

Quanterra
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CERTIFICATE OF ANALYSIS

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

RECEIVED
APR 11 2000

EDMC



March 6, 2000

Attention: Joan Kessner

SAF Number : B00-014
Date SDG Closed : February 3, 2000
Number of Samples : One (1)
Sample Type : Water
SDG Number : W03049
Data Deliverable : 21-Day / Summary

I. Introduction

On February 3, 2000, one water sample was received at the Quanterra Richland Laboratory (QRL) for radiochemical analysis. Upon receipt, the sample was assigned the following laboratory ID number to correspond with the Bechtel Hanford, Inc. (BHI) specific ID:

<u>QRL ID#</u>	<u>BHI ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
9D86X010	B0XH85	WATER	2/3/00

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 RICH-RC-5017
- Gas Proportional Counting**
Total Strontium by method RICH-RC-5006
- Alpha Spectroscopy**
Plutonium-238, -239/40 by method RICH-RC-5010
Americium-241 by method RICH-RC-5080
- Liquid Scintillation Counting**
Technetium-99 by method RICH-RC-5078

Nickel-63 by method RICH-RC-5069
Carbon-14 by method RICH-RC-5022

III. Quality Control

The analytical results for each analysis performed under SDG W03049 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

IV. Comments

Gamma Spectroscopy

Gamma Scan by method RICH-RC-5017:

The achieved MDAs are based on the best available counting geometry and detector efficiency for the matrix analyzed. The data are accepted for reporting with the MDAs achieved. Except as noted, the LCS, batch blank, samples and sample duplicate (B0XH85) results are within contractual requirements.

Gas Proportional Counting

Total Strontium by method RICH-RC-5006:

The achieved MDAs do not meet the CRDL for samples B0XH85 and B0XH85 duplicate analysis due to insufficient sample volume. The data are accepted for reporting with the MDAs achieved. Except as noted, the LCS, batch blank, samples and sample duplicate (B0XH85) results are within contractual requirements.

Alpha Spectroscopy

Plutonium-238, -239/40 by method RICH-RC-5010:

The LCS, batch blank, samples and sample duplicate (B0XH85) results are within contractual requirements.

Americium-241 by method RICH-RC-5080:

The LCS, batch blank, samples and sample duplicate (B0XH85) results are within contractual requirements.

Liquid Scintillation Counting

Technetium-99 by method RICH-RC-5078:

The achieved MDAs do not meet the CRDL for samples B0XH85 and B0XH85 duplicate analysis due to insufficient sample volume. The data are accepted for reporting with the MDAs

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achieved. Except as noted, the LCS, batch blank, samples, sample duplicate (B0XH85) and sample matrix spike (B0XH85) results are within contractual requirements.

Nickel-63 by method RICH-RC-5069:

The achieved MDAs do not meet the CRDL for samples B0XH85 and B0XH85 duplicate analysis due to insufficient sample volume. The data are accepted for reporting with the MDAs achieved. Except as noted, the LCS, batch blank, samples, sample duplicate (B0XH85) and sample matrix spike (B0XH85) results are within contractual requirements.

Carbon-14 by method RICH-RC-5022:

All bottles received for sample B0XH85 were pH<2, therefore the analysis was performed using acidified water. The reported results may be suspect due to loss of carbon as a volatile. Except as noted, the LCS, batch blank, samples and sample duplicate (B0XH85) 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:



Jackie Waddell
Project Manager

SAMPLE RESULTS

LAB NAME: QUANTERRA, Richland **SDG: /RPT GRP:** W03049 / 9936
LAB SAMPLE ID: 9D86X010 **MATRIX:** WATER
CLIENT ID: BOXH85 **DATE RECEIVED:** 2/3/2000 2:30:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	0.00E+00	U	0.0E+00	3.1E-01	3.47E-01	pCi/L	49.97%	RICHRC5010
PU239/40	-2.05E-02	U	2.9E-02	2.9E-02	5.84E-01	pCi/L	49.97%	RICHRC5010
AM-241	6.10E-02	U	1.8E-01	1.8E-01	4.79E-01	pCi/L	94.61%	RICHRC5072
BA-133	-4.26E+00	U	9.1E+00	9.1E+00	1.56E+01	pCi/L		RICHRC5017
CO-60	1.08E-01	U	7.5E+00	7.5E+00	1.45E+01	pCi/L		RICHRC5017
CS-137	-3.16E+00	U	7.8E+00	7.8E+00	1.36E+01	pCi/L		RICHRC5017
EU-152	-4.07E-02	U	2.1E+01	2.1E+01	3.73E+01	pCi/L		RICHRC5017
EU-154	-3.34E+01	U	2.3E+01	2.3E+01	3.06E+01	pCi/L		RICHRC5017
EU-155	-1.64E+01	U	1.8E+01	1.8E+01	2.97E+01	pCi/L		RICHRC5017
STRONTIUM	-3.63E-02	U	1.4E+00	1.4E+00	3.36E+00	pCi/L	99.10%	RICHRC5006
C-14	8.47E+00	U	5.8E-01	1.2E+01	1.65E+01	pCi/L	100.00%	RICHRC5022
NI-63	-1.87E+00	U	1.1E-01	1.9E+01	3.05E+01	pCi/L	89.57%	RICHRC5069
TC-99	1.55E+00	U	8.0E-02	1.9E+01	2.06E+01	pCi/L	100.00%	RICHRC5078

Number of Results: 13

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03049 / 9936
LAB SAMPLE ID: D86X019R MATRIX: WATER
CLIENT ID: BOXH85 DUP DATE RECEIVED: 2/3/2000 2:30:00 P
ORIG LAB SAMPLE ID: 9D86X010

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
C-14	6.63E+00	U	4.6E-01	1.2E+01	1.65E+01	pCi/L	100.00%	RICHRC5022	8.47E+00	24.34%

Number of Results:

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03049 / 9936
LAB SAMPLE ID: D86X01CR MATRIX: WATER
CLIENT ID: BOXH85 DUP DATE RECEIVED: 2/3/2000 2:30:00 P
ORIG LAB SAMPLE ID: 9D86X010

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
NI-63	-1.59E+00	U	1.0E-01	2.0E+01	3.65E+01	pCi/L	90.09%	RICHRC5069	-1.87E+00	16.16%

Number of Results:

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03049 / 9936
LAB SAMPLE ID: D86X01ER MATRIX: WATER
CLIENT ID: BOXH85 DUP DATE RECEIVED: 2/3/2000 2:30:00 P
ORIG LAB SAMPLE ID: 9D86X010

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
TC-99	-6.82E+00	U	3.6E-01	1.8E+01	2.07E+01	pCi/L	100.00%	RICHRC5078	1.55E+00	317.44%

Number of Results:

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03049 / 9936
LAB SAMPLE ID: D86X01FR MATRIX: WATER
CLIENT ID: B0XH85 DUP DATE RECEIVED: 2/3/2000 2:30:00 P
ORIG LAB SAMPLE ID: 9D86X010

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
PU-238	0.00E+00	U	0.0E+00	2.2E-01	2.48E-01	pCi/L	68.92%	RICHRC5010	0.00E+00	0.00%
PU239/40	1.83E-01	U	2.6E-01	2.6E-01	2.48E-01	pCi/L	68.92%	RICHRC5010	-2.05E-02	250.45%

Number of Results:

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03049 / 9936
LAB SAMPLE ID: D86X01GR MATRIX: WATER
CLIENT ID: BOXH85 DUP DATE RECEIVED: 2/3/2000 2:30:00 P
ORIG LAB SAMPLE ID: 9D86X010

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
AM-241	-7.59E-03	U	1.5E-02	1.5E-02	3.82E-01	pCi/L	88.14%	RICHRC5072	6.10E-02	256.85%

Number of Results:

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland **SDG: /RPT GRP:** W03049 / 9936
LAB SAMPLE ID: D86X01HR **MATRIX:** WATER
CLIENT ID: B0XH85 DUP **DATE RECEIVED:** 2/3/2000 2:30:00 P
ORIG LAB SAMPLE ID: 9D86X010

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
BA-133	-1.05E+00	U	7.9E+00	7.9E+00	1.40E+01	pCi/L		RICHRC5017	-4.26E+00	121.24%
CO-60	4.50E+00	U	5.6E+00	5.6E+00	1.39E+01	pCi/L		RICHRC5017	1.08E-01	190.64%
CS-137	-3.09E+00	U	7.4E+00	7.4E+00	1.31E+01	pCi/L		RICHRC5017	-3.16E+00	2.04%
EU-152	6.99E+00	U	1.6E+01	1.6E+01	3.07E+01	pCi/L		RICHRC5017	-4.07E-02	202.34%
EU-154	3.21E+00	U	2.1E+01	2.1E+01	4.25E+01	pCi/L		RICHRC5017	-3.34E+01	242.52%
EU-155	1.23E+00	U	1.4E+01	1.4E+01	2.39E+01	pCi/L		RICHRC5017	-1.64E+01	232.29%

Number of Results:

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03049 / 9936
LAB SAMPLE ID: D86X01JR MATRIX: WATER
CLIENT ID: BOXH85 DUP DATE RECEIVED: 2/3/2000 2:30:00 P
ORIG LAB SAMPLE ID: 9D86X010

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
STRONTIUM	1.37E+00	U	1.6E+00	1.6E+00	3.38E+00	pCi/L	99.60%	RICHRC5006	-3.63E-02	210.87%

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W03049 / 9936
LAB SAMPLE ID: D8AKJ13B MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
C-14	1.64E+00	U	1.1E-01	5.7E+00	8.27E+00	pCi/L	100.00%	RICHRC5022

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W03049 / 9936
LAB SAMPLE ID: D8AKP11B MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
TC-99	-1.07E+01	U	5.7E-01	1.8E+01	2.07E+01	pCi/L	100.00%	RICHRC5078

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W03049 / 9936
LAB SAMPLE ID: D8AKR11B MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	0.00E+00	U	0.0E+00	7.7E-02	8.56E-02	pCi/L	100.14%	RICHRC5010
PU239/40	3.16E-02	U	6.3E-02	6.3E-02	8.55E-02	pCi/L	100.14%	RICHRC5010

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W03049 / 9936
LAB SAMPLE ID: D8AKT11B MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	4.38E-02	U	9.6E-02	9.6E-02	1.92E-01	pCi/L	87.21%	RICHRC5072

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W03049 / 9936
LAB SAMPLE ID: D8AKW11B MATRIX: Water

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
BA-133	-3.73E+00	U	5.8E+00	5.8E+00	9.66E+00	pCi/L		RICHRC5017
CO-58	2.94E+00	U	4.4E+00	4.4E+00	9.12E+00	pCi/L		RICHRC5017
CO-60	1.51E+00	U	4.9E+00	4.9E+00	1.00E+01	pCi/L		RICHRC5017
CS-137	-5.98E+00	U	4.9E+00	4.9E+00	7.47E+00	pCi/L		RICHRC5017
EU-152	-6.20E+00	U	1.2E+01	1.2E+01	2.11E+01	pCi/L		RICHRC5017
EU-154	1.48E+01	U	1.1E+01	1.1E+01	2.80E+01	pCi/L		RICHRC5017
EU-155	-8.21E+00	U	8.7E+00	8.7E+00	1.43E+01	pCi/L		RICHRC5017
FE-59	3.11E+00	U	7.8E+00	7.8E+00	1.68E+01	pCi/L		RICHRC5017

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W03049 / 9936
LAB SAMPLE ID: D8AKX11B MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
STRONTIUM	1.63E-01	U	3.6E-01	3.6E-01	8.11E-01	pCi/L	84.30%	RICHRC5006

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03049 / 9936
LAB SAMPLE ID: D8AKJ12S MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
C-14	4.58E+01	J	2.3E+00	7.8E+00	8.26E+00	pCi/L	100.00%	4.53E+01	101.13%

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03049 / 9936
LAB SAMPLE ID: D8AKN12S MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
NI-63	2.35E+03		3.8E+01	1.8E+02	2.86E+01	pCi/L	89.77%	3.04E+03	77.25%

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03049 / 9936
LAB SAMPLE ID: D8AKP12S MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
TC-99	8.66E+02		1.8E+01	8.0E+01	2.06E+01	pCi/L	100.00%	9.05E+02	95.74%

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03049 / 9936
LAB SAMPLE ID: D8AKR12S MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
PU239/40	4.52E+00		9.3E-01	1.2E+00	1.29E-01	pCi/L	66.15%	4.52E+00	99.99%

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03049 / 9936
LAB SAMPLE ID: D8AKT12S MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
AM-241	2.11E+01		2.1E+00	4.3E+00	1.37E-01	pCi/L	78.76%	2.29E+01	92.17%

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03049 / 9936
LAB SAMPLE ID: D8AKW12S MATRIX: Water

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
CO-60	8.83E+01		1.8E+01	1.8E+01	1.08E+01	pCi/L		7.59E+01	116.30%
CS-137	4.94E+01		1.4E+01	1.4E+01	1.14E+01	pCi/L		5.01E+01	98.55%
EU-152	1.32E+02		3.2E+01	3.2E+01	2.67E+01	pCi/L		1.54E+02	85.84%

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03049 / 9936
LAB SAMPLE ID: D8AKX12S MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
STRONTIUM	1.16E+01		9.9E-01	3.5E+00	7.43E-01	pCi/L	93.70%	1.38E+01	84.16%

Number of Results:

MATRIX SPIKE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03049 / 9936
LAB SAMPLE ID: D86X01AW MATRIX: WATER

ANALYTE	SPIKE RESULT*	COUNTING Q ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
NI-63	2.14E+03	3.8E+01	1.7E+02	3.15E+01	pCi/L	-1.87E+0	3.03E+03	70.51%

Number of Results:

*Spike Result Corrected For Sample Result

Result = IDL When Not Detected

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

MATRIX SPIKE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03049 / 9936
LAB SAMPLE ID: D86X01DW MATRIX: WATER

ANALYTE	SPIKE RESULT* Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
TC-99	5.76E+03	5.0E+01	4.4E+02	2.07E+01	pCi/L	1.55E+00	6.02E+03	95.66%

Number of Results:

*Spike Result Corrected For Sample Result

Result = IDL When Not Detected

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B00-014-05		Page 1 of 1		
Collector Fahlberg/Winterrose		Company Contact J Adler		Telephone No. 373-4316		Project Coordinator TRENT, SJ		Price Code 7L Data Turnaround 21 Days		
Project Designation 105-F/DR Phase III Below-grade Areas Sampling and Analy		Sampling Location 105F		SAF No. B00-014		Air Quality				
Ice Chest No.		Field Logbook No. EL 1424		COA 105F22870		Method of Shipment Fed Ex				
Shipped To Quanterra Incorporated		Offsite Property No.				Bill of Lading/Air Bill No.				
POSSIBLE SAMPLE HAZARDS/REMARKS		Preservation		None	HNO3 to pH <2	HCl to pH <2	HNO3 to pH <2			
		Type of Container		P	P	P	P			
		No. of Container(s)		1	1	1	1			
		Special Handling and/or Storage		Volume	20mL	500mL	1000mL	1000mL		
SAMPLE ANALYSIS				Activity Scan	ICP Metals - 6010A (Supertrace) (Lead), Mercury (CV) 7470 - (CV)	Technetium-99	See item (1) in Special Instructions			
SIDG W03049 JOB0302355				2:30						
Sample No.	Matrix *	Sample Date	Sample Time							
BOXH85	Water	2-1-00	12:25	X	X	X	X			
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS		Matrix *
Relinquished By R. Fally		Date/Time 1435		Received By Ref 2-A		Date/Time 2-1-00		(1) Gamma Spectroscopy(Water) (Cobalt-60); Gamma Spec - Add-on (Barium-133); Isotopic Plutonium; Strontium-89,90 -- Total Sr; Americium-241; Carbon-14; Nickel-63 Sample originated from a non rad source, no activity report required		S=Soil SE=Sediment SO=Solid S=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue W1=Wipe L=Liquid V=Vegetation X=Other
Relinquished By Ref 2-A		Date/Time 23:00/0900		Received By R. Thoren		Date/Time 2:30/0900				
Relinquished By R. Thoren		Date/Time 2:30/1430		Received By K. Thoren		Date/Time 2:30/1430				
Relinquished By		Date/Time		Received By		Date/Time				
Relinquished By		Date/Time		Received By		Date/Time				
Relinquished By		Date/Time		Received By		Date/Time				
LABORATORY SECTION		Received By		Title				Date/Time		
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time		

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

CASE NARRATIVE

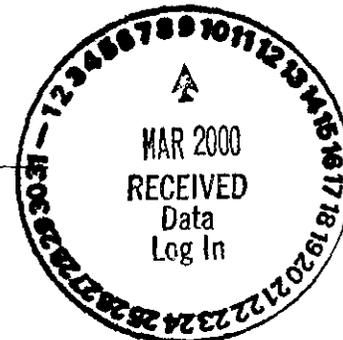
314 298-8566 Telephone
314 298-8757 Fax

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, Washington 99352

March 8, 2000

Attention: Joan Kessner

Quote Number	:	33833
SDG	:	W03049
Number of Samples	:	one (1)
Sample Matrix	:	Water
Data Deliverable	:	Summary
Date SDG Closed	:	February 3, 2000



II. Introduction

On February 3, 2000, one (1) "water" sample was received by Quanterra, Richland and transferred to Quanterra, St. Louis for chemical analysis. The samples were received at the St. Louis lab on 2/4/00 at a temperature of 3 degrees C. See the attached Sample Summary for a listing of Client Ids and their associated Lab numbers.

III. Analytical Results/ Methodology

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

Analyses requested: ICP Metals - (SuperTrace Lead)

Deviation from Request: None

IV. Definitions

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

QCBLK- Quality Control Blank, Method Blank
QCLCS- Quality Control Laboratory Control Sample, Blank Spike
MS- Matrix Spike.
MSD- Matrix Spike Duplicate.

Bechtel Hanford Incorporated
March 8, 2000
Quote Number: 33833
SDG: W03049
Page 2

V. Comments

General: The term "Detection Limit" used in the analytical data reports refers to either the lab's standard reporting limits or contractually required reporting limits, whichever is applicable.

Please refer to the attached cross-reference table for the standard preparation methods used at Quanterra, St. Louis.

The EDD for this SDG will be sent at a later date. The switch to our new LIMs system required a re-programming of the EDD software. That is currently in process.

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

There were no comments or non-conformances associated with this data.

I certify that this Summary 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:



Marti Ward
St. Louis Project Manager

SAMPLE SUMMARY

FOB040242

<u>WO #</u>	<u>SAMPLE#</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
D886T	001	BOXH85	02/01/00	12:25

NOTE(S) :

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

METHODS SUMMARY

FOB040242

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>	<u>PREPARATION METHOD</u>
Trace Inductively Coupled Plasma (ICP) Metals	SW846 6010B	SW846 3010A

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

STL- St. Louis

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QUANTERRA INCORPORATED
CLIENT ANALYSIS SUMMARY
Quanterra - St. Louis

Run Date: 2/07/00
Time: 8:55:34
User Id.: SEITHELK

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 105-F/DR PHASE3
REPORT TO: Accounts Payable
P.O. NUMBER:
SITE: B00-014
AMOUNT REC'D: 500P
STORAGE LOC: S2D
LOT COMMENTS: Client requires QC, even if a lesser vol
MATRIX: WATER
SAMPLE ID: BOXH85
QC PACKAGE: Special Report - see checklist
SAMPLE COMMENTS:

QUOTE/SAR #: 33833
LAB ID: F-0B040242-001
WORK ORDER: D886T
RECEIVING DATE: 2/03/00
SAMPLING DATE: 2/01/00
ANALYTICAL DUE DATE: 2/18/00N
REPORT DUE DATE: 2/24/00
PRIORITY: 15
SAMPLING TIME: 12:25
RECEIVING TIME: 14:30

SDG# : W03049

Beginning Depth: .00 Ending Depth: .00

***** ANALYSIS *****

WRK	REQUEST	EXTRACTION	ANALYSIS
LOC	DATE	EXP DATE	EXP DATE

Inductively Coupled Plasma (6010B Trace)	06	2/04/00	0/00/00	7/30/00
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METALS, TOTAL - Waters

MT6010 L PB

(I-05-QM-01) D886T Protocol: A QC Program: STANDARD TEST SET

STL- St. Louis

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QUANTERRA INCORPORATED
CLIENT ANALYSIS SUMMARY
Quanterra - St. Louis

Run Date: 2/07/00
Time: 8:55:34
User Id.: SEITHELK

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 105-F/DR PHASE3
REPORT TO: Accounts Payable

QUOTE/SAR #: 33833
LAB ID: F-0B040242-001-D
WORK ORDER: D886T MSD
RECEIVING DATE: 2/03/00
SAMPLING DATE: 2/01/00
ANALYTICAL DUE DATE: 2/18/00N
REPORT DUE DATE: 2/24/00
PRIORITY: 15
SAMPLING TIME: 12:25
RECEIVING TIME: 14:30

P.O. NUMBER:
SITE: B00-014
AMOUNT REC'D: 500P
STORAGE LOC: S2D
LOT COMMENTS: Client requires QC, even if a lesser vol
MATRIX: WATER
SAMPLE ID: BOXH85
QC PACKAGE: Special Report - see checklist
SAMPLE COMMENTS:

SDG# : W03049

Beginning Depth: .00 Ending Depth: .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
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Inductively Coupled Plasma (6010B Trace)	06	2/04/00	0/00/00	7/30/00
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METALS, TOTAL - Waters

MT6010_L PB

(I-05-QM-01) D886T Protocol: A QC Program: STANDARD TEST SET

STL- St. Louis

PSL20300
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QUANTERRA INCORPORATED
CLIENT ANALYSIS SUMMARY
Quanterra - St. Louis

Run Date: 2/07/00
Time: 8:55:34
User Id.: SEITHELK

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 105-F/DR PHASE3
REPORT TO: Accounts Payable
P.O. NUMBER:
SITE: B00-014
AMOUNT REC'D: 500P
STORAGE LOC: S2D
LOT COMMENTS: Client requires QC, even if a lesser vol
MATRIX: WATER
SAMPLE ID: B0XH85
QC PACKAGE: Special Report - see checklist
SAMPLE COMMENTS:

QUOTE/SAR #: 33833
LAB ID: F-0B040242-001-S
WORK ORDER: D886T MS
RECEIVING DATE: 2/03/00
SAMPLING DATE: 2/01/00
ANALYTICAL DUE DATE: 2/18/00N
REPORT DUE DATE: 2/24/00
PRIORITY: 15
SAMPLING TIME: 12:25
RECEIVING TIME: 14:30
SDG# : W03049

Beginning Depth: .00 Ending Depth: .00

***** ANALYSIS *****				
	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Inductively Coupled Plasma (6010B Trace) METALS, TOTAL - Waters MT6010_L PB (I-05-QM-01) D886T	06	2/04/00	0/00/00	7/30/00
	Protocol: A	QC Program:	STANDARD TEST SET	

Data is incomplete without Case Narrative

30 5/24/00

STL - St. Louis

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B00-014-05		Page 1 of 1	
Collector Fahlberg/Winterrose		Company Contact J Adler		Telephone No. 373-4316		Project Coordinator TRENT, SJ		Price Code 7L		Data Turnaround 21 Days	
Project Designation 105-F/DR Phase III Below-grade Areas Sampling and Analy		Sampling Location 105F		SAF No. B00-014		Air Quality					
Ice Chest No.		Field Logbook No. EL 1424		COA 105F22870		Method of Shipment Fed Ex					
Shipped To Quanterra Incorporated		Offsite Property No.		Liquid 24.00		Bill of Lading/Air Bill No.					
POSSIBLE SAMPLE HAZARDS/REMARKS		Preservation		None	HNO3 to pH <2	HCl to pH <2	HNO3 to pH <2				
		Type of Container		P	P	P	P				
		No. of Container(s)		1	1	1	1				
		Special Handling and/or Storage		Volume	20mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS <i>SDG W03049</i>		Activity Scan		ICP Metals - 6010A (Supertrace) (Lead): 7470 - (CV)	Techaction-99	See item (1) in Special Instructions					
Sample No.	Matrix *	Sample Date	Sample Time								
BOXH85	Water	2-1-00	12:25	X	X	X	X				
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS			
Relinquished By <i>R. Fahlberg</i>		Date/Time 1435		Received By <i>REF 2-A</i>		Date/Time 2-1-00		(1) Gamma Spectroscopy (Water) (Cobalt-60); Gamma Spec - Add-on (Barium-133); Isotopic Plutonium; Strontium-89,90 -- Total Sr; Americium-241; Carbon-14; Nickel-63 Sample originated from a non rad source, no activity report required 8:40 SN			
Relinquished By <i>R. Fahlberg</i>		Date/Time 2-1-00		Received By <i>R. Thornton</i>		Date/Time 2-3-00/0900					
Relinquished By <i>R. Thornton</i>		Date/Time 2-3-00/1440		Received By <i>R. Thornton</i>		Date/Time 2-3-00/1430					
Relinquished By <i>R. Thornton</i>		Date/Time 2-3-00/1445		Received By <i>R. Thornton</i>		Date/Time 2-4-00/850					
Relinquished By		Date/Time		Received By		Date/Time					
Relinquished By		Date/Time		Received By		Date/Time		Matrix * S - Soil SE - Sediment SO - Solid S - Sludge W - Water O - Oil A - Air DS - Drum Solids OL - Drum Liquid 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					

020768

Login No.: FOB040242

Condition Upon Receipt Variance Report
St. Louis Laboratory

W03049

Client: Bechtel

Date: 2-4-00 Time: 8:40

Project No: 33833

Initiated by: SLM/SP

Shipper/No: Carbone 4012614410

RFA/COC Numbers: B00-04-05

Condition/Variance (Check all that apply):

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

No variances were noted during sample receipt. Cooler Temperature Upon Receipt: 5°

Temperature Variance Does Not Affect the Following Analyses:

Notes: Rec'd. 1x2500g broken, TOX, B0X2500
All others 100% full MW 2.5.00

Corrective Action:

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

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

Sample(s) processed "as is".

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

Sample Control Supervisor Review: (or designate) SLM/SP Date: 2-4-00

Project Management Review: MWard Date: 2.5.00

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: FOB040242
 Date Sampled...: 02/01/00

Date Received...: 02/03/00

Matrix.....: WATER

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>RPD</u>	<u>RPD LIMITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>WORK ORDER #</u>
MS Lot-Sample #: FOB040242-001 Prep Batch #...: 0049264							
Lead	91	(75 - 125)			SW846 6010B	02/18/00	D886T102
	90	(75 - 125)	1.3	(0-20)	SW846 6010B	02/18/00	D886T103
	Dilution Factor: 1						

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

BECHEMEL HANFORD, INC.

Client Sample ID: B0XH85

TOTAL Metals

Lot-Sample #...: F0B040242-001

Matrix.....: WATER

Date Sampled...: 02/01/00

Date Received...: 02/03/00

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		<u>METHOD</u>	<u>PREPARATION-</u>	<u>WORK</u>
		<u>LIMIT</u>	<u>UNITS</u>		<u>ANALYSIS DATE</u>	<u>ORDER #</u>
Prep Batch #...: 0049264						
Lead	ND	3.0	ug/L	SW846 6010B	02/18/00	D886T101
		Dilution Factor: 1		MDL.....: 0.60		

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: FOB040242

Matrix.....: WATER

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>WORK ORDER #</u>
MB Lot-Sample #: FOB180000-264				Prep Batch #...: 0049264		
Lead	ND	3.0	ug/L	SW846 6010B	02/18/00	D8QLH101
		Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: FOB040242

Matrix.....: WATER

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>WORK ORDER #</u>
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LCS Lot-Sample#: FOB180000-264 Prep Batch #...: 0049264

Lead	96	(80 - 120)	SW846 6010B	02/18/00	DBQLH102
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Dilution Factor: 1

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.