334199:91 334200:90)
3	AN - Amber Glass-1L	HPLC/8316/Q4					S	COLD	20-OCT-97	29-SEP-97	S13D	(334204:86 334205:85 334206:84)
1	AN - Amber Glass-500ml	AS/7060/Q4					S	HNO3	20-OCT-97	21-MAR-98	S13D	(334193:97)
1		ICAP/6010/Q4					S	HNO3	20-OCT-97	21-MAR-98	S13D	(334194:96)
1	PN - Plastic-1L	CL/330.3/Q4					S	COLD	20-OCT-97	24-SEP-97	S13D	(334197:93)
1	PN - Plastic-500ml	TDS/160.1/Q4					S	COLD	20-OCT-97	29-SEP-97	S13D	(334195:95)
1		TSS/160.2/Q4					S	COLD	20-OCT-97	29-SEP-97	S13D	(334196:94)
1	PN - Plastic-250ml	SO4/375.4/Q4					S	COLD	20-OCT-97	20-OCT-97	S13D	(334192:98)
1	PW - Plastic-128oz	PH/150.1/Q4					S	COLD	20-OCT-97	23-SEP-97	S13D	(334191:99)
15936-001DUP	B0L3Y6	Water	22-SEP-97 09:00	22-SEP-97 13:48	22-OCT-97	AIRBORNE	1	Screening not Required				
RICHLAND ID 70936801												
1	PN - Plastic-1L	CL/330.3/Q4					S	COLD	20-OCT-97	24-SEP-97	S13D	(334197:93)
1	PN - Plastic-500ml	TDS/160.1/Q4					S	COLD	20-OCT-97	29-SEP-97	S13D	(334195:95)
1		TSS/160.2/Q4					S	COLD	20-OCT-97	29-SEP-97	S13D	(334196:94)
1	PN - Plastic-250ml	SO4/375.4/Q4					S	COLD	20-OCT-97	20-OCT-97	S13D	(334192:98)
1	PW - Plastic-128oz	PH/150.1/Q4					S	COLD	20-OCT-97	23-SEP-97	S13D	(334191:99)
15936-001MS	B0L3Y6	Water	22-SEP-97 09:00	22-SEP-97 13:48	22-OCT-97	AIRBORNE	1	Screening not Required				
RICHLAND ID 70936801												
3	VI - Vial-40ml	VOA/8260/Q4					S	HCL	20-OCT-97	06-OCT-97	109Q	(334201:89 334202:88 334203:87)
3		VOA/APPIX/Q4					S	HCL	20-OCT-97	06-OCT-97	109Q	(334198:92 334199:91 334200:90)
3	AN - Amber Glass-1L	HPLC/8316/Q4					S	COLD	20-OCT-97	29-SEP-97	S13D	(334204:86 334205:85 334206:84)
1	AN - Amber Glass-500ml	AS/7060/Q4					S	HNO3	20-OCT-97	21-MAR-98	S13D	(334193:97)
1		ICAP/6010/Q4					S	HNO3	20-OCT-97	21-MAR-98	S13D	(334194:96)
1	PN - Plastic-1L	CL/330.3/Q4					S	COLD	20-OCT-97	24-SEP-97	S13D	(334197:93)
1	PN - Plastic-250ml	SO4/375.4/Q4					S	COLD	20-OCT-97	20-OCT-97	S13D	(334192:98)
15936-001MSD	B0L3Y6	Water	22-SEP-97 09:00	22-SEP-97 13:48	22-OCT-97	AIRBORNE	1	Screening not Required				
RICHLAND ID 70936801												
3	VI - Vial-40ml	VOA/8260/Q4					S	HCL	20-OCT-97	06-OCT-97	109Q	(334201:89 334202:88 334203:87)
3		VOA/APPIX/Q4					S	HCL	20-OCT-97	06-OCT-97	109Q	(334198:92 334199:91 334200:90)
3	AN - Amber Glass-1L	HPLC/8316/Q4					S	COLD	20-OCT-97	29-SEP-97	S13D	(334204:86 334205:85 334206:84)
1	AN - Amber Glass-500ml	AS/7060/Q4					S	HNO3	20-OCT-97	21-MAR-98	S13D	(334193:97)
1		ICAP/6010/Q4					S	HNO3	20-OCT-97	21-MAR-98	S13D	(334194:96)

*=Sample has not been rad screened.

000005

[redacted] SISD Temp 4°C. Curr # 12905
ST 1 OILD

Chain of Custody Record

Quanterra

QUA 4124 0797

Client	Project Manager	Date	Chain of Custody Number
Bechtel		9-23-97	00003
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 1**

City	State	Zip Code	Site Contact	Lab Contact

Project Name: SAF BU17-108

Carrier/Waybill Number:

Contract/Purchase Order/Quote No:

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

Special Instructions/ Conditions of Receipt

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Aqueous	Sed	Soil		Containers & Preservatives: Unpres	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH
1043 6 SOIL BOF 3JG	ALL											

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 11-6-97

QC Requirements (Specify): SDG W01938

	Date	Time		Date	Time
1. Relinquished By: Fitzgerald (Quanterra)	9-23-97	15:00	1. Received By: Fred Mitchell	9-24-97	1130
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

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

000006

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B97-108-10	Page 1 of 2

Collector: Robert Fahlberg/R. Nielson	Company Contact: Joe Zoric	Telephone No.: 373-4315	Project Coordinator: Koerner, CC
Project Designation: 183N Backwash Discharge Pond -- Permit Monitoring	Sampling Location: 100N		SAF No.: B97-108
Ice Chest No.: Shipping Van 96-002	Field Logbook No.: EL-1309		Method of Shipment: Hand delivered
Shipped To: Quanterra Incorporated	Offsite Property No.: Pit 1		Bill of Lading/Air Bill No.: 1

Data Turnaround: **45 Days**

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage: Cool 4C

SAMPLE ANALYSIS: SDG 70936801 W01938

Sample No.	Matrix *	Sample Date	Sample Time	Activity Scan	pH - 150.1	Sulfate -- 375.4	Arsenic - 7060 - (GFAA)	ICP Metals - 6010A (TAL)	TDS - 160.1 (Total dissolved solids)	TSS - 160.2	Chlorine (Total residual) - 330.3 (Chlorine)	VOA - 8240A (Append IX)	VOA - 8260A (TCL)
Preservation				None	None	Cool 4C	HNO3 to pH <2	HNO3 to pH <2	Cool 4C	Cool 4C	None	HCl or H2SO4 to pH <2 Coo	HCl or H2SO4 to pH <2 Coo
Type of Container				P	P	P	G	G	P	P	G P	aGs*	aGs*
No. of Container(s)				1	1	1	1	1	1	1	1	3	3
Volume				20ml	125ml	250ml	500ml	500ml	500ml	500ml	1000ml	40ml	40ml
B0L3Y6	Water	9/22/97	0900	X	X	X	X	X	X	X	X	X	X
					1	1	1	1	1	1	1	1	1
					100	100	100	100	100	100	100	3X100	3X100
					9-25					9-25	9-25		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Renee Nelson	9/22/97 1348	[illegible]	9/22/97 1348
		2100 pm	

SPECIAL INSTRUCTIONS
**EPA330.3 - The ERC Contractor acknowledges the specified holding time is not likely achievable.

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

000001

Bechtel/Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B97-108-10	Page 2 of 2

Collector Robert Fahlberg/R. Nielson	Company Contact Joe Zoric	Telephone No. 373-4315	Project Coordinator Koerner, CC	Data Turnaround 45 Days
Project Designation 183N Backwash Discharge Pond -- Permit Monitoring	Sampling Location 100N		SAF No. B97-108	
Ice Chest No. Shipping Van 96-002	Field Logbook No. EL-1309		Method of Shipment Hand delivered	
Shipped To Quanterra Incorporated	Offsite Property No.		Bill of Lading/Air Bill No.	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage
Cool 4C

SAMPLE ANALYSIS
70936801

Preservation	Cool 4C												
Type of Container	aG												
No. of Container(s)	3												
Volume	1000ml												
	Acrylamide - 8316												
Sample No.	Matrix *	Sample Date	Sample Time										
B0L3Y6	Water	9/22/97	0900	X									
				X/100									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Renee Nelson 9/22/97 1348	Date/Time	Received By D. Wagan 9-22-97 1348 100GP	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
**EPA330.3 - The ERC Contractor acknowledges the specified holding time is not likely achievable

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

000008

FROM THE DESK OF: **ALLEN NELLESEN**
ERC TEAM RAD-CON SUPPORT
373-1925/X0-23

TO: R.T.Fahlberg N1-28 **DATE:** August 15, 1996

SUBJECT: **WATER SAMPLES FROM 183N POTABLE WATER PLANT**

Water samples are routinely collected and sent off-site for analysis to assure compliance with Washington State Department of Health drinking water requirements. The history of 183-N which provides treated water to support the operation of the N-Reactor shows that a radiological survey of the water samples is not warranted.

If you need further help or have any questions, please call me at the phone number displayed above.

cc: D. D. Blankenship X7-75
T. A. Edwards X0-23
J. E. Parsons X0-23
R. K. Stafford X1-86
J. P. Zoric X5-57

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received 9/22 PM BHI Client Name BHI

Project/Client # B97-108 Batch or Case # 96-002

Cooler ID (if noted on outside of cooler) B97-159

1. Condition of shipping container? OK
2. Custody Seals on cooler intact? Yes [✓] No [ ]
3. Custody Seals dated and signed? Yes [✓] No [ ]
4. Chain of Custody record is taped on inside of cooler lid? Yes [ ] No [✓]
5. Vermiculite/packing material is: Wet [ ] Dry [ ] NA
6. Each sample is in a plastic bag? Yes [✓] No [ ]
7. Number of sample containers in cooler: 32
8. Samples have: ✓ tape; ✓ custody seals; ___ hazard labels; ___ appropriate sample labels
9. Samples are: ✓ in good condition; ___ broken; ___ other; ___ leaking; ___ have air bubbles
10. Coolant Present? Yes [✓] No [ ] Sample Temperature 4°C
11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #(s) B97-108-10, B97-159-16, 17 & 18
    Request for Analysis #(s) N/A
    Airbill # N/A Carrier Courier
12. Have any anomalies been identified above? Yes [ ] No [✓]
13. Memos have been initiated for all anomalies identified above? Yes [ ]

Printed Name/Signature [signature] Date/Time 9-22-97 1348

Environmental Restoration Contractor **ERC Team**

Interoffice Memorandum

Job No. 22192

TO:	W. S. Thompson	N1-28	DATE:	February 29, 1996
	G. C. Henckel	H4-80		
COPIES:	K. A. Smith	X0-23	FROM:	S. K. De Mers
	T. L. Lafreniere	X0-23		Radiological Controls
	D. E. Gergely	X0-23		T7-05/373-1913

SUBJECT: **Total Activities for Off-Site Shipments of Groundwater Samples to NRC Licensed Laboratories**

There is no need to perform total activities prior to offsite shipment to NRC licensed labs of samples taken from ground water wells located on the Hanford Site.

All wells reviewed to date for radiological content have shown no well with a total activity in excess of 2,000,000 pCi/l (2,000 pCi/gm), the Department Of Transportation limit for radioactive material. The highest activity in any known well is 1.56×10^6 pCi/l H^3.

While this does not constitute any release from radiological controls for worker protection, it does allow samples to be shipped based on historical laboratory data and save the expense of doing radiochemical analysis.

A copy of the most recent analytical data should be provided to the NRC licensed laboratory with the samples being shipped or if no data is available for new wells, the most recent data from adjacent wells.

Client Sample Screening Results

22-Sep-97

9/22/97

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
PGW B0LWF4		9 22 1997	QUAD21A	9 22 1997 11:17:25 AM	B0LWF4	30	33	1.01333333	146	3.835
	LIQUID		Bkg:	9 20 1997 12:12:16 AM	BKG	600	52	0.08666667	619	1.0316667

Anl Date: 9/22/1997 Tot Sa, Alq: 1.10E+01 , 1.00E+01 Alp; (Dpm/ 2.94E+00 (uCi/ 1.46E-03 (pCi/ 1.33E+02 ± 3.1E+01 CAT I 1.9E-01 Lab Alq
Ppt mg: 2.3 Units: L , ml Bet; Alq): 7.16E+00 Sa): 3.55E-03 L|g): 3.22E+02 ± 3.6E+01 1.6E-01 L|g

PGW B0LWF6		9/22/1997	QUAD21B	9 22 1997 11:17:25 AM	B0LWF6	30	15	0.44666667	69	1.3983333
	LIQUID		Bkg:	9 20 1997 12:12:16 AM	BKG	600	32	0.05333333	541	0.9016667

Anl Date: 9/22/1997 Tot Sa, Alq: 1.10E+01 , 1.00E+01 Alp; (Dpm/ 1.35E+00 (uCi/ 6.71E-04 (pCi/ 6.10E+01 ± 2.4E+01 CAT I 4.1E-01 Lab Alq
Ppt mg: 0.3 Units: L , ml Bet; Alq): 2.43E+00 Sa): 1.20E-03 L|g): 1.09E+02 ± 2.4E+01 4.6E-01 L|g

PGW B0LYF3		9/22/1997	QUAD21C	9/22 1997 11:17:25 AM	B0LYF3	30	14	0.40333333	112	2.5683333
	LIQUID		Bkg:	9 20 1997 12:12:16 AM	BKG	600	38	0.06333333	699	1.165

Anl Date: 9/22/1997 Tot Sa, Alq: 1.00E+00 , 1.00E+01 Alp; (Dpm/ 1.14E+00 (uCi/ 5.15E-05 (pCi/ 5.15E+01 ± 2.6E+01 CAT I 4.9E-01 Lab Alq
Ppt mg: 2.8 Units: L , ml Bet; Alq): 4.83E+00 Sa): 2.18E-04 L|g): 2.18E+02 ± 3.1E+01 2.3E-01 L|g

PGW B0LYH5		9/22/1997	QUAD21D	9/22 1997 11:17:25 AM	B0LYH5	30	20	0.60833333	67	1.2283333
	LIQUID		Bkg:	9 20 1997 12:12:16 AM	BKG	600	35	0.05833333	603	1.005

Anl Date: 9/22/1997 Tot Sa, Alq: 1.00E+00 , 1.00E+01 Alp; (Dpm/ 2.08E+00 (uCi/ 9.36E-05 (pCi/ 9.36E+01 ± 3.1E+01 CAT I 2.7E-01 Lab Alq
Ppt mg: 10.4 Units: L , ml Bet; Alq): 2.13E+00 Sa): 9.61E-05 L|g): 9.61E+01 ± 2.4E+01 5.2E-01 L|g

PGW B0LYH9		9/22/1997	QUAD22A	9/22/1997 11:17:30 AM	B0LYH9	30	15	0.435	67	1.2483333
	LIQUID		Bkg:	9 20 1997 12:12:25 AM	BKG	600	39	0.065	591	0.985

Anl Date: 9/22/1997 Tot Sa, Alq: 1.00E+00 , 1.00E+01 Alp; (Dpm/ 1.21E+00 (uCi/ 5.44E-05 (pCi/ 5.44E+01 ± 2.3E+01 CAT I 4.6E-01 Lab Alq
Ppt mg: 0.4 Units: L , ml Bet; Alq): 2.06E+00 Sa): 9.27E-05 L|g): 9.27E+01 ± 2.3E+01 5.4E-01 L|g

PGW B0LYJ3		9 22 1997	QUAD22B	9 22 1997 11:17:30 AM	B0LYJ3	30	31	1	71	1.4016667
	LIQUID		Bkg:	9 20 1997 12:12:25 AM	BKG	600	20	0.03333333	579	0.965

Anl Date: 9/22/1997 Tot Sa, Alq: 1.00E+00 , 1.00E+01 Alp; (Dpm/ 3.06E+00 (uCi/ 1.38E-04 (pCi/ 1.38E+02 ± 3.0E+01 CAT I 1.8E-01 Lab Alq
Ppt mg: 2.2 Units: L , ml Bet; Alq): 2.06E+00 Sa): 9.28E-05 L|g): 9.28E+01 ± 2.3E+01 5.4E-01 L|g

000012

(B) 9/22/97

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
PGW B0LYK9		9 22 1997	QUAD22C	9 22 1997 11:17:30 AM	B0LYK9	30	16	0.47833333	167	4.635
	LIQUID		Bkg:	9 20 1997 12:12:25 AM	BKG	600	33	0.055	559	0 9316667

Anl Date: 9/22/1997	Tot Sa, Alq: 1.00E+00	, 1 00E+01	Alp;	(Dpm/ 1.29E+00	(uCi/ 5.79E-05	(pCi/ 5.79E+01	± 2.4E+01	CAT	4 3E-01	Lab
Ppt mg: 2.3	Units: L	, ml	Bet;	Alq): 8.38E+00	Sa): 3.77E-04	Lig): 3.77E+02	± 3.6E+01	I	1.3E-01	Alq Lig

PGW B0LYL0		9/22/1997	QUAD22D	9 22 1997 11:17:30 AM	B0LYL0	30	28	0.885	102	2.48			
	LIQUID		Bkg:	9/20 1997 12:12:25 AM	BKG	600	29	0.04833333	552	0 92			
Anl Date: 9/22/1997	Tot Sa, Alq: 1.00E+00	, 1 00E+01	Alp;	(Dpm/ 2 65E+00	(uCi/ 1.19E-04	(pCi/ 1 19E+02	± 2.8E+01	CAT	2 1E-01	Lab			
Ppt mg: 2.6	Units: L	, ml	Bet;	Alq): 4.16E+00	Sa): 1 87E-04	Lig): 1 87E+02	± 2.8E+01	I	2.7E-01	Alq Lig			

PGW B0M115		9/22/1997	QUAD23A	9/22 1997 11:17:34 AM	B0M115	30	22	0.68333333	76	1.7183333			
	LIQUID		Bkg:	9 20 1997 12:12:30 AM	BKG	600	30	0 05	489	0 815			
Anl Date: 9/22/1997	Tot Sa, Alq: 3.00E+00	, 1.00E+01	Alp;	(Dpm/ 2 00E+00	(uCi/ 2.71E-04	(pCi/ 9 02E+01	± 2 5E+01	CAT	2 8E-01	Lab			
Ppt mg: 3	Units: L	, ml	Bet;	Alq): 2 86E+00	Sa): 3 86E-04	Lig): 1 29E+02	± 2 4E+01	I	3 9E-01	Alq Lig			

PGW B0M117		9 22 1997	QUAD23B	9 22 1997 11 17 34 AM	B0M117	30	13	0.38833333	64	1.2116667			
	LIQUID		Bkg:	9 20 1997 12:12:30 AM	BKG	600	27	0.045	553	0 9216667			
Anl Date: 9/22/1997	Tot Sa, Alq: 3 00E+00	, 1.00E+01	Alp;	(Dpm/ 1 21E+00	(uCi/ 1 63E-04	(pCi/ 5 44E+01	± 2.4E+01	CAT	4 6E-01	Lab			
Ppt mg: 4.5	Units: L	, ml	Bet;	Alq): 2 09E+00	Sa): 2 82E-04	Lig): 9.39E+01	± 2.3E+01	I	5 3E-01	Alq Lig			

PGW B0M163		9/22/1997	QUAD23C	9 22 1997 11:17:34 AM	B0M163	30	11	0.32833333	70	1.3666667			
	LIQUID		Bkg:	9 20 1997 12:12 30 AM	BKG	600	23	0 03833333	580	0 9666667			
Anl Date: 9/22/1997	Tot Sa, Alq: 3.00E+00	, 1.00E+01	Alp;	(Dpm/ 9.50E-01	(uCi/ 1.28E-04	(pCi/ 4 28E+01	± 2.3E+01	CAT	5.8E-01	Lab			
Ppt mg: 3.2	Units: L	, ml	Bet;	Alq): 2 46E+00	Sa): 3 33E-04	Lig): 1 11E+02	± 2 4E+01	I	4 5E-01	Alq Lig			

PGW B0M165		9.22 1997	QUAD23D	9 22 1997 11:17:34 AM	B0M165	30	28	0.89333333	110	2 695			
	LIQUID		Bkg:	9 20 1997 12:12:30 AM	BKG	600	24	0 04	583	0 9716667			
Anl Date: 9/22/1997	Tot Sa, Alq: 3.00E+00	, 1 00E+01	Alp;	(Dpm/ 2 79E+00	(uCi/ 3 76E-04	(pCi/ 1 25E+02	± 3 0E+01	CAT	2 0E-01	Lab			
Ppt mg: 5.6	Units: L	, ml	Bet;	Alq): 4 64E+00	Sa): 6 27E-04	Lig): 2 09E+02	± 2 9E+01	I	2 4E-01	Alq Lig			

000013

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

B0LYW4

Project 105N/109N Zone 1 Materials Drum Sampling - Other Liquid
Customer ID B0LYV6 Liquid
RCF ID RCF1753
Sample time, date 1410 9/12/97
Analysis date 9/17/97

4 Liter

Isotope		Activity pCi/gm		2 s err	Ci/gm
K40	<	1.4e+02			1.4e-10
Co60		2.2e+02	+/-	2.9e+01	2.2e-10
I129	<	6.4e+01			6.4e-11
Cs137	<	1.0e+01			1.0e-11
Eu152	<	3.3e+01			3.3e-11
Eu154	<	1.6e+01			1.6e-11
Eu155	<	4.6e+01			4.6e-11
Th32dau	<	8.4e+01			8.4e-11
U235	<	6.0e+01			6.0e-11
U238	<	9.4e+02			9.4e-10
U238dau		1.4e+02	+/-	4.2e+01	1.4e-10
Np237	<	1.5e+01			1.5e-11
Am241	<	2.3e+01			2.3e-11
Tot Act Gam (pCi/gm)		3.5e+02		Ci/gm	3.5e-10
Y/Sr-90	<	N/R			
Gross Alpha	<	4.0e-01			4.0e-13
Gross Beta		4.5e+01	+/-	4.7e+00	4.5e-11
AEA total	<	N/R			

Cat I

< 10K pCi

Reported as 137-Cs Betas. < 100K pCi

Total Activity (pCi/gm) 6.2e+00 < 2K pCi/g
(Ci/gm) 6.2e-12

B 9/22/97

Definitions

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

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

The analysis of Np237 is based on the activity of Pa233

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

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

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

N/R means no result or analysis not requested

S. G. Huff 9/17/97
Radiological analyst Date

Jerry R. Hensley 09-17-97
Date

Post-it® Fax Note 7671
To David St. John
Co./Dept.
Phone # 376-8540
Fax # 376-8651
Date 9/18/97
From J. R. Hensley
Co.
Phone #
Fax #

B0LY40

GAMMA-RAY ENERGY ANALYSIS REPORT

Thermo Hanford Inc.
Radiological Counting Facility THI - RCF

Project	105N/109N Zone 1 Materials Drum Sampling - other Liquid		
Customer ID	B0LYY1		
RCF ID	RCF1751		
	Sample time, date	1330	9/12/97
	Analysis date		9/17/97

Isotope		Activity pCi/gm	2 s err	Ci/gm
K40	<	4.4e+01		4.4e-11
Co60	<	5.0e+00		5.0e-12
I129	<	5.0e+02		5.0e-10
Cs137	<	4.0e+00		4.0e-12
Eu152	<	2.5e+01		2.5e-11
Eu154	<	1.2e+01		1.2e-11
Eu155	<	1.4e+01		1.4e-11
Th32dau	<	1.4e+01		1.4e-11
U235	<	2.1e+01		2.1e-11
U238	<	5.1e+02		5.1e-10
U238dau	<	8.0e+00		8.0e-12
Np237	<	9.0e+00		9.0e-12
Am241	<	1.9e+01		1.9e-11
Tot Act Gam (pCi/gm)		0.0e+00	Ci/gm	0.0e+00
Y/Sr-90	<	N/R		
Gross Alpha	<	N/R		
Gross Beta	<	N/R		
AEA total	<	N/R		

CAT I

Total Activity (pCi/gm) 0.0e+00
(Ci/gm) 0.0e+00

9/22/97

Definitions

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

The analysis of Np237 is based on the activity of Pa233

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

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

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

N/R means no result or analysis not requested

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

No gross alpha or beta due to unknown chemical symbol on container.

S. G. Nyce for 9/18/97
Radiological analyst Date

Jerry R. Hensley 09-18-97
Date

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

BOLYX9

Project	105N/109N Zone 1 Materials Drum Sampling - Other Solid		
Customer ID	B0LYY3 Liquid		
RCF ID	RCF1750		
	Sample time, date	1400	9/12/97
	Analysis date		9/16/97

Isotope		Activity pCi/gm		2 s err	Ci/gm
K40	<	8.2e+01			8.2e-11
Co60		2.4e+01	+/-	8.7e+00	2.4e-11
I129	<	1.0e+03			1.0e-09
Cs137	<	7.0e+00			7.0e-12
Eu152	<	5.3e+01			5.3e-11
Eu154	<	2.6e+01			2.6e-11
Eu155	<	2.2e+01			2.2e-11
Th32dau	<	2.1e+01			2.1e-11
U235	<	4.4e+01			4.4e-11
U238	<	1.1e+03			1.1e-09
U238dau	<	1.6e+01			1.6e-11
Np237	<	1.6e+01			1.6e-11
Am241	<	2.9e+01			2.9e-11
Tot Act Gam (pCi/gm)		2.4e+01		Ci/gm	2.4e-11
Y/Sr-90	<	N/R			
Gross Alpha	<	1.3e+00			1.3e-12
Gross Beta		1.1e+01	+/-	4.6e+00	1.1e-11 Reported as 137-Cs Betas.
AEA total	<	N/R			

Total Activity (pCi/gm) 6.2e+00
(Ci/gm) 6.2e-12

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

Definitions

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

The analysis of Np237 is based on the activity of Pa233

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

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

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

N/R means no result or analysis not requested

S. S. Hauer for 9/17/97
Radiological analyst Date

Jerry R. Hansley 09-17-97
Date

Post-it® Fax Note 7671	Date 9/17/97	# of pages ▶ 6
To Dave St. John	From J.R. Hensley	
Co./Dept.	Co.	
Phone # 376-8540	Phone #	
Fax # 376-8651	Fax #	

BULYX7

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

Project	105N/109N Zone 1 Materials drum Shipping - Other Solid
Customer ID	BOLYW0 Solid
RCF ID	RCF1749
Sample time, date	1325 9/12/97
Analysis date	9/17/97

4 liter

Isotope		Activity pCi/gm		2 s err	Ci/gm
K40		2.5e+01	+/-	3.5e+00	2.5e-11
Co60		3.6e+01	+/-	2.0e+00	3.6e-11
I129	<	1.8e+01			1.8e-11
Cs137		4.0e-01	+/-	2.0e-01	4.0e-13
Eu152	<	1.3e+00			1.3e-12
Eu154	<	1.0e+00			1.0e-12
Eu155	<	1.0e+00			1.0e-12
Th32dau	<	2.0e+00			2.0e-12
U235	<	1.7e+00			1.7e-12
U238	<	6.5e+01			6.5e-11
U238dau	<	6.0e-01			6.0e-13
Np237	<	6.0e-01			6.0e-13
Am241	<	1.7e+00			1.7e-12
Tot Act Gam (pCi/gm)		6.1e+01		Ci/gm	6.1e-11

CAT I

Y/Sr-90	<	N/R
Gross Alpha	<	N/R
Gross Beta	<	N/R
AEA total	<	N/R

Reported as 137-Cs Betas.

Total Activity (pCi/gm) 6.1e+01 < 2k pCi/g
(Ci/gm) 6.1e-11

9/22/97

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

Definitions

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

The analysis of Np237 is based on the activity of Pa233

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

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

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

N/R means no result or analysis not requested.

GEA results are indication only - no calibration geometry on file for sample

S.R. Huff for 9/17/97 — 09-17-97
Radiological analyst Date Jerry R. Hensley Date

000017

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

BOLYX8

Project	105N/109N Zone 1 Materials Drum Sampling - Other Solid	
Customer ID	B0LYY2 Solid	
RCF ID	RCF1752	
	Sample time, date	1345 9/12/97
	Analysis date	9/17/97

Isotope		Activity pCi/gm	2 s err	Ci/gm	
K40	<	8.6e+01		9.6e-11	
Co60	<	1.1e+01		1.1e-11	
I129	<	4.4e+01		4.4e-11	
Cs137	<	9.0e+00		9.0e-12	
Eu152	<	1.5e+01		1.5e-11	
Eu154	<	1.1e+01		1.1e-11	
Eu155	<	2.8e+01		2.8e-11	
Th32dau	<	4.0e+01		4.0e-11	
U235	<	4.8e+01		4.8e-11	
U238	<	9.8e+02		9.8e-10	
U238dau	<	1.3e+01		1.3e-11	
Np237	<	7.0e+00		7.0e-12	
Am241	<	1.6e+01		1.6e-11	
Tot Act Gam (pCi/gm)		0.0e+00	Ci/gm	0.0e+00	
Y/Sr-90	<	N/R			
Gross Alpha	<	1.7e+00		1.7e-12	< 10K pCi
Gross Beta		1.1e+01	+/- 5.5e+00	1.1e-11	Reported as 137-Cs Betas. < 100K pCi
AEA total	<	N/R			
			Total Activity (pCi/gm)	6.2e+00	< 2K pCi/g
			(Ci/gm)	6.2e-12	

Liter

CAT I

9/22/97

Definitions

All errors reported at 2 standard deviations

A Assigned as residual beta from Gamma/Beta balance

For soils and natural samples, the following applies

The analysis of U238 is based on the activity of Pa234m

The analysis of Np237 is based on the activity of Pa233

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

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

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

N/R means no result or analysis not requested

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

S. D. Huff for 9/22/97
Radiological analyst Date

Jerry R. Hensley 09-17-97
Date

Quanterra
Environmental Services

BW&WP
012905

Login No.: 15936

Condition Upon Receipt Variance Report
St. Louis Laboratory

Client: _____

Date: 9-24-97 Time: 11:30

Project No: 550230

Initiated by: 2nd Mitchell

Shipper/No: AB 599 9636 414

RFA/COC Numbers: 3

Condition/Variance (Check all that apply):

1. ☐ Sample received broken/leaking.
2. ☐ Sample received without proper preservative.
   - ☐ Cooler temperature not within 4°C ± 2°C
     Record temperature: _____
   - ☐ pH _____
   - ☐ other: _____
3. ☐ Sample received in improper container.
4. ☐ Sample received without proper paperwork. Explain: _____
5. ☑ Paperwork received without sample.
6. ☐ No sample ID on sample container.
7. ☐ Custody tape disturbed/broken/missing.
8. ☐ Sample ID on container does not match sample ID on paperwork. Explain: _____
9. ☐ All coolers on airbill not received with shipment.
10. ☐ Other (explain below): _____

☐ No variances were noted during sample receipt. Cooler Temperature Upon Receipt: 4°C

Notes: Missing pH & TSS Containers
Recv missing Samples 9-25-97

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) 2nd Mitchell Date: 9-24-97

Project Management Review: [illegible] Date: 10/17/97

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

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

Bechtel Hanford Incoporated
3350 George Washington Way
Richland, WA 99352

Project: 550.230

Category: Volatiles 8260 (TCL)
Method: EPA 8260
Matrix: LIQUID

Sample Date : 09/22/97
Receipt Date : 09/22/97
Report Date : 10/17/97

Client ID: B0L3Y6

Quanterra ID : 15936-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Dichlorodifluoromethane	75-71-8	QCBLK155496-1	10/06/97	10/06/97	10	UG/L	U	10	1
Chloromethane	74-87-3	QCBLK155496-1	10/06/97	10/06/97	10	UG/L	U	10	1
Bromomethane	74-83-9	QCBLK155496-1	10/06/97	10/06/97	10	UG/L	U	10	1
Vinyl Chloride	75-01-4	QCBLK155496-1	10/06/97	10/06/97	10	UG/L	U	10	1
Chloroethane	75-00-3	QCBLK155496-1	10/06/97	10/06/97	10	UG/L	U	10	1
Acrolein	107-02-8	QCBLK155496-1	10/06/97	10/06/97	100	UG/L	U	100	1
Methylene Chloride	75-09-2	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
Acetone	67-64-1	QCBLK155496-1	10/06/97	10/06/97	13	UG/L	J	20	1
Trichlorofluoromethane	75-69-4	QCBLK155496-1	10/06/97	10/06/97	10	UG/L	U	10	1
Allyl chloride	107-05-1	QCBLK155496-1	10/06/97	10/06/97	10	UG/L	U	10	1
Carbon Disulfide	75-15-0	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
1,1-Dichloroethene	75-35-4	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
Acetonitrile	75-05-8	QCBLK155496-1	10/06/97	10/06/97	100	UG/L	U	100	1
Acrylonitrile	107-13-1	QCBLK155496-1	10/06/97	10/06/97	100	UG/L	U	100	1
Propionitrile	107-12-0	QCBLK155496-1	10/06/97	10/06/97	20	UG/L	U	20	1
1,1-Dichloroethane	75-34-3	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
trans-1,2-Dichloroethene	156-60-5	QCBLK155496-1	10/06/97	10/06/97	2	UG/L	U	2	1
Iodomethane	74-88-4	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
Chloroform	67-66-3	QCBLK155496-1	10/06/97	10/06/97	83	UG/L		5	1
1,2-Dichloroethane	107-06-2	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
2-Chloro-1,3-butadiene	126-99-8	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
Methacrylonitrile	126-98-7	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
2-Butanone (MEK)	78-93-3	QCBLK155496-1	10/06/97	10/06/97	20	UG/L	U	20	1
Isobutyl alcohol	78-83-1	QCBLK155496-1	10/06/97	10/06/97	200	UG/L	U	200	1
1,1,1-Trichloroethane	71-55-6	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
Carbon Tetrachloride	56-23-5	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
Vinyl Acetate	108-05-4	QCBLK155496-1	10/06/97	10/06/97	10	UG/L	U	10	1
Bromodichloromethane	75-27-4	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
1,2-Dichloropropane	78-87-5	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
cis-1,3-Dichloropropene	10061-01-5	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
Methyl methacrylate	80-62-6	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
Trichloroethene	79-01-6	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
Ethyl methacrylate	97-63-2	QCBLK155496-1	10/06/97	10/06/97	10	UG/L	U	10	1
1,1,2-Trichloroethane	79-00-5	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
Benzene	71-43-2	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
Dibromomethane	74-95-3	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
trans-1,3-Dichloropropene	10061-02-6	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
Bromoform	75-25-2	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
1,2-Dibromoethane	106-93-4	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
1,4-Dioxane	123-91-1	QCBLK155496-1	10/06/97	10/06/97	500	UG/L	U	500	1
4-Methyl-2-Pentanone (MIBK)	108-10-1	QCBLK155496-1	10/06/97	10/06/97	20	UG/L	U	20	1
2-Hexanone	591-78-6	QCBLK155496-1	10/06/97	10/06/97	20	UG/L	U	20	1
Tetrachloroethene	127-18-4	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
1,1,2,2-Tetrachloroethane	79-34-5	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
Dibromochloromethane	124-48-1	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
Toluene	108-88-3	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
Chlorobenzene	108-90-7	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
1,1,1,2-Tetrachloroethane	630-20-6	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
EthylBenzene	100-41-4	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
Styrene	100-42-5	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
trans,1,4-Dichloro-2-butene	110-57-6	QCBLK155496-1	10/06/97	10/06/97	100	UG/L	U	100	1
Xylene (total)	1330-20-7	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
Pentachloroethane	76-01-7	QCBLK155496-1	10/06/97	10/06/97	10	UG/L	U	10	1
1,2,3-Trichloropropane	96-18-4	QCBLK155496-1	10/06/97	10/06/97	5	UG/L	U	5	1
1,2-Dibromo-3-chloropropane	96-12-8	QCBLK155496-1	10/06/97	10/06/97	10	UG/L	U	10	1
Toluene-d8	2037-26-5	QCBLK155496-1	10/06/97	10/06/97	99	%REC			1
Bromofluorobenzene	460-00-4	QCBLK155496-1	10/06/97	10/06/97	92	%REC			1
Dibromofluoromethane	1868-53-7	QCBLK155496-1	10/06/97	10/06/97	95	%REC			1

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Project: 550.230

Category: Volatiles 8260 (TCL)
Method: EPA 8260
Matrix: LIQUID

Sample Date : 09/22/97
Receipt Date : 09/22/97
Report Date : 10/17/97

Client ID: B0L3Y6

Quanterra ID : 15936-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
1,1-Dichloroethene	75-35-4	QCBLK155496-1	10/06/97	10/06/97	103	%REC			1
Trichloroethene	79-01-6	QCBLK155496-1	10/06/97	10/06/97	101	%REC			1
Benzene	71-43-2	QCBLK155496-1	10/06/97	10/06/97	100	%REC			1
Toluene	108-88-3	QCBLK155496-1	10/06/97	10/06/97	96	%REC			1
Chlorobenzene	108-90-7	QCBLK155496-1	10/06/97	10/06/97	102	%REC			1
Toluene-d8	2037-26-5	QCBLK155496-1	10/06/97	10/06/97	97	%REC			1
Bromofluorobenzene	460-00-4	QCBLK155496-1	10/06/97	10/06/97	89	%REC			1
Dibromofluoromethane	1868-53-7	QCBLK155496-1	10/06/97	10/06/97	97	%REC			1

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Project: 550.230

Category: Volatiles 8260 (TCL)
Method: EPA 8260
Matrix: LIQUID

Sample Date : 09/22/97
Receipt Date : 09/22/97
Report Date : 10/17/97

Client ID: 80L3Y6

Quanterra ID : 15936-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
1,1-Dichloroethene	75-35-4	QCBLK155496-1	10/06/97	10/06/97	109	%REC			1
Trichloroethene	79-01-6	QCBLK155496-1	10/06/97	10/06/97	103	%REC			1
Benzene	71-43-2	QCBLK155496-1	10/06/97	10/06/97	103	%REC			1
Toluene	108-88-3	QCBLK155496-1	10/06/97	10/06/97	98	%REC			1
Chlorobenzene	108-90-7	QCBLK155496-1	10/06/97	10/06/97	101	%REC			1
Toluene-d8	2037-26-5	QCBLK155496-1	10/06/97	10/06/97	95	%REC			1
Bromofluorobenzene	460-00-4	QCBLK155496-1	10/06/97	10/06/97	84	%REC			1
Dibromofluoromethane	1868-53-7	QCBLK155496-1	10/06/97	10/06/97	94	%REC			1

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0L3Y6

Lab Name: QUANTERRA MO Contract: 550-230

Lab Code: ITMO Case No.: V93613 SAS No.: SDG No.: W01938

Matrix: (soil/water) WATER Lab Sample ID: 15936-001

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: F2183

Level: (low/med) LOW Date Received: 09/22/97

% Moisture: not dec. Date Analyzed: 10/06/97

GC Column: RTX-502.2 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	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	25	B
67-64-1	Acetone	40	B
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	84	
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	7	J
71-55-6	1,1,1-Trichloroethane	7	
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	2	J
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

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0L3Y6

Lab Name: QUANTERRA MO Contract: 550-230

Lab Code: ITMO Case No.: V93613 SAS No.: SDG No.: W01938

Matrix: (soil/water) WATER Lab Sample ID: 15936-001

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: F2183

Level: (low/med) LOW Date Received: 09/22/97

% Moisture: not dec. Date Analyzed: 10/06/97

GC Column: RTX-502.2 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75058	Acetonitrile	3.98	98	J

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Project: 550.230

Category: VOA-8240A (Appendix IX)
Method: EPA 8240
Matrix: LIQUID

Sample Date : 09/22/97
Receipt Date : 09/22/97
Report Date : 10/17/97

Client ID: B0L3Y6

Quanterra ID : 15936-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Chloromethane	74-87-3	QCBLK155387-1	10/06/97	10/06/97	10	UG/L	U	10	1
Bromomethane	74-83-9	QCBLK155387-1	10/06/97	10/06/97	10	UG/L	U	10	1
Vinyl Chloride	75-01-4	QCBLK155387-1	10/06/97	10/06/97	10	UG/L	U	10	1
Chloroethane	75-00-3	QCBLK155387-1	10/06/97	10/06/97	10	UG/L	U	10	1
Methylene Chloride	75-09-2	QCBLK155387-1	10/06/97	10/06/97	25	UG/L	B	5	1
Acetone	67-64-1	QCBLK155387-1	10/06/97	10/06/97	40	UG/L	B	20	1
Carbon Disulfide	75-15-0	QCBLK155387-1	10/06/97	10/06/97	5	UG/L	U	5	1
1,1-Dichloroethene	75-35-4	QCBLK155387-1	10/06/97	10/06/97	5	UG/L	U	5	1
1,1-Dichloroethane	75-34-3	QCBLK155387-1	10/06/97	10/06/97	5	UG/L	U	5	1
1,2-Dichloroethene (total)	540-59-0	QCBLK155387-1	10/06/97	10/06/97	5	UG/L	U	5	1
Chloroform	67-66-3	QCBLK155387-1	10/06/97	10/06/97	84	UG/L		5	1
1,2-Dichloroethane	107-06-2	QCBLK155387-1	10/06/97	10/06/97	5	UG/L	U	5	1
2-Butanone (MEK)	78-93-3	QCBLK155387-1	10/06/97	10/06/97	7	UG/L	J	20	1
1,1,1-Trichloroethane	71-55-6	QCBLK155387-1	10/06/97	10/06/97	7	UG/L		5	1
Carbon Tetrachloride	56-23-5	QCBLK155387-1	10/06/97	10/06/97	5	UG/L	U	5	1
Bromodichloromethane	75-27-4	QCBLK155387-1	10/06/97	10/06/97	5	UG/L	U	5	1
1,2-Dichloropropane	78-87-5	QCBLK155387-1	10/06/97	10/06/97	5	UG/L	U	5	1
cis-1,3-Dichloropropene	10061-01-5	QCBLK155387-1	10/06/97	10/06/97	5	UG/L	U	5	1
Trichloroethene	79-01-6	QCBLK155387-1	10/06/97	10/06/97	5	UG/L	U	5	1
Dibromochloromethane	124-48-1	QCBLK155387-1	10/06/97	10/06/97	5	UG/L	U	5	1
1,1,2-Trichloroethane	79-00-5	QCBLK155387-1	10/06/97	10/06/97	5	UG/L	U	5	1
Benzene	71-43-2	QCBLK155387-1	10/06/97	10/06/97	5	UG/L	U	5	1
trans-1,3-Dichloropropene	10061-02-6	QCBLK155387-1	10/06/97	10/06/97	5	UG/L	U	5	1
Bromoform	75-25-2	QCBLK155387-1	10/06/97	10/06/97	5	UG/L	U	5	1
4-Methyl-2-Pentanone (MIBK)	108-10-1	QCBLK155387-1	10/06/97	10/06/97	20	UG/L	U	20	1
2-Hexanone	591-78-6	QCBLK155387-1	10/06/97	10/06/97	20	UG/L	U	20	1
Tetrachloroethene	127-18-4	QCBLK155387-1	10/06/97	10/06/97	5	UG/L	U	5	1
1,1,2,2-Tetrachloroethane	79-34-5	QCBLK155387-1	10/06/97	10/06/97	5	UG/L	U	5	1
Toluene	108-88-3	QCBLK155387-1	10/06/97	10/06/97	2	UG/L	J	5	1
Chlorobenzene	108-90-7	QCBLK155387-1	10/06/97	10/06/97	5	UG/L	U	5	1
EthylBenzene	100-41-4	QCBLK155387-1	10/06/97	10/06/97	5	UG/L	U	5	1
Styrene	100-42-5	QCBLK155387-1	10/06/97	10/06/97	5	UG/L	U	5	1
Xylene (total)	1330-20-7	QCBLK155387-1	10/06/97	10/06/97	5	UG/L	U	5	1
Acetonitrile	75-05-8	QCBLK155387-1	10/06/97	10/06/97	98	UG/L	J	5	1
Toluene-d8	2037-26-5	QCBLK155387-1	10/06/97	10/06/97	106	%REC			1
Bromofluorobenzene	460-00-4	QCBLK155387-1	10/06/97	10/06/97	85	%REC			1
Dibromofluoromethane	1868-53-7	QCBLK155387-1	10/06/97	10/06/97	111	%REC			1

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Project: 550.230

Category: VOA-8240A (Appendix IX)
Method: EPA 8240
Matrix: LIQUID

Sample Date : 09/22/97
Receipt Date : 09/22/97
Report Date : 10/17/97

Client ID: B0L3Y6

Quanterra ID : 15936-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
1,1-Dichloroethene	75-35-4	QCBLK155387-1	10/06/97	10/06/97	120	%REC			1
Trichloroethene	79-01-6	QCBLK155387-1	10/06/97	10/06/97	106	%REC			1
Benzene	71-43-2	QCBLK155387-1	10/06/97	10/06/97	107	%REC			1
Toluene	108-88-3	QCBLK155387-1	10/06/97	10/06/97	100	%REC			1
Chlorobenzene	108-90-7	QCBLK155387-1	10/06/97	10/06/97	99	%REC			1
Toluene-d8	2037-26-5	QCBLK155387-1	10/06/97	10/06/97	105	%REC			1
Bromofluorobenzene	460-00-4	QCBLK155387-1	10/06/97	10/06/97	91	%REC			1
Dibromofluoromethane	1868-53-7	QCBLK155387-1	10/06/97	10/06/97	107	%REC			1

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Project: 550.230

Category: VOA-8240A (Appendix IX)
Method: EPA 8240
Matrix: LIQUID

Sample Date : 09/22/97
Receipt Date : 09/22/97
Report Date : 10/30/97

Client ID: B0L3Y6

Quanterra ID : 15936-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
1,1-Dichloroethene	75-35-4	QCBLK155387-1	10/06/97	10/06/97	132	%REC			1
Trichloroethene	79-01-6	QCBLK155387-1	10/06/97	10/06/97	108	%REC			1
Benzene	71-43-2	QCBLK155387-1	10/06/97	10/06/97	110	%REC			1
Toluene	108-88-3	QCBLK155387-1	10/06/97	10/06/97	101	%REC			1
Chlorobenzene	108-90-7	QCBLK155387-1	10/06/97	10/06/97	101	%REC			1
Toluene-d8	2037-26-5	QCBLK155387-1	10/06/97	10/06/97	108	%REC			1
Bromofluorobenzene	460-00-4	QCBLK155387-1	10/06/97	10/06/97	88	%REC			1
Dibromofluoromethane	1868-53-7	QCBLK155387-1	10/06/97	10/06/97	109	%REC			1

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0L3Y6

Lab Name: QUANTERRA MO Contract: 550-230

Lab Code: ITMO Case No.: V93601 SAS No.: SDG No.: W01938

Matrix: (soil/water) WATER Lab Sample ID: 15936-001

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: G9260

Level: (low/med) LOW Date Received: 09/22/97

% Moisture: not dec. Date Analyzed: 10/06/97

GC Column: RTX-502.2 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	10	U
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
107-02-8	Acrolein	100	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	13	J
75-69-4	Trichlorofluoromethane	10	U
107-05-1	Allyl chloride	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-05-8	Acetonitrile	100	U
107-13-1	Acrylonitrile	100	U
107-12-0	Propionitrile	20	U
75-34-3	1,1-Dichloroethane	5	U
156-60-5	Trans-1,2-Dichloroethene	2	U
74-88-4	Iodomethane	5	U
67-66-3	Chloroform	83	
107-06-2	1,2-Dichloroethane	5	U
126-99-8	2-Chlor-1,3-Butadiene	5	U
126-98-7	Methacrylonitrile	5	U
78-93-3	2-Butanone	20	U
78-83-1	Isobutyl alcohol	200	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0L3Y6

Lab Name: QUANTERRA MO Contract: 550-230

Lab Code: ITMO Case No.: V93601 SAS No.: SDG No.: W01938

Matrix: (soil/water) WATER Lab Sample ID: 15936-001

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: G9260

Level: (low/med) LOW Date Received: 09/22/97

% Moisture: not dec. Date Analyzed: 10/06/97

GC Column: RTX-502.2 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
10061-01-5	cis-1,3-Dichloropropene	5	U
80-62-6	Methyl methacrylate	5	U
79-01-6	Trichloroethene	5	U
97-63-2	Ethyl methacrylate	10	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
74-95-3	Dibromomethane	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
106-93-4	1,2-Dibromoethane	5	U
123-91-1	1,4-Dioxane	500	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
124-48-1	Dibromochloromethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
630-20-6	1,1,1,2-Tetrachloroethane	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
110-57-6	trans-1,4-Dichloro-2-butene	100	U
1330-20-7	Xylene (total)	5	U
76-01-7	Pentachloroethane	10	U
96-18-4	1,2,3-Trichloropropane	5	U
96-12-8	1,2-Dibromo-3-Chloropropane	10	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0L3Y6

Lab Name: QUANTERRA MO Contract: 550-230

Lab Code: ITMO Case No.: V93601 SAS No.: SDG No.: W01938

Matrix: (soil/water) WATER Lab Sample ID: 15936-001

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: G9260

Level: (low/med) LOW Date Received: 09/22/97

% Moisture: not dec. Date Analyzed: 10/06/97

GC Column: RTX-502.2 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

Bechtel Hanford Incoporated
3350 George Washington Way
Richland, WA 99352

Project: 550.230

Category: Acrylamide
Method: SW-846 8316
Matrix: LIQUID

Sample Date : 09/22/97
Receipt Date : 09/22/97
Report Date : 10/21/97

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0L3Y6	15936-001	Acrylamide	79-06-1	QCBLK150372-1	10/13/97	10/13/97	100	UG/L	U	100	1
B0L3Y6	15936-001MS	Acrylamide	79-06-1	QCBLK150372-1	10/13/97	10/13/97	82	%REC			1
B0L3Y6	15936-001MSD	Acrylamide	79-06-1	QCBLK150372-1	10/13/97	10/13/97	91	%REC			1
NA	QCBLK150372-1	Acrylamide	79-06-1	QCBLK150372-1	10/13/97	10/13/97	100	UG/L	U	100	1
NA	QCSPK150372-1	Acrylamide	79-06-1	QCBLK150372-1	10/13/97	10/13/97	79	%REC			1

1D
ACRYLAMIDE ANALYSIS DATA SHEET

EPA SAMPLE NO.
B0L3Y6

Lab Name: QUANTERRA MO Contract: 550.230

Lab Code: ITMO Case No.: _____ SAS No.: _____ SDG No.: W01938

Matrix : (soil/water) WATER Lab Sample ID: 15936-001

Sample wt/vol: 1000 (g/ml) ML Lab File ID: _____

Level: (low/med) LOW Date Sampled: 09-22-97

% Moisture: not dec._____ dec._____ Date Extracted: _____

Extraction:(SepF/Cont/Sonc/Shak)_____ Date Analyzed: 10-13-97

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

CAS NO.	Compound	CONCENTRATION UNITS: (mg/L or mg/Kg) UG/L	Q
79-06-1	ACRYLAMIDE	100	U

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

FORM I HBH

Bechtel Hanford Incoporated
3350 George Washington Way
Richland, WA 99352

Project: 550.230

Category: ICP Metals-6010A (TAL)
Method: EPA 6010
Matrix: LIQUID

Sample Date : 09/22/97
Receipt Date : 09/22/97
Report Date : 10/30/97

Client ID: B0L3Y6

Quanterra ID : 15936-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aluminum	7429-90-5	QCBLK156273-1	10/16/97	10/16/97	132	UG/L	B	200	1
Antimony	7440-36-0	QCBLK156273-1	10/16/97	10/16/97	36.1	UG/L	U	60.0	1
Barium	7440-39-3	QCBLK156273-1	10/16/97	10/16/97	32.0	UG/L	B	200	1
Beryllium	7440-41-7	QCBLK156273-1	10/16/97	10/16/97	0.40	UG/L	U	5.0	1
Cadmium	7440-43-9	QCBLK156273-1	10/16/97	10/16/97	3.0	UG/L	UN	5.0	1
Calcium	7440-70-2	QCBLK156273-1	10/16/97	10/16/97	30100	UG/L		5000	1
Chromium	7440-47-3	QCBLK156273-1	10/16/97	10/16/97	3.5	UG/L	U	10.0	1
Cobalt	7440-48-4	QCBLK156273-1	10/16/97	10/16/97	4.2	UG/L	U	50.0	1
Copper	7440-50-8	QCBLK156273-1	10/16/97	10/16/97	4.0	UG/L	B	25.0	1
Iron	7439-89-6	QCBLK156273-1	10/16/97	10/16/97	899	UG/L		100	1
Magnesium	7439-95-4	QCBLK156273-1	10/16/97	10/16/97	4570	UG/L	B	5000	1
Manganese	7439-96-5	QCBLK156273-1	10/16/97	10/16/97	14.6	UG/L	B	15.0	1
Nickel	7440-02-0	QCBLK156273-1	10/16/97	10/16/97	9.9	UG/L	U	40.0	1
Potassium	7440-09-7	QCBLK156273-1	10/16/97	10/16/97	2640	UG/L	U	5000	1
Silver	7440-22-4	QCBLK156273-1	10/16/97	10/16/97	5.3	UG/L	U	10.0	1
Sodium	7440-23-5	QCBLK156273-1	10/16/97	10/16/97	7620	UG/L		5000	1
Vanadium	7440-62-2	QCBLK156273-1	10/16/97	10/16/97	6.2	UG/L	B	50.0	1
Zinc	7440-66-6	QCBLK156273-1	10/16/97	10/16/97	10.6	UG/L	B	20.0	1

Bechtel Hanford Incoporated
3350 George Washington Way
Richland, WA 99352

Project: 550.230

Category: ICP Metals-6010A (TAL)
Method: EPA 6010
Matrix: LIQUID

Sample Date : 09/22/97
Receipt Date : 09/22/97
Report Date : 10/23/97

Client ID: BOL3Y6

Quanterra ID : 15936-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aluminum	7429-90-5	QCBLK156273-1	10/16/97	10/16/97	96	%REC			1
Antimony	7440-36-0	QCBLK156273-1	10/16/97	10/16/97	98	%REC			1
Barium	7440-39-3	QCBLK156273-1	10/16/97	10/16/97	94	%REC			1
Beryllium	7440-41-7	QCBLK156273-1	10/16/97	10/16/97	99	%REC			1
Cadmium	7440-43-9	QCBLK156273-1	10/16/97	10/16/97	80	%REC	N		1
Calcium	7440-70-2	QCBLK156273-1	10/16/97	10/16/97	97	%REC			1
Chromium	7440-47-3	QCBLK156273-1	10/16/97	10/16/97	93	%REC			1
Cobalt	7440-48-4	QCBLK156273-1	10/16/97	10/16/97	94	%REC			1
Copper	7440-50-8	QCBLK156273-1	10/16/97	10/16/97	100	%REC			1
Iron	7439-89-6	QCBLK156273-1	10/16/97	10/16/97	94	%REC			1
Magnesium	7439-95-4	QCBLK156273-1	10/16/97	10/16/97	100	%REC			1
Manganese	7439-96-5	QCBLK156273-1	10/16/97	10/16/97	93	%REC			1
Nickel	7440-02-0	QCBLK156273-1	10/16/97	10/16/97	95	%REC			1
Potassium	7440-09-7	QCBLK156273-1	10/16/97	10/16/97	103	%REC			1
Silver	7440-22-4	QCBLK156273-1	10/16/97	10/16/97	89	%REC			1
Sodium	7440-23-5	QCBLK156273-1	10/16/97	10/16/97	97	%REC			1
Vanadium	7440-62-2	QCBLK156273-1	10/16/97	10/16/97	97	%REC			1
Zinc	7440-66-6	QCBLK156273-1	10/16/97	10/16/97	96	%REC			1

Bechtel Hanford Incoporated
3350 George Washington Way
Richland, WA 99352

Project: 550.230

Category: ICP Metals-6010A (TAL)
Method: EPA 6010
Matrix: LIQUID

Sample Date : 09/22/97
Receipt Date : 09/22/97
Report Date : 10/23/97

Client ID: B0L3Y6

Quanterra ID : 15936-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aluminum	7429-90-5	QCBLK156273-1	10/16/97	10/16/97	94	%REC			1
Antimony	7440-36-0	QCBLK156273-1	10/16/97	10/16/97	96	%REC			1
Barium	7440-39-3	QCBLK156273-1	10/16/97	10/16/97	93	%REC			1
Beryllium	7440-41-7	QCBLK156273-1	10/16/97	10/16/97	97	%REC			1
Cadmium	7440-43-9	QCBLK156273-1	10/16/97	10/16/97	78	%REC	N		1
Calcium	7440-70-2	QCBLK156273-1	10/16/97	10/16/97	94	%REC			1
Chromium	7440-47-3	QCBLK156273-1	10/16/97	10/16/97	90	%REC			1
Cobalt	7440-48-4	QCBLK156273-1	10/16/97	10/16/97	92	%REC			1
Copper	7440-50-8	QCBLK156273-1	10/16/97	10/16/97	99	%REC			1
Iron	7439-89-6	QCBLK156273-1	10/16/97	10/16/97	91	%REC			1
Magnesium	7439-95-4	QCBLK156273-1	10/16/97	10/16/97	99	%REC			1
Manganese	7439-96-5	QCBLK156273-1	10/16/97	10/16/97	91	%REC			1
Nickel	7440-02-0	QCBLK156273-1	10/16/97	10/16/97	92	%REC			1
Potassium	7440-09-7	QCBLK156273-1	10/16/97	10/16/97	100	%REC			1
Silver	7440-22-4	QCBLK156273-1	10/16/97	10/16/97	98	%REC			1
Sodium	7440-23-5	QCBLK156273-1	10/16/97	10/16/97	95	%REC			1
Vanadium	7440-62-2	QCBLK156273-1	10/16/97	10/16/97	94	%REC			1
Zinc	7440-66-6	QCBLK156273-1	10/16/97	10/16/97	95	%REC			1

Bechtel Hanford Incoporated
3350 George Washington Way
Richland, WA 99352

Project: 550.230

Category: Arsenic-7060-(GFAA)
Method: EPA 7000 Series
Matrix: LIQUID

Sample Date : 09/22/97
Receipt Date : 09/22/97
Report Date : 10/23/97

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil
B0L3Y6	15936-001	Arsenic	7440-38-2	QCBLK156572-1	10/20/97	10/20/97	1.6	UG/L	U	10.0	1
B0L3Y6	15936-001MS	Arsenic	7440-38-2	QCBLK156572-1	10/20/97	10/20/97	109	%REC			1
B0L3Y6	15936-001MSD	Arsenic	7440-38-2	QCBLK156572-1	10/20/97	10/20/97	109	%REC			1
NA	QCLCS156572-1	Arsenic	7440-38-2	QCBLK156572-1	10/20/97	10/20/97	104	%REC			1
NA	QCBLK156572-1	Arsenic	7440-38-2	QCBLK156572-1	10/20/97	10/20/97	1.6	UG/L	U	10.0	1

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0L3Y6

Lab Name: QUANTERRA_MO Contract: 550.230

Lab Code: ITMO Case No.: SAS No.: SDG No.: W01938

Matrix (soil/water): WATER Lab Sample ID: 15936-001

Level (low/med): LOW Date Received: 09/22/97

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	132	B		P
7440-36-0	Antimony	36.1	U		P
7440-38-2	Arsenic	1.6	U		F
7440-39-3	Barium	32.0	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	3.0	U	N	P
7440-70-2	Calcium	30100			P
7440-47-3	Chromium	3.5	U		P
7440-48-4	Cobalt	4.2	U		P
7440-50-8	Copper	4.0	B		P
7439-89-6	Iron	899			P
7439-95-4	Magnesium	4570	B		P
7439-96-5	Manganese	14.6	B		P
7440-02-0	Nickel	9.9	U		P
7440-09-7	Potassium	2640	U		P
7440-22-4	Silver	5.3	U		P
7440-23-5	Sodium	7620			P
7440-62-2	Vanadium	6.2	B		P
7440-66-6	Zinc	10.6	B		P

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

Bechtel Hanford Incoporated
3350 George Washington Way
Richland, WA 99352

Project: 550.230

Category: pH EPA 150.1
Method: EPA 150.1
Matrix: LIQUID

Sample Date : 09/22/97
Receipt Date : 09/22/97
Report Date : 10/22/97

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0L3Y6	15936-001	pH	PH	QCBLK155096-1	10/03/97	10/03/97	6.41	PH			1
B0L3Y6	15936-001DUP	pH	PH	QCBLK155096-1	10/03/97	10/03/97	6.58	PH			1
NA	QCBLK155096-1	pH	PH	QCBLK155096-1	10/03/97	10/03/97	4.27	PH			1

Bechtel Hanford Incoporated
3350 George Washington Way
Richland, WA 99352

Project: 550.230

Category: Total Residual Chlorine
Method: EPA 330.3
Matrix: LIQUID

Sample Date : 09/22/97
Receipt Date : 09/22/97
Report Date : 10/22/97

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0L3Y6	15936-001	Total Chlorine	7782-50-5A	QCBLK155329-1	10/06/97	10/06/97	0.10	MG/L	U	0.10	1
B0L3Y6	15936-001DUP	Total Chlorine	7782-50-5A	QCBLK155329-1	10/06/97	10/06/97	0.10	MG/L	U	0.10	1
NA	QCBLK155329-1	Total Chlorine	7782-50-5A	QCBLK155329-1	10/06/97	10/06/97	0.10	MG/L	U	0.10	1
NA	QCLCS155329-1	Total Chlorine	7782-50-5A	QCBLK155329-1	10/06/97	10/06/97	98	%REC			1

Bechtel Hanford Incoporated
3350 George Washington Way
Richland, WA 99352

Project: 550.230

Category: TDS
Method: EPA 160.1
Matrix: LIQUID

Sample Date : 09/22/97
Receipt Date : 09/22/97
Report Date : 10/22/97

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0L3Y6	15936-001	Total Dissolved	TDS	QCBLK154805-1	10/01/97	10/01/97	152	MG/L		5.00	1
B0L3Y6	15936-001DUP	Total Dissolved	TDS	QCBLK154805-1	10/01/97	10/01/97	142	MG/L		5.00	1
NA	QCBLK154805-1	Total Dissolved	TDS	QCBLK154805-1	10/01/97	10/01/97	5.00	MG/L	U	5.00	1
NA	QCLCS154805-1	Total Dissolved	TDS	QCBLK154805-1	10/01/97	10/01/97	98	%REC			1

Bechtel Hanford Incoporated
3350 George Washington Way
Richland, WA 99352

Project: 550.230

Category: Sulfate
Method: EPA 375.4
Matrix: LIQUID

Sample Date : 09/22/97
Receipt Date : 09/22/97
Report Date : 10/22/97

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0L3Y6	15936-001	Sulfate	14808-79-8	QCBLK154754-1	10/02/97	10/02/97	34.2	MG/L		5.00	1
B0L3Y6	15936-001DUP	Sulfate	14808-79-8	QCBLK154754-1	10/02/97	10/02/97	35.0	MG/L		5.00	1
B0L3Y6	15936-001MS	Sulfate	14808-79-8	QCBLK154754-1	10/02/97	10/02/97	69	%REC			1
NA	QCBLK154754-1	Sulfate	14808-79-8	QCBLK154754-1	10/02/97	10/02/97	5.00	MG/L	U	5.00	1
NA	QCLCS154754-1	Sulfate	14808-79-8	QCBLK154754-1	10/02/97	10/02/97	103	%REC			1

Bechtel Hanford Incoporated
3350 George Washington Way
Richland, WA 99352

Project: 550.230

Category: Total Suspended Solids (160.2)
Method: EPA 160.2
Matrix: LIQUID

Sample Date : 09/22/97
Receipt Date : 09/22/97
Report Date : 10/30/97

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil
B0L3Y6	15936-001	Total Suspended	TSS	QCBLK154804-1	10/01/97	10/01/97	3.0	MG/L		1.00	1
B0L3Y6	15936-001DUP	Total Suspended	TSS	QCBLK154804-1	10/01/97	10/01/97	3.0	MG/L		1.00	1
NA	QCBLK154804-1	Total Suspended	TSS	QCBLK154804-1	10/01/97	10/01/97	1.00	MG/L	U	1.00	1
NA	QCLCS154804-1	Total Suspended	TSS	QCBLK154804-1	10/01/97	10/01/97	101	%REC			1