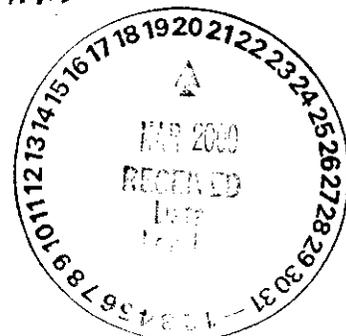


Quanterra
2800 George Washington Way
Richland, Washington 99352-1613

509 375-3131 Telephone
509 375-5590 Fax

03-19-2000



CERTIFICATE OF ANALYSIS

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

March 19, 2000

Attention: Joan Kessner

SAF Number	:	B00-014
Date SDG Closed	:	February 23, 2000
Number of Samples	:	One (1)
Sample Type	:	Water
SDG Number	:	W03091
Data Deliverable	:	21-Day / Summary

RECEIVED
APR 11 2000

EDMC

I. Introduction

On February 23, 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>
9D8WWQ10	B0XKL4	WATER	2/23/00

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

Bechtel Hanford, Inc.
March 19, 2000
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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 W03091 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, sample and sample duplicate (B0XKL4) results are within contractual requirements.

Gas Proportional Counting

Total Strontium by method RICH-RC-5006:

The achieved MDA does not meet the CRDL for sample B0XKL4 due to insufficient sample volume. The data are accepted for reporting with the MDAs achieved. There was insufficient sample volume received for a duplicate sample analysis. Except as noted, the LCS, batch blank and sample results are within contractual requirements.

Alpha Spectroscopy

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

The LCS, batch blank, sample and sample duplicate (B0XKL4) results are within contractual requirements.

Americium-241 by method RICH-RC-5080:

The LCS, batch blank, sample and sample duplicate (B0XKL4) results are within contractual requirements.

Liquid Scintillation Counting

Technetium-99 by method RICH-RC-5078:

The LCS, batch blank, sample, sample duplicate (B0XKL4) and sample matrix spike (B0XKL4) results are within contractual requirements.

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Nickel-63 by method RICH-RC-5069:

The achieved MDA does not meet the CRDL for sample B0XKL4 due to insufficient sample volume. The data are accepted for reporting with the MDAs achieved. The duplicate sample analysis results do not agree within RPD limits. Since there is insufficient sample volume remaining for reanalysis, the data are accepted for reporting with client approval [J.Kessner 3/17/00]. Except as noted, the LCS, batch blank, sample and sample matrix spike (B0XKL4) results are within contractual requirements.

Carbon-14 by method RICH-RC-5022:

The LCS, batch blank, sample and sample duplicate (B0XKL4) 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:** W03091 / 10071
LAB SAMPLE ID: 9D8WWQ10 **MATRIX:** WATER
CLIENT ID: BOXKL4 **DATE RECEIVED:** 2/23/2000 1:30:00 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	1.9E-01	2.10E-01	pCi/L	81.13%	RICHRC5010
PU239/40	-6.19E-03	U	1.2E-02	1.2E-02	3.12E-01	pCi/L	81.13%	RICHRC5010
AM-241	-2.61E-02	U	2.6E-02	2.6E-02	4.35E-01	pCi/L	103.75%	RICHRC5072
BA-133	1.66E+00	U	5.2E+00	5.2E+00	9.86E+00	pCi/L		RICHRC5017
CO-60	1.98E+00	U	4.4E+00	4.4E+00	9.96E+00	pCi/L		RICHRC5017
CS-137	9.79E-01	U	4.9E+00	4.9E+00	9.42E+00	pCi/L		RICHRC5017
EU-152	7.23E+00	U	1.1E+01	1.1E+01	2.26E+01	pCi/L		RICHRC5017
EU-154	-1.76E+01	U	1.4E+01	1.4E+01	1.93E+01	pCi/L		RICHRC5017
EU-155	2.26E+00	U	9.5E+00	9.5E+00	1.76E+01	pCi/L		RICHRC5017
STRONTIUM	-9.71E-01	U	2.8E+00	2.8E+00	7.03E+00	pCi/L	95.60%	RICHRC5006
C-14	-1.62E+00	U	1.2E-01	1.1E+01	1.59E+01	pCi/L	100.00%	RICHRC5022
NI-63	4.07E+01	U	2.5E+00	6.7E+01	1.10E+02	pCi/L	92.19%	RICHRC5069
TC-99	-1.31E+01	U	7.0E-01	1.1E+01	1.28E+01	pCi/L	100.00%	RICHRC5078

Number of Results: 13

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03091 / 10071
LAB SAMPLE ID: D8WWQ18R MATRIX: WATER
CLIENT ID: B0XKL4 DUP DATE RECEIVED: 2/23/2000 1:30:00 P
ORIG LAB SAMPLE ID: 9D8WWQ10

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
C-14	-3.50E-01	U	2.6E-02	1.1E+01	1.59E+01	pCi/L	100.00%	RICHRC5022	-1.62E+00	129.06%

Number of Results:

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03091 / 10071
LAB SAMPLE ID: D8WWQ1AR MATRIX: WATER
CLIENT ID: B0XKL4 DUP DATE RECEIVED: 2/23/2000 1:30:00 P
ORIG LAB SAMPLE ID: 9D8WWQ10

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
NI-63	1.62E+02		9.2E+00	8.3E+01	1.25E+02	pCi/L	89.51%	RICHRC5069	4.07E+01	119.70%

Number of Results:

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03091 / 10071
LAB SAMPLE ID: D8WWQ1DR MATRIX: WATER
CLIENT ID: B0XKL4 DUP DATE RECEIVED: 2/23/2000 1:30:00 P
ORIG LAB SAMPLE ID: 9D8WWQ10

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
TC-99	-1.06E+01	U	5.6E-01	1.1E+01	1.28E+01	pCi/L	100.00%	RICHRC5078	-1.31E+01	21.26%

Number of Results:

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03091 / 10071
LAB SAMPLE ID: D8WWQ1ER MATRIX: WATER
CLIENT ID: B0XKL4 DUP DATE RECEIVED: 2/23/2000 1:30:00 P
ORIG LAB SAMPLE ID: 9D8WWQ10

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	2.0E-01	2.17E-01	pCi/L	78.61%	RICHRC5010	0.00E+00	0.00%
PU239/40	0.00E+00	U	0.0E+00	2.0E-01	2.17E-01	pCi/L	78.61%	RICHRC5010	-6.19E-03	200.00%

Number of Results:

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03091 / 10071
LAB SAMPLE ID: D8WWQ1FR MATRIX: WATER
CLIENT ID: B0XKL4 DUP DATE RECEIVED: 2/23/2000 1:30:00 P
ORIG LAB SAMPLE ID: 9D8WWQ10

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
AM-241	8.82E-02	U	1.8E-01	1.8E-01	2.39E-01	pCi/L	94.43%	RICHRC5072	-2.61E-02	368.11%

Number of Results:

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland **SDG: /RPT GRP:** W03091 / 10071
LAB SAMPLE ID: D8WWQ1GR **MATRIX:** WATER
CLIENT ID: B0XKL4 DUP **DATE RECEIVED:** 2/23/2000 1:30:00 P
ORIG LAB SAMPLE ID: 9D8WWQ10

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
BA-133	-4.85E+00	U	7.5E+00	7.5E+00	1.27E+01	pCi/L		RICHRC5017	1.66E+00	409.13%
CO-60	2.49E+00	U	6.6E+00	6.6E+00	1.33E+01	pCi/L		RICHRC5017	1.98E+00	22.96%
CS-137	5.07E+00	U	6.3E+00	6.3E+00	1.23E+01	pCi/L		RICHRC5017	9.79E-01	135.24%
EU-152	-7.94E+00	U	1.5E+01	1.5E+01	2.57E+01	pCi/L		RICHRC5017	7.23E+00	4262.75%
EU-154	8.79E+00	U	2.0E+01	2.0E+01	3.98E+01	pCi/L		RICHRC5017	-1.76E+01	596.66%
EU-155	8.80E+00	U	1.3E+01	1.3E+01	2.34E+01	pCi/L		RICHRC5017	2.26E+00	118.12%

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W03091 / 10071
LAB SAMPLE ID: D946V13B MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
C-14	-2.14E+00	U	1.6E-01	5.3E+00	7.95E+00	pCi/L	100.00%	RICHRC5022

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W03091 / 10071
LAB SAMPLE ID: D947511B MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
NI-63	3.06E+00	U	1.8E-01	2.0E+00	3.09E+00	pCi/L	99.43%	RICHRC5069

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W03091 / 10071
LAB SAMPLE ID: D947A11B MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
TC-99	-5.33E+00	U	2.7E-01	1.1E+01	1.28E+01	pCi/L	100.00%	RICHRC5078

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W03091 / 10071
LAB SAMPLE ID: D947F11B MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	-3.02E-03	U	6.0E-03	6.1E-03	1.52E-01	pCi/L	83.40%	RICHRC5010
PU239/40	0.00E+00	U	0.0E+00	9.2E-02	1.02E-01	pCi/L	83.40%	RICHRC5010

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W03091 / 10071
LAB SAMPLE ID: D947R11B MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	0.00E+00	U	0.0E+00	9.3E-02	1.03E-01	pCi/L	107.85%	RICHRC5072

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W03091 / 10071
LAB SAMPLE ID: D948111B MATRIX: Water

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
BA-133	-2.99E+00	U	5.4E+00	5.4E+00	9.11E+00	pCi/L		RICHRC5017
CO-60	-1.00E+00	U	4.7E+00	4.7E+00	8.77E+00	pCi/L		RICHRC5017
CS-137	-1.38E+00	U	4.3E+00	4.3E+00	7.53E+00	pCi/L		RICHRC5017
EU-152	-9.23E-01	U	1.3E+01	1.3E+01	2.26E+01	pCi/L		RICHRC5017
EU-154	4.80E+00	U	1.4E+01	1.4E+01	2.89E+01	pCi/L		RICHRC5017
EU-155	-4.08E+00	U	8.0E+00	8.0E+00	1.37E+01	pCi/L		RICHRC5017

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W03091 / 10071
LAB SAMPLE ID: D948311B MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
STRONTIUM	5.89E-02	U	3.8E-01	3.8E-01	8.87E-01	pCi/L	75.40%	RICHRC5006

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03091 / 10071
LAB SAMPLE ID: D946V12S MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
C-14	4.16E+01	J	2.2E+00	7.4E+00	7.93E+00	pCi/L	100.00%	4.53E+01	91.63%

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03091 / 10071
LAB SAMPLE ID: D947512S MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
NI-63	2.33E+02		5.4E+00	1.8E+01	5.61E+00	pCi/L	92.63%	3.16E+02	73.81%

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03091 / 10071
LAB SAMPLE ID: D947514S MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
NI-63	2.40E+02		5.2E+00	1.9E+01	5.02E+00	pCi/L	97.89%	3.17E+02	75.88%

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03091 / 10071
LAB SAMPLE ID: D947515S MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
NI-63	2.92E+02		4.6E+00	2.2E+01	3.15E+00	pCi/L	97.59%	3.16E+02	92.28%

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03091 / 10071
LAB SAMPLE ID: D947516S MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
NI-63	3.06E+02		4.8E+00	2.3E+01	3.24E+00	pCi/L	95.10%	3.17E+02	96.70%

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03091 / 10071
LAB SAMPLE ID: D947A12S MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
TC-99	4.81E+02		1.0E+01	4.6E+01	1.28E+01	pCi/L	100.00%	5.41E+02	88.90%

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03091 / 10071
LAB SAMPLE ID: D947R12S MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
AM-241	2.09E+01		2.0E+00	4.2E+00	1.31E-01	pCi/L	86.65%	2.28E+01	91.42%

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03091 / 10071
LAB SAMPLE ID: D947F12S MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
PU239/40	4.39E+00		8.9E-01	1.2E+00	1.82E-01	pCi/L	70.54%	4.63E+00	94.91%

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03091 / 10071
LAB SAMPLE ID: D948112S MATRIX: Water

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
CO-60	7.50E+01		1.7E+01	1.7E+01	9.31E+00	pCi/L		7.69E+01	97.50%
CS-137	4.27E+01		1.3E+01	1.3E+01	9.74E+00	pCi/L		5.01E+01	85.19%
EU-152	1.40E+02		3.2E+01	3.2E+01	2.15E+01	pCi/L		1.54E+02	91.42%

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03091 / 10071
LAB SAMPLE ID: D948312S MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
STRONTIUM	1.10E+01		1.0E+00	3.3E+00	7.54E-01	pCi/L	87.00%	1.36E+01	80.65%

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03091 / 10071
LAB SAMPLE ID: D948313S MATRIX: WATER

ANALYTE	RESULT	COUNTING Q ERROR (2s)	TOTAL ERROR (2s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
STRONTIUM	1.18E+01	1.0E+00	3.5E+00	7.14E-01	pCi/L	92.30%	1.36E+01	86.75%

Number of Results:

MATRIX SPIKE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03091 / 10071
LAB SAMPLE ID: D8WWQ19W MATRIX: WATER

ANALYTE	SPIKE RESULT*	COUNTING Q ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
NI-63	9.64E+03	1.5E+02	7.3E+02	1.05E+02	pCi/L	4.07E+01	1.04E+04	92.95%

Number of Results:

*Spike Result Corrected For Sample Result

Result = IDL When Not Detecte

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

MATRIX SPIKE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03091 / 10071
LAB SAMPLE ID: D8WWQ1CW MATRIX: WATER

ANALYTE	SPIKE RESULT*	COUNTING Q	ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
TC-99	3.54E+03		3.0E+01	2.7E+02	1.28E+01	pCi/L	-1.31E+0	3.62E+03	97.75%

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.

Data Review Checklist
RADIOCHEMISTRY

Priority

Lot Number: <u>JOB230239</u>				
Client ID: <u>BHI</u>				
Due Date: <u>3-18-00</u>				
QC Batch Number: <u>0060166</u>			SDG Number: <u>W03091</u>	
Method Test Parameter: <u>Am241 (SK)</u>				
Matrix: <u>Water</u>				
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
A. Calibration				
1. Is the calibration documentation included where applicable?			✓	✓
B. Sample Analysis				↓
1. Are the sample yields within acceptance criteria?	✓			
2. Were all sample holding times met?	✓			
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			
C. QC Samples				
1. Is the blank yield within acceptance criteria?	✓			
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			
3. Does the blank result meet the Contract criteria?	✓			
4. Is the blank result < the Contract Detection Limit?	✓			
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓	
6. Is the LCS result within acceptance criteria?	✓			
7. Is the LCS yield within acceptance criteria?	✓			
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓			
9. Do the MS/MSD results and yields meet acceptance criteria?			✓	
10. Do the duplicate sample results and yields meet acceptance criteria?	✓			
D. Other				
1. Are all Nonconformances included and noted?			✓	
2. Are all required forms filled out?	✓			
3. Was the correct methodology used?	✓			
4. Was transcription checked?	✓			
5. Were all calculations checked at a minimum frequency?	✓			
6. Were units checked?	✓			✓

Comments on any "No" response: _____

First Level Review: *Pam Krutiger*
 Second Level Review: *Jacqui Waddell*

Date: *3-9-00*
 Date: *3/10/00*

Data Review Checklist
RADIOCHEMISTRY

Priority

Lot Number: <u>JOB 230239</u>				
Client ID: <u>BAI</u>				
Due Date: <u>3-15-00</u>				
QC Batch Number: <u>0060165</u>			SDG Number: <u>W03091</u>	
Method Test Parameter: <u>Plutonium</u>				
Matrix: <u>Water</u>				
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
A. Calibration				
1. Is the calibration documentation included where applicable?			✓	✓
B. Sample Analysis				↓
1. Are the sample yields within acceptance criteria?	✓			
2. Were all sample holding times met?	✓			
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			
C. QC Samples				
1. Is the blank yield within acceptance criteria?	✓			
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			
3. Does the blank result meet the Contract criteria?	✓			
4. Is the blank result < the Contract Detection Limit?	✓			
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓	
6. Is the LCS result within acceptance criteria?	✓			
7. Is the LCS yield within acceptance criteria?	✓			
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓			
9. Do the MS/MSD results and yields meet acceptance criteria?			✓	
10. Do the duplicate sample results and yields meet acceptance criteria?	✓			
D. Other				
1. Are all Nonconformances included and noted?			✓	
2. Are all required forms filled out?	✓			
3. Was the correct methodology used?	✓			
4. Was transcription checked?	✓			
5. Were all calculations checked at a minimum frequency?	✓			
6. Were units checked?	✓			

Comments on any "No" response: _____

First Level Review: Pam Keritz
 Second Level Review: Jackie Wadwell

Date: 3-7-00
 Date: 3/9/00

Data Review Checklist
RADIOCHEMISTRY

Priority

Lot Number: <u>JOB230239</u>					
Client ID: <u>BHI</u>					
Due Date: <u>3-15-00</u>					
QC Batch Number: <u>0060167</u>			SDG Number: <u>3091</u>		
Method Test Parameter: <u>gamma</u>					
Matrix: <u>water</u>					
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)	
A. Calibration					
1. Is the calibration documentation included where applicable?			✓	✓	
B. Sample Analysis					
1. Are the sample yields within acceptance criteria?			✓	↓	
2. Were all sample holding times met?	✓				
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓				
C. QC Samples					
1. Is the blank yield within acceptance criteria?			✓		
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓				
3. Does the blank result meet the Contract criteria?	✓				
4. Is the blank result < the Contract Detection Limit?	✓				
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓		
6. Is the LCS result within acceptance criteria?	✓				
7. Is the LCS yield within acceptance criteria?			✓		
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓				
9. Do the MS/MSD results and yields meet acceptance criteria?			✓		
10. Do the duplicate sample results and yields meet acceptance criteria?	✓				
D. Other					
1. Are all Nonconformances included and noted?			✓		
2. Are all required forms filled out?	✓				
3. Was the correct methodology used?	✓				
4. Was transcription checked?	✓				
5. Were all calculations checked at a minimum frequency?	✓				
6. Were units checked?	✓				

Comments on any "No" response: _____

First Level Review: Pam Kunitz

Date: 3-2-00

Second Level Review: Judie Waddell

Date: 3/7/00

Data Review Checklist
RADIOCHEMISTRY

Priority

Lot Number: <u>20B230239</u>				
Client ID: <u>BHZ</u>				
Due Date: <u>3-15-00</u>				
QC Batch Number: <u>0060169</u>			SDG Number: <u>W03091</u>	
Method Test Parameter: <u>TOTAL SR</u>				
Matrix: <u>Water</u>				
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
A. Calibration				
1. Is the calibration documentation included where applicable?			✓	✓
B. Sample Analysis				
1. Are the sample yields within acceptance criteria?	✓			
2. Were all sample holding times met?	✓			
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			
C. QC Samples				
1. Is the blank yield within acceptance criteria?	✓			
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			
3. Does the blank result meet the Contract criteria?	✓			
4. Is the blank result < the Contract Detection Limit?	✓			
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓	
6. Is the LCS result within acceptance criteria?	✓			
7. Is the LCS yield within acceptance criteria?	✓			
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓			
9. Do the MS/MSD results and yields meet acceptance criteria?			✓	
10. Do the duplicate sample results and yields meet acceptance criteria?			✓	
D. Other				
1. Are all Nonconformances included and noted?	✓			
2. Are all required forms filled out?	✓			
3. Was the correct methodology used?	✓			
4. Was transcription checked?	✓			
5. Were all calculations checked at a minimum frequency?	✓			
6. Were units checked?	✓			

Comments on any "No" response: insuf for dup - YCRDL RCM.

First Level Review: Pam Kanitz

Second Level Review: Jackie Waddell

Date: 3-7-00

Date: 3/9/00

Data Review Checklist
RADIOCHEMISTRY

Priority

Lot Number: 30B230239				
Client ID: BNI				
Due Date: 3-15-00				
QC Batch Number: 006059			SDG Number: W03091	
Method Test Parameter: C-14				
Matrix: Water				
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
A. Calibration				
1. Is the calibration documentation included where applicable?			✓	✓
B. Sample Analysis				
1. Are the sample yields within acceptance criteria?			✓	↓
2. Were all sample holding times met?	✓			
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			
C. QC Samples				
1. Is the blank yield within acceptance criteria?			✓	
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			
3. Does the blank result meet the Contract criteria?	✓			
4. Is the blank result < the Contract Detection Limit?	✓			
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓	
6. Is the LCS result within acceptance criteria?	✓			
7. Is the LCS yield within acceptance criteria?			✓	
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓			
9. Do the MS/MSD results and yields meet acceptance criteria?			✓	
10. Do the duplicate sample results and yields meet acceptance criteria?	✓			
D. Other				
1. Are all Nonconformances included and noted?			✓	
2. Are all required forms filled out?	✓			
3. Was the correct methodology used?	✓			
4. Was transcription checked?	✓			
5. Were all calculations checked at a minimum frequency?	✓			
6. Were units checked?	✓			

Comments on any "No" response: _____

First Level Review: Pam Keritz
 Second Level Review: Jackie Waddell

Date: 3-4-00
 Date: 3/7/00

0035

Data Review Checklist
RADIOCHEMISTRY

Lot Number: <u>70B230 239</u>				
Client ID: <u>BHI</u>				
Due Date: <u>3-15-00</u>				
QC Batch Number: <u>0060162</u>		SDG Number: <u>3091</u>		
Method Test Parameter: <u>Nickel G3</u>				
Matrix: <u>Water</u>				
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
A. Calibration				
1. Is the calibration documentation included where applicable?			✓	✓
B. Sample Analysis				
1. Are the sample yields within acceptance criteria?	✓			↓
2. Were all sample holding times met?	✓			
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			
C. QC Samples				
1. Is the blank yield within acceptance criteria?	✓			
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			
3. Does the blank result meet the Contract criteria?	✓			
4. Is the blank result < the Contract Detection Limit?	✓			
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓	
6. Is the LCS result within acceptance criteria?	✓			
7. Is the LCS yield within acceptance criteria?	✓			
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓			
9. Do the MS/MSD results and yields meet acceptance criteria?	✓			
10. Do the duplicate sample results and yields meet acceptance criteria?		✓		
D. Other				
1. Are all Nonconformances included and noted? # <u>1374</u>	✓			↓
2. Are all required forms filled out?	✓			
3. Was the correct methodology used?	✓			
4. Was transcription checked?	✓			
5. Were all calculations checked at a minimum frequency?	✓			
6. Were units checked?	✓			

Comments on any "No" response: _____

First Level Review: _____
 Second Level Review: Jessie Waddell

Date: _____
 Date: 3/20/00



Nonconformance Memo

NCM #: J01374	Classification: Anomaly
NCM Initiated By: Jackie Waddell	Status: CLOSED
Date Opened: 03/19/00	Production Area: Environmental - Sep
Date Closed: 03/20/00	Tests: Ni-63 by LSC
	Lot #'s (Sample #'s): J0B230239 (1)
	QC Batch: 0060162
Nonconformance: Dups not within acceptance limits	
Subcategory: Other (explanation required)	

Problem Description / Root Cause

Name	Date	Description
Jackie Waddell	03/19/00	Root cause unknown.

Corrective Action

Name	Date	Corrective Action
Jackie Waddell	03/19/00	Insufficient volume for reanalysis. Report results with client approval [J.Kessner 3/17/00].

Quality Assurance Verification

Verified By	Due Date	Status	Notes:
Jodie Carnes	N/A	Verified/completed	

Client Notification Summary

Client	Project Manager	Date Notified	Response Date	How Notified
BECHTEL HANFORD, INC.	Jackie Waddell	03/20/00	03/20/00	by narrative
	<u>Response</u>	<u>Response Details</u>		
	No response saved			

Approval History

Name	Date Approved:	Position
Jackie Waddell	03/19/00	Project Manager
Dale OConnell	03/20/00	Group Leader
Jodie Carnes	03/20/00	Quality Assurance

Data Review Checklist
RADIOCHEMISTRY

Priority

Lot Number: <u>JOB230239</u>				
Client ID: <u>BHL</u>				
Due Date: <u>3-15-00</u>				
QC Batch Number: <u>0060163</u>			SDG Number: <u>W03091</u>	
Method Test Parameter: <u>TC-99</u>				
Matrix: <u>Water</u>				
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
A. Calibration			✓	✓
1. Is the calibration documentation included where applicable?				
B. Sample Analysis				↓
1. Are the sample yields within acceptance criteria?	✓			
2. Were all sample holding times met?	✓			
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			
C. QC Samples				
1. Is the blank yield within acceptance criteria?	✓			
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			
3. Does the blank result meet the Contract criteria?	✓			
4. Is the blank result < the Contract Detection Limit?	✓			
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓	
6. Is the LCS result within acceptance criteria?	✓			
7. Is the LCS yield within acceptance criteria?	✓			
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓			
9. Do the MS/MSD results and yields meet acceptance criteria?			✓	
10. Do the duplicate sample results and yields meet acceptance criteria?	✓			
D. Other			✓	
1. Are all Nonconformances included and noted?				
2. Are all required forms filled out?	✓			
3. Was the correct methodology used?	✓			
4. Was transcription checked?	✓			
5. Were all calculations checked at a minimum frequency?	✓			
6. Were units checked?	✓			✓

Comments on any "No" response: _____

First Level Review: Mita O. Alvarez Date: 3/13/00
 Second Level Review: Jacqui Wardell Date: 3/13/00

CHAIN OF CUSTODY

W-2'1023

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B00-014-07	Page 1 of 1
Collector Falberg/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 <input type="checkbox"/>		
Ice Chest No. ERC96 059	Field Logbook No. EL 1424	COA R105F22870	Method of Shipment Quanterra				
Shipped To Quanterra Incorporated	Offsite Property No. NA		Bill of Lading/Air Bill No. NA				

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				

SDA Due 3-15
W03091 JOB230239

Activity Scan	ICP Metals - 6010A (Supertrace) (Lead); Mercury - 7470 - (CV)	Technetium-99 <input checked="" type="checkbox"/>	See item (1) in Special Instructions.						
---------------	---	---	---------------------------------------	--	--	--	--	--	--

Sample No.	Matrix *	Sample Date	Sample Time	Activity Scan	ICP Metals - 6010A (Supertrace) (Lead); Mercury - 7470 - (CV)	Technetium-99	See item (1) in Special Instructions.						
BOXKL4 DBWWQ	Water	2-22-00	1320	X	X	X	X						

CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix * S=Soil SL=Sediment SO=Solid S=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other
Relinquished By R. Free	Date/Time 2-22-00	Received By R.A. Thoren	Date/Time 2-22-00/1510	(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-radiologically controlled source				
Relinquished By R. Thoren	Date/Time 2-23-00/1330	Received By K. Schusterberg	Date/Time 2-23-00					
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

0040

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received: 2-23-00 1330 SG#: W03091
Work Order Number: JOB230239 SAF #: B00-014 / B00-013
Shipping Container ID: ERC96-059 Chain of Custody #: B00-014-07

- 1. Custody Seals on shipping container intact? Yes No
- 2. Custody Seals dated and signed? Yes No
- 3. Chain-of-Custody record present? Yes No
- 4. Cooler temperature NO ICE
- 5. Vermiculite/packing materials is Wet Dry
- 6. Number of samples in shipping container: 34
- 7. Sample holding times exceeded? Yes No

8. Samples have:

<input checked="" type="checkbox"/> tape	<input type="checkbox"/> hazard labels
<input checked="" type="checkbox"/> custody seals	<input type="checkbox"/> appropriate sample labels

9. Samples are:

<input checked="" type="checkbox"/> in good condition	<input type="checkbox"/> leaking
<input type="checkbox"/> broken	<input type="checkbox"/> have air bubbles

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

Sample Custodian/Laboratory: K. Hattaway Date: 2-23-00

Telephoned To: _____ On _____ By _____

Client Sample Screening Results

24-Feb-00

M. J. 2-24-00

CLIENT CODE	ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B		
BHI	BOXKL4D8WWQ	LIQUID	2/23/2000 3:20:00 PM	QUAD21B	2/24/2000 11:57:12 AM	BOXKL4D8WWQ	30	6	0.105	36	0.26833333		
	D8WWQ			Bkg:	2/24/2000 1:47:41 AM	BKG	600	57	0.095	559	0.93166667		
Anl Date:	2/24/00	Tot Sa, Alq:	2.00E+00	1.00E+01	Alp:	(Dpm/ 3.19E-01	(uCi/ 2.87E-05	(pCi/ 1.44E+01	+ 2.1E+01	CAT	1.7E+00	Lab	
Ppt mg:	0	Units:	L	ml	Bet:	Alq): 4.54E-01	Sa): 4.09E-05	Ljg): 2.04E+01	+ 1.8E+01	I	2.4E+00	Alq	
												Ljg	
BHI	BOXMY0D8WW2	SOLID	2/23/2000 3:20:00 PM	QUAD21B	2/24/2000 2:10:43 PM	BOXMY0D8WW2	30	12	0.305	199	5.70166667		
	D8WW2			Bkg:	2/24/2000 1:47:41 AM	BKG	600	57	0.095	559	0.93166667		
Anl Date:	2/24/00	Tot Sa, Alq:	1.37E+02	5.99E+01	Alp:	(Dpm/ 1.34E+00	(uCi/ 1.38E-03	(pCi/ 1.01E+01	+ 7.1E+00	CAT	5.0E+00	Lab	
Ppt mg:	59.9	Units:	g	mg	Bet:	Alq): 1.20E+01	Sa): 1.23E-02	Ljg): 9.03E+01	+ 7.5E+00	I	1.1E+00	Alq	
												Ljg	
BHI	BOXMY1D8WW3	SOLID	2/23/2000 3:20:00 PM	QUAD21C	2/24/2000 2:10:43 PM	BOXMY1D8WW3	30	18	0.46666667	616	19.54833333		
	D8WW3			Bkg:	2/24/2000 1:47:41 AM	BKG	600	80	0.13333333	591	0.985		
Anl Date:	2/24/00	Tot Sa, Alq:	1.21E+02	1.06E+02	Alp:	(Dpm/ 1.80E+00	(uCi/ 9.31E-04	(pCi/ 7.67E+00	+ 5.3E+00	CAT	6.5E+00	Lab	
Ppt mg:	105.8	Units:	g	mg	Bet:	Alq): 4.38E+01	Sa): 2.26E-02	Ljg): 1.87E+02	+ 7.9E+00	I	5.4E-01	Alq	
												Ljg	
BHI	BOXMY2D8WW4	SOLID	2/23/2000 3:20:00 PM	QUAD21D	2/24/2000 2:10:43 PM	BOXMY2D8WW4	30	15	0.36833333	105	2.52166667		
	D8WW4			Bkg:	2/24/2000 1:47:41 AM	BKG	600	79	0.13166667	587	0.97833333		
Anl Date:	2/24/00	Tot Sa, Alq:	1.32E+02	1.02E+02	Alp:	(Dpm/ 2.43E+00	(uCi/ 1.42E-03	(pCi/ 1.07E+01	+ 5.7E+00	CAT	4.7E+00	Lab	
Ppt mg:	102.2	Units:	g	mg	Bet:	Alq): 5.48E+00	Sa): 3.20E-03	Ljg): 2.42E+01	+ 3.4E+00	I	4.1E+00	Alq	
												Ljg	
BHI	BOXMY3D8WW5	SOLID	2/23/2000 3:20:00 PM	QUAD22A	2/24/2000 2:10:47 PM	BOXMY3D8WW5	30	12	0.29166667	172	4.585		
	D8WW5			Bkg:	2/24/2000 1:47:46 AM	BKG	600	65	0.10833333	689	1.14833333		
Anl Date:	2/24/00	Tot Sa, Alq:	1.35E+02	6.67E+01	Alp:	(Dpm/ 1.39E+00	(uCi/ 1.27E-03	(pCi/ 9.40E+00	+ 6.9E+00	CAT	5.3E+00	Lab	
Ppt mg:	66.7	Units:	g	mg	Bet:	Alq): 9.38E+00	Sa): 8.57E-03	Ljg): 6.34E+01	+ 6.2E+00	I	1.6E+00	Alq	
												Ljg	
BHI	BOXMY4D8WW6	SOLID	2/23/2000 3:20:00 PM	QUAD22B	2/24/2000 2:10:47 PM	BOXMY4D8WW6	30	11	0.21666667	84	1.28333333		
	D8WW6			Bkg:	2/24/2000 1:47:46 AM	BKG	600	90	0.15	910	1.51666667		
Anl Date:	2/24/00	Tot Sa, Alq:	1.38E+02	7.29E+01	Alp:	(Dpm/ 1.20E+00	(uCi/ 1.02E-03	(pCi/ 7.40E+00	+ 7.3E+00	CAT	6.8E+00	Lab	
Ppt mg:	72.9	Units:	g	mg	Bet:	Alq): 2.58E+00	Sa): 2.20E-03	Ljg): 1.59E+01	+ 4.1E+00	I	6.3E+00	Alq	
												Ljg	

0042

24-Feb-00

RQC053

Parent Batch:
Associated Batches:
:
:
:
:

Quanterra Incorporated
Information Sheet Rad Prep

PRIORITY

2 day

Run Date: 2/29/00
Time: 9:10:46

Page: 1

*
* QC BATCH: 0060166 *
*

W03091

SX: Americium-241 by Alpha Spec
8I: Am PrpRC5016, SepRC5072(5003)
SI: CLIENT: HANFORD

Analytical Due Date: 3/15/00

Project Manager: JW2

Lot# Work Order	Client	Analyt Due Matrix	Client Name Aliquot Geometry	Count	Time	Mid/Ave Date/Time	Tracer ID Spike ID	CRDL	Units	Screen Info - (Ci) Alpha Beta	PM Bin
JOB230239-001 X D8WWQ-1-0F WATER Comments: WATER		3/15/00	Bechtel Hanford, .0000	.000		2/22/00 13:20			pCi/L	1.44E-14 2.04E-14 27-02/00	JW2
JOB230239-001 D8WWQ-1-06 WATER Comments: WATER		3/15/00	Bechtel Hanford, .0000	.000		2/22/00 13:20			pCi/L	1.44E-14 2.04E-14 27-02/00	JW2
JOB290000-166 B D947R-1-01 WATER Comments:		3/15/00	Bechtel Hanford,			2/22/00 13:20		1	pCi/L	**NA **NA	JW2
JOB290000-166 C D947R-1-02 WATER Comments:		3/15/00	Bechtel Hanford,			2/22/00 13:20		1	pCi/L	**NA **NA	JW2

Total Number of Samples In Batch: 00004

Batch Information: Dry Wt: Decay Correct: Y Blank Sub: None Call In:
 Uncert: Both Sigma: 1.960 ODR: Target List + Other Detected
 BLANK CRDL Tracer Yield Type QC Control Limits
 Americium 241 1 Americium 243 (020-105) RPD

** NYS = Not Yet Screened
 ** NA = Not Applicable
 ** Other = Other than Gross Alpha or Gross Beta
 ++ Indicates that Batch Information has changed for this sample. Print worksheet for details.

0043

COC Signature Page
 W03091

Lot or Batch #:	Initials/Date	Procedure #
Released By	PK 2-29-00	Richr0009
Received	EPS 2/29/00	RICHRC5016.1+5072.1
Released By	EPS 3/4/00.	n/a
Received	for 03-04-00	RICH 5072.1
Released By	for 03- -00	n/a
Received	SID 3/6/00	RES003-2
Released By	SID 3/2/00	n/a
Received	CS 3/1/00	RICHK0001RK1
Released By	CS 3/1/00	n/a
Received	DM 3-2-00	Pradek 12.7.1
Released By	DM 3-7-00	n/a
Received	PK 3-2-00	RICHRC0002
Released By	PK 3-9-00	n/a
Received		

RQC053

Parent Batch:
Associated Batches:

Quanterra Incorporated
Information Sheet Rad Prep

PRIORITY
2/day

Run Date: 2/29/00
Time: 9:08:31
Page: 1

* QC BATCH: 0060165 *

W030911

SO: Plutonium-238,239/40 by Alpha Spec
6D: Pu PrpRC5016, SepRC5010(5039)
5I: CLIENT: HANFORD

Analytical Due Date: 3/15/00
Project Manager: JW2

Lot# Work Order	Analyt Due Client Matrix	Client Name Aliquot Geometry	Count	Time	Mid/Ave Date/Time	Tracer ID Spike ID	CRDL	Units	Screen Info - (Ci) Alpha Beta	PM Bin
JOB230239-001 X D8WWQ-1-0E WATER Comments: WATER	3/15/00	Bechtel Hanford, .0000	.000	2/22/00 13:20				pCi/L	1.44E-14 2.04E-14 27-02/00	JW2
JOB230239-001 D8WWQ-1-04 WATER Comments: WATER	3/15/00	Bechtel Hanford, .0000	.000	2/22/00 13:20				pCi/L	1.44E-14 2.04E-14 27-02/00	JW2
JOB290000-165 B D947F-1-01 WATER Comments:	3/15/00	Bechtel Hanford,		2/22/00 13:20		1		pCi/L	**NA **NA	JW2
JOB290000-165 C D947F-1-02 WATER Comments:	3/15/00	Bechtel Hanford,		2/22/00 13:20		1		pCi/L	**NA **NA	JW2

Total Number of Samples In Batch: 00004

Batch Information:

Dry Wt: Decay Correct: Y Blank Sub: None Call In:
Uncert: Both Sigma: 1.960 ODR: Target List + Other Detected

BLANK CRDL	Tracer Yield	Type	QC Control Limits
Plutonium 238 1	Plutonium 242 (020-105)	RPD	
Plutonium 239/4 1		RPD	

** NYS = Not Yet Screened
** NA = Not Applicable
** Other = Other than Gross Alpha or Gross Beta
** Indicates that Batch Information has changed for this sample. Print worksheet for details.

0045

COC Signature Page

W03091

Lot or Batch #: 0060165	Initials/Date	Procedure #
Released By	<u>Rich 2-29-00</u>	<u>Rich 10009</u>
Received	<u>EPS 2/29/00</u>	<u>RICHRC5016.1</u>
Released By	<u>EPS 3/2/00</u>	<u>n/a</u>
Received	<u>Rich 03-02-00</u>	<u>RICH 5010</u>
Released By	<u>Rich 03-03-00</u>	<u>n/a</u>
Received	<u>SD 03/03/00</u>	<u>RC5039.2</u>
Released By	<u>SD 3/6/00</u>	<u>n/a</u>
Received	<u>CD 3/6/00</u>	<u>RC1172000874</u>
Released By	<u>G 3/7/00</u>	<u>n/a</u>
Received	<u>Jm 3-7-00</u>	<u>RADcalc v2.07.1</u>
Released By	<u>Jm 3-7-00</u>	<u>n/a</u>
Received	<u>PK 3-7-00</u>	<u>RICHRC0002</u>
Released By	<u>PK 3-8-00</u>	<u>n/a</u>
Received		

RQC053

Parent Batch:
Associated Batches:

Quanterra Incorporated
Information Sheet Rad Prep

PRIORITY
Today

Run Date: 2/29/00
Time: 9:11:42

Page: 1

* QC BATCH: 0060167 *

PRIORITY SEQUENTIAL

W03091
TA: Gamma by HPGE
AW: Gamma PrpRC5017
SI: CLIENT: HANFORD

Analytical Due Date: 3/15/00
Project Manager: JW2

Lot# Work Order	Analyt Due Client Matrix	Client Name Aliquot Geometry	Count	Time	Mid/Ave Date/Time	Tracer ID Spike ID	CRDL	Units	Screen Info - (Ci) Alpha Beta	PM Bin
JOB230239-001 X D8WWQ-1-0G WATER Comments: WATER	3/15/00	Bechtel Hanford, .0000	.000	2/22/00 13:20		--	pCi/L	1.44E-14 2.04E-14 27-02/00	JW2	
JOB230239-001 D8WWQ-1-01 WATER Comments: WATER	3/15/00	Bechtel Hanford, .0000	.000	2/22/00 13:20		--	pCi/L	1.44E-14 2.04E-14 27-02/00	JW2	
JOB290000-167 B D9481-1-01 WATER Comments:	3/15/00	Bechtel Hanford,		2/22/00 13:20		--	pCi/L	**NA **NA	JW2	
JOB290000-167 C D9481-1-02 WATER Comments:	3/15/00	Bechtel Hanford,		2/22/00 13:20		6	pCi/L	**NA **NA	JW2	

Total Number of Samples In Batch: 00004

Batch Information:	Dry Wt:	Decay Correct: Y	Blank Sub: None	Call In:
	Uncert: Both	Sigma: 1.960	ODR: Target List + Other Detected	
		<u>Tracer Yield</u>	<u>Type</u>	<u>QC Control Limits</u>
BLANK CRDL	--		RPD	
Cobalt 58	25		RPD	
Cobalt 60	15		RPD	
Cesium 137	50		RPD	
Europium 152	50		RPD	
Europium 154	50		RPD	
Europium 155	--		RPD	
Iron 59	--		RPD	

** NYS = Not Yet Screened
** NA = Not Applicable
** Other = Other than Gross Alpha or Gross Beta
** Indicates that Batch Information has changed for this sample. Print worksheet for details.

0047

COC Signature Page

W03091

Lot or Batch #:	Initials/Date	Procedure #
Released By	<u>BRB 2-29-00</u>	<u>Richrc0009</u>
Received	<u>EPS 2/29/00</u>	<u>RICHRC5016.1+5017.1</u>
Released By	<u>EPS 3/1/00</u>	<u>n/a</u>
Received	<u>M 3/1/00</u>	<u>RICHRC0007</u>
Released By	<u>M 3/2/00</u>	<u>RT 3/2/00</u> n/a
Received	<u>PK 3-2-00</u>	<u>RICHRC0002</u>
Released By	<u>PK 3-3-00</u>	<u>n/a</u>
Received		
Released By		<u>n/a</u>
Received		
Released By		<u>n/a</u>
Received		
Released By		<u>n/a</u>
Received		

RQC053

Parent Batch:
Associated Batches:
:
:
:

Quanterra Incorporated
Information Sheet Rad Prep

PRIORITY

Run Date: 2/29/00
Time: 9:12:22
Page: 1

* QC BATCH: 0060169 *
* * * * *

Iday

W03091
TH: Total Strontium by GPC
CG: Sr-Total Prp/SepRCS006
SI: CLIENT: HANFORD

Analytical Due Date: 3/15/00
Project Manager: JW2

Lot# Work Order	Client	Analyt Due Matrix	Client Name Aliquot	Name Geometry	Count	Time	Mid/Ave Date/Time	Tracer ID Spike ID	CRDL	Units	Screen Info - (Ci) Alpha Beta	PM Bin
JOB230239-001 D8WWQ-1-02 Comments: WATER		3/15/00	Bechtel Hanford, .0000				.000 2/22/00 13:20			pCi/L	1.44E-14 2.04E-14 27-02/00	JW2
JOB290000-169 B D9483-1-01 Comments:		3/15/00	Bechtel Hanford,				2/22/00 13:20		2	pCi/L	**NA **NA	JW2
JOB290000-169 C D9483-1-02 Comments:		3/15/00	Bechtel Hanford,				2/22/00 13:20		2	pCi/L	**NA **NA	JW2
JOB290000-169 C D9483-1-03 Comments:		3/15/00	Bechtel Hanford,				2/22/00 13:20		2	pCi/L	**NA **NA	JW2

Total Number of Samples In Batch: 00004

Batch Information: Dry Wt: N Decay Correct: Y Blank Sub: None Call In:

 Uncert: Both Sigma: 1.960 ODR: Target List + Other Detected

BLANK CRDL Tracer Yield Type QC Control Limits

 Strontium 90 2 Strontium Trace (020-105) RPD

** NYS = Not Yet Screened
 ** NA = Not Applicable
 ** Other = Other than Gross Alpha or Gross Beta
 ++ Indicates that Batch Information has changed for this sample. Print worksheet for details.

0043

COC Signature Page

W03091

Lot or Batch #: W030109

Initials/Date

Procedure #

Released By	AM 2-29-00	Richard CCCC9
Received	EPS 2/29/00	Richard 5016.1
Released By	EPS 3/2/00	n/a
Received	PK 3-2-00	Richard 5016
Released By	AM 3-6-00	n/a
Received	CO 3/6/00	Richard 5016
Released By	CS 3/7/00	n/a
Received	JM 3-7-00	Richard 5016.1
Released By	JM 3-7-00	n/a
Received	PK 3-7-00	Richard 5016
Released By	PK 3-8-00	n/a
Received		
Released By		n/a
Received		

RQC053

Parent Batch:
Associated Batches:
:
:
:
:

PRIORITY

2day

Quanterra Incorporated
Information Sheet Rad Prep

* QC BATCH: 0060159 *
*

W03091

S3: Carbon-14 by Liquid Scint
5S: C-14 Prp/SepRC5022
5I: CLIENT: HANFORD

PRIORITY

2day

Run Date: 2/29/00
Time: 9:05:38
Page: 1

Analytical Due Date: 3/15/00
Project Manager: JW2

Lot# Work Order	Analyt Due Client Matrix	Client Name Aliquot Geometry	Count	Time	Mid/Ave Date/Time	Tracer ID Spike ID	CRDL	Units	Screen Info - (Ci) Alpha Beta	PM Bin
JOB230239-001 D8WWQ-1-03 WATER Comments: WATER	3/15/00	Bechtel Hanford, .0000	.000	2/22/00 13:20		200	pCi/L	1.44E-14 2.04E-14 27-02/00	JW2	
JOB230239-001 X D8WWQ-1-08 WATER Comments: WATER	3/15/00	Bechtel Hanford, .0000	.000	2/22/00 13:20		200	pCi/L	1.44E-14 2.04E-14 27-02/00	JW2	
JOB290000-159 B D946V-1-01 WATER Comments:	3/15/00	Bechtel Hanford,		2/22/00 13:20		200	pCi/L	**NA **NA	JW2	
JOB290000-159 C D946V-1-02 WATER Comments:	3/15/00	Bechtel Hanford,		2/22/00 13:20		200	pCi/L	**NA **NA	JW2	
JOB290000-159 B D946V-1-03 WATER Comments:	3/15/00	Bechtel Hanford,		2/22/00 13:20		200	pCi/L	**NA **NA	JW2	

Total Number of Samples In Batch: 00005

Batch Information:

Dry Wt: N

Decay Correct: Y

Blank Sub: None

Call In:

Uncert: Both

Sigma: 1.960

ODR: Target List + Other Detected

BLANK CRDL
Carbon 14

200

Tracer Yield

Type
RPD

QC Control Limits

** NYS = Not Yet Screened

** NA = Not Applicable

** Other = Other than Gross Alpha or Gross Beta

++ Indicates that Batch Information has changed for this sample. Print worksheet for details.

0051

COC Signature Page

W03091

Lot or Batch #: 0060159	Initials/Date	Procedure #
Released By	AA 2-29-00	Richrc0009
Received	EPS 2/29/00	RICHRC5016.1
Released By	EPS 2/29/00	n/a
Received	DM 2-29-00	RICHRC5022
Released By	DM 3-1-00	n/a
Received	A 3/1/00	RICHRC0001
Released By	CS 3/2/00	n/a
Received	DM 3-2-00	RADCAL V2.4
Released By	DM 3-3-00	n/a
Received	PK 3-3-00	RICHRC0002
Released By	PK 3-6-00	n/a
Received		
Released By		n/a
Received		

PRIORITY

RQC053

Parent Batch:
Associated Batches:
:
:
:
:

Quanterra Incorporated
Information Sheet Rad Prep

*
* QC BATCH: 0060162 *
*

21 day
TAT

Run Date: 3/06/00
Time: 9:35:35
Page: 1

S4: Nickel by ICP and Nickel-63 by Liquid Sc Analytical Due Date: 3/15/00
AA: Ni-63 PrpRCS016, SepRCS069
S1: CLIENT: HANFORD
Project Manager: JW2

Lot# Work Order	Client	Analyt Due Matrix	Client Name Aliquot Geometry	Count	Time	Mid/Ave Date/Time	Tracer ID Spike ID	CRDL	Units	Screen Info - (Ci) Alpha Beta	PM Bin
JOB230239-001 X D8WWQ-1-0A WATER Comments: WATER		3/15/00	Bechtel Hanford, .0000	.000		2/22/00 13:20			pCi/L	1.44E-14 2.04E-14 27-02/00	JW2
JOB230239-001 D8WWQ-1-05 WATER Comments: WATER		3/15/00	Bechtel Hanford, .0000	.000		2/22/00 13:20		15	pCi/L	1.44E-14 2.04E-14 27-02/00	JW2
JOB230239-001 S D8WWQ-1-09 WATER Comments: WATER		3/15/00	Bechtel Hanford, .0000	.000		2/22/00 13:20		15	pCi/L	1.44E-14 2.04E-14 27-02/00	JW2
JOB290000-162 B D9475-1-01 WATER Comments:		3/15/00	Bechtel Hanford,			2/22/00 13:20		15	pCi/L	**NA **NA	JW2
JOB290000-162 C D9475-1-02 WATER Comments:		3/15/00	Bechtel Hanford,			2/22/00 13:20		15	pCi/L	**NA **NA	JW2
JOB290000-162 B D9475-1-03 WATER Comments:		3/15/00	Bechtel Hanford,			2/22/00 13:20			pCi/L	**NA **NA	JW2
JOB290000-162 C D9475-1-04 WATER Comments:		3/15/00	Bechtel Hanford,			2/22/00 13:20		15	pCi/L	**NA **NA	JW2
JOB290000-162 C D9475-1-05 WATER Comments:		3/15/00	Bechtel Hanford,			2/22/00 13:20		15	pCi/L	**NA **NA	JW2
JOB290000-162 C D9475-1-06 WATER Comments:		3/15/00	Bechtel Hanford,			2/22/00 13:20		15	pCi/L	**NA **NA	JW2

0053

* QC BATCH: 0060162 *

Total Number of Samples In Batch: 00009

Batch Information:

Dry Wt: Decay Correct: Y Blank Sub: None Call In:
Uncert: Both Sigma: 1.960 ODR: Target List + Other Detected

BLANK CRDL
Nickel 63

15

Tracer Yield
Nickel

(020-105)

Type
RPD

QC Control Limits

** NYS = Not Yet Screened

** NA = Not Applicable

** Other = Other than Gross Alpha or Gross Beta

** Indicates that Batch Information has changed for this sample. Print worksheet for details.

0054

COC Signature Page

W03091

Lot or Batch #: 0060162 Initials/Date Procedure #

Released By	<u>KRA 2-29-00</u>	<u>RichRC0009</u>
Received	<u>EPS 2/29/00</u>	<u>RICHRC5016.1</u>
Released By	<u>EPS 3/2/00</u>	n/a
Received	<u>MH 3-2-00</u>	<u>Rich RC 5069</u>
Released By	<u>MH 3-8-00</u>	n/a
Received	<u>3/9/00</u>	<u>RICHRC0001</u>
Released By	<u>CS 3/13/00</u>	n/a
Received	<u>3m 3-13-00</u>	<u>Radial V2.7-1</u>
Released By	<u>3m 3-15-00</u>	n/a
Received	<u>JW 3/15/00</u>	<u>RICHRC0002/2</u>
Released By	<u>JW 3/15/00</u>	n/a
Received		
Released By		n/a
Received		

RQC053

Parent Batch:
Associated Batches:
:
:
:
:

Quanterra Incorporated
Information Sheet Rad Prep

PRIORITY
2 day

Run Date: 2/29/00
Time: 9:07:34
Page: 1

*
* QC BATCH: 0060163 *
*

W03091

S5: Technetium-99 by Liquid Scint
FP: Tc-99 Prp/SepRC5065
SI: CLIENT: HANFORD

Analytical Due Date: 3/15/00
Project Manager: JW2

Lot# Work Order	Analyt Due Client Matrix	Client Name Aliquot Geometry	Count	Ave Time	Mid/Ave Date/Time	Tracer ID Spike ID	CRDL	Units	Screen Info - (Ci) Alpha Beta	PM Bin
J0B230239-001 S D8WWQ-1-0C WATER Comments: WATER	3/15/00	Bechtel Hanford, .0000	.000	2/22/00	13:20			pCi/L	1.44E-14 2.04E-14 27-02/00	JW2
J0B230239-001 X D8WWQ-1-0D WATER Comments: WATER	3/15/00	Bechtel Hanford, .0000	.000	2/22/00	13:20		15	pCi/L	1.44E-14 2.04E-14 27-02/00	JW2
J0B230239-001 D8WWQ-1-07 WATER Comments: WATER	3/15/00	Bechtel Hanford, .0000	.000	2/22/00	13:20		15	pCi/L	1.44E-14 2.04E-14 27-02/00	JW2
J0B290000-163 B D947A-1-01 WATER Comments:	3/15/00	Bechtel Hanford,		2/22/00	13:20		15	pCi/L	**NA **NA	JW2
J0B290000-163 C D947A-1-02 WATER Comments:	3/15/00	Bechtel Hanford,		2/22/00	13:20		15	pCi/L	**NA **NA	JW2

Total Number of Samples In Batch: 00005

Batch Information: Dry Wt: Decay Correct: Y Blank Sub: None Call In:
 Uncert: Both Sigma: 1.960 ODR: Target List + Other Detected
 BLANK CRDL Tracer Yield Type QC Control Limits
 Technetium 99 15 RPD

** NYS = Not Yet Screened
 ** NA = Not Applicable
 ** Other = Other than Gross Alpha or Gross Beta
 ** Indicates that Batch Information has changed for this sample. Print worksheet for details.

0056

RQC053

Quanterra Incorporated
Information Sheet Rad Prep

Run Date: 3/06/00
Time: 15:19:12

Parent Batch:
Associated Batches:

*
* QC BATCH: 0060163 *
*

Page: 1

S5: Technetium-99 by Liquid Scint
FP: Tc-99 Prp/SepRC5065
SI: CLIENT: HANFORD

Analytical Due Date: 3/15/00

Project Manager: JW2

Lot# Work Order	Analyt Due Client Matrix	Client Name Aliquot Geometry	Count	Time	Mid/Ave Date/Time	Tracer ID Spike ID	CRDL	Units	Screen Info - (Ci) Alpha Beta	PM Bin
J0B230239-001 S D8WWQ-1-0C WATER Comments: WATER	3/15/00	Bechtel Hanford, .0000	.000	2/22/00 13:20				pCi/L	1.44E-14 2.04E-14 27-02/00	JW2
J0B230239-001 X D8WWQ-1-0D WATER Comments: WATER	3/15/00	Bechtel Hanford, .0000	.000	2/22/00 13:20		15		pCi/L	1.44E-14 2.04E-14 27-02/00	JW2
J0B230239-001 D8WWQ-1-07 WATER Comments: WATER	3/15/00	Bechtel Hanford, .0000	.000	2/22/00 13:20		15		pCi/L	1.44E-14 2.04E-14 27-02/00	JW2
J0B290000-163 B D947A-1-01 WATER Comments:	3/15/00	Bechtel Hanford,		2/22/00 13:20		15		pCi/L	**NA **NA	JW2
J0B290000-163 C D947A-1-02 WATER Comments:	3/15/00	Bechtel Hanford,		2/22/00 13:20		15		pCi/L	**NA **NA	JW2
J0B290000-163 B D947A-1-03 WATER Comments:	3/15/00	Bechtel Hanford,		2/22/00 13:20		15		pCi/L	**NA **NA	JW2

Total Number of Samples In Batch: 00006

Batch Information:

Dry Wt:

Decay Correct: Y

Blank Sub: None

Call In:

Uncert: Both

Sigma: 1.960

ODR: Target List + Other Detected

BLANK CRDL

Tracer Yield

Type
RPD

QC Control Limits

Technetium 99 15

** NYS = Not Yet Screened

** NA = Not Applicable

** Other = Other than Gross Alpha or Gross Beta

** Indicates that Batch Information has changed for this sample. Print worksheet for details.

0057

COC Signature Page

W03091

Lot or Batch #: W03091

Initials/Date

Procedure #

Released By	Received	Released By	Received	Released By	Received
	2.28.00 WA		Rich RC 5065		
	3.5.00 WA		n/a		
	3/6/00 ^{at} RICHARDSON				
	10/3/00		n/a		
	3M 3.9.00		Procal 10.7.1		
	3M 3.9.00		n/a		
	TM 3/10/00		RICHERSON/2		
	TM 3/13/00		n/a		
	Received				
	Released By				
	Received				
	Released By				
	Received				
	Released By				
	Received				
	Released By				
	Received				

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

314 298-8566 Telephone
314 298-8757 Fax

CASE NARRATIVE

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, Washington 99352

March 22, 2000

Attention: Joan Kessner

Quote Number	:	33833
SAF	:	B00-014
SDG	:	W03091
Number of Samples	:	one (1)
Sample Matrix	:	Water
Data Deliverable	:	Summary
Date SDG Closed	:	February 23, 2000



II. Introduction

On February 23, 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 2/24/00 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, Chromium)
Mercury - 7470 - (CV)

Deviation from Request: None

Bechtel Hanford Incorporated
March 22, 2000
Quote Number: 33833
SDG: W03091
Page 2

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.

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.

Chromium was added to the requested list of compounds by the client after the samples had been received.

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.

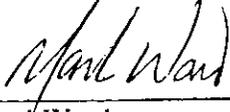
The Mercury analytical run extended beyond the twenty four hour hold time (from digestion to analysis) recommended by the SW846 method. All QC met criteria. The data was not affected by this procedure.

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

Bechtel Hanford Incorporated
March 22, 2000
Quote Number: 33833
SDG: W03091
Page 3

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:

A handwritten signature in cursive script, appearing to read "Marti Ward".

Marti Ward
St. Louis Project Manager

SAMPLE SUMMARY

F0B240139

<u>WO #</u>	<u>SAMPLE#</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
DBXH6	001	B0XKL4	02/22/00	13:20

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

FOB240139

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>	<u>PREPARATION METHOD</u>
Mercury in Liquid Waste (Manual Cold-Vapor)	SW846 7470A	SW846 7470A
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.

SEVERN TRENT - St. Louis

FSL20300
Page 1

QUANTERRA INCORPORATED
CLIENT ANALYSIS SUMMARY
Quanterra - St. Louis

Run Date: 2/24/00
Time: 9:58:23
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: S12C
LOT COMMENTS: Client requires QC, even if a lesser vol
MATRIX: WATER
SAMPLE ID: BOXKL4
QC PACKAGE: Special Report - see checklist
SAMPLE COMMENTS:

QUOTE/SAR #: 33833
LAB ID: F-0B240139-001
WORK ORDER: D8XH6
RECEIVING DATE: 2/23/00
SAMPLING DATE: 2/22/00
ANALYTICAL DUE DATE: 3/10/00N
REPORT DUE DATE: ~~2/16/00~~ 3/15/00
PRIORITY: 15
SAMPLING TIME: 13:20
RECEIVING TIME: 13:30
SDG# : W03091

MW
2-24-00

Beginning Depth: .00 Ending Depth: .00

***** ANALYSIS *****				
	<u>WRK</u>	<u>REQUEST</u>	<u>EXTRACTION</u>	<u>ANALYSIS</u>
	<u>LOC</u>	<u>DATE</u>	<u>EXP DATE</u>	<u>EXP DATE</u>
Inductively Coupled Plasma (6010B Trace) METALS, TOTAL - Waters MT6010_L PB (I-05-QM-01) D8XH6 Protocol: A QC Program: STANDARD TEST SET	06	2/24/00	0/00/00	8/20/00
Mercury (7470A, Cold Vapor) - Liquid METALS, TOTAL (Method exclusive) - Waters M7470_L HG (I-19-Q8-01) DEXH6 Protocol: A QC Program: STANDARD TEST SET	06	2/24/00	0/00/00	3/21/00

SEVERN TRENT - St. Louis

PSL20300
Page 1

QUANTERRA INCORPORATED
CLIENT ANALYSIS SUMMARY
Quanterra - St. Louis

Run Date: 2/24/00
Time: 9:58:23
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: S12C
LCT COMMENTS: Client requires QC, even if a lesser vol
MATRIX: WATER
SAMPLE ID: B0XKL4
QC PACKAGE: Special Report - see checklist
SAMPLE COMMENTS:

QUOTE/SAR #: 33833
LAB ID: F-0B240139-001-D
WORK ORDER: D8XH6 MSD
RECEIVING DATE: 2/23/00
SAMPLING DATE: 2/22/00
ANALYTICAL CJE DATE: 3/10/00N
REPORT DUE DATE: 3/16/00
PRIORITY: 15
SAMPLING TIME: 13:20
RECEIVING TIME: 13:30
SDG# : W03091

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) D8XH6 Protocol: A QC Program: STANDARD TEST SET	06	2/24/00	0/00/00	8/20/00
Mercury (7470A, Cold Vapor) - Liquid METALS, TOTAL (Method exclusive) - Waters M7470_L HG (I-19-06-01) D8XH6 Protocol: A QC Program: STANDARD TEST SET	06	2/24/00	0/00/00	3/21/00

SEVERN TRENT - St. Louis

FSL20300
Page 1

QUANTERRA INCORPORATED
CLIENT ANALYSIS SUMMARY
Quanterra - St. Louis

Run Date: 2/24/00
Time: 9:58:23
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: S12C

QUOTE/SAR #: 33833
LAB ID: F-0B240139-001-S
WORK ORDER: D8XH6 MS
RECEIVING DATE: 2/23/00
SAMPLING DATE: 2/22/00
ANALYTICAL DUE DATE: 3/10/00N
REPORT DUE DATE: 3/16/00
PRIORITY: 15

LOT COMMENTS: Client requires QC, even if a lesser vol
MATRIX: WATER
SAMPLE ID: B0XKL4
QC PACKAGE: Special Report - see checklist
SAMPLE COMMENTS:

SAMPLING TIME: 13:20
RECEIVING TIME: 13:30
SDG# : WG3091

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) D8XH6	06	2/24/00	0/00/00	6/20/00
Protocol: A QC Program: STANDARD TEST SET				

Mercury (7470A, Cold Vapor) - Liquid METALS, TOTAL (Method exclusive) - Waters M7470_L HG (I-19-C8-01) D8XH6	06	2/24/00	0/00/00	3/21/00
Protocol: A QC Program: STANDARD TEST SET				

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received: 2-23-00 1330 SG# W03091
Work Order Number: JOB230239 SAF# B00-014 / B00-013
Shipping Container ID: ER96-059 Chain of Custody # B00-014-07

- 1. Custody Seals on shipping container intact? Yes [X] No []
2. Custody Seals dated and signed? Yes [X] No []
3. Chain-of-Custody record present? Yes [X] No []
4. Cooler temperature NO ICE
5. Vermiculite/packing materials is Wet [] Dry [X]
6. Number of samples in shipping container: 34
7. Sample holding times exceeded? Yes [] No [X]

8. Samples have:
[X] tape [] hazard labels
[X] custody seals [] appropriate sample labels

9. Samples are:
[X] in good condition [] leaking
[] broken [] have air bubbles

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

Blank lines for description of anomalies.

Sample Custodian/Laboratory: K. Hilt Date: 2-23-00
Telephoned To: On By



000024

Lot No.: F08240139
W03091

Condition Upon Receipt Variance Report
St. Louis Laboratory

Client: Bechtel Hanson
Quote No: 33833
Shipper No: ALBORNE 400631416

Date: 2-24-00 Time: 0820
Initiated by: [Signature]
RFA/COC Numbers: 300-014

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"/>	Sample volume insufficient for analysis
3. <input type="checkbox"/>	Sample received in improper container.	11. <input type="checkbox"/>	Other (explain below)
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/not tamper evident type (circle all that apply).		

No variances were noted during sample receipt.
 Cooler Temperature Upon Receipt in °C: 3°

Temperature Variance Does Not Affect the Following Analyses: _____

Notes: All samples 100% full - 2-24-00

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: [Signature] Date: 2-24-00
Project Management Review: [Signature] Date: 2-24-00

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

BECHTEL HANFORD, INC.

Client Sample ID: B0XKL4

TOTAL Metals

Lot-Sample #...: F0B240139-001
 Date Sampled...: 02/22/00

Date Received...: 02/23/00

Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0056177						
Lead	ND	3.0	ug/L	SW846 6010B	02/25-02/29/00	D8XH6101
		Dilution Factor: 1		MDL.....: 0.90		
Chromium	ND	10.0	ug/L	SW846 6010B	02/25-02/29/00	D8XH6107
		Dilution Factor: 1		MDL.....: 2.0		
Prep Batch #...: 0066217						
Mercury	ND	0.20	ug/L	SW846 7470A	03/06-03/07/00	D8XH6104
		Dilution Factor: 1		MDL.....: 0.035		

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F0E240139
 Date Sampled...: 02/22/00

Date Received...: 02/23/00

Matrix.....: WATER

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
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MS Lot-Sample #: F0E240139-001 Prep Batch #...: 0056177

Lead

ND	500	477	ug/L	95			SW846 6010B	02/25-02/29/00	D8XH6102
ND	500	486	ug/L	97	1.7		SW846 6010B	02/25-02/29/00	D8XH6103

Dilution Factor: 1

Chromium

ND	200	197	ug/L	98			SW846 6010B	02/25-02/29/00	D8XH6108
ND	200	200	ug/L	100	1.5		SW846 6010B	02/25-02/29/00	D8XH6109

Dilution Factor: 1

MS Lot-Sample #: F0E240139-001 Prep Batch #...: 0066217

Mercury

ND	1.00	1.05	ug/L	105			SW846 7470A	03/06-03/07/00	D8XH6105
ND	1.00	1.02	ug/L	102	2.9		SW846 7470A	03/06-03/07/00	D8XH6106

Dilution Factor: 1

NOTE (S):

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

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: FOB240139

Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: FOB250000-177 Prep Batch #... : 0056177						
Lead	ND	3.0	ug/L	SW846 6010B	02/25-02/28/00	D910K11H
		Dilution Factor: 1				
Chromium	ND	10.0	ug/L	SW846 6010B	02/25-02/28/00	D910K119
		Dilution Factor: 1				
MB Lot-Sample #: FOC060000-217 Prep Batch #... : 0066217						
Mercury	ND	0.20	ug/L	SW846 7470A	03/06-03/07/00	D99XH101
		Dilution Factor: 1				

NOTE(S):

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

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Lot-Sample #...: FOB240139

Matrix.....: WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Mercury	1.00	0.978	ug/L	98		SW846 7470A	03/06-03/07/00	0066217
	1.00	0.958	ug/L	96	2.1	SW846 7470A	03/06-03/07/00	0066217

Dilution Factor: 1

NOTE (S) :

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

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: FOB240139

Matrix.....: WATER

<u>PARAMETER</u>	<u>SPIKE AMOUNT</u>	<u>MEASURED AMOUNT</u>	<u>UNITS</u>	<u>PERCNT RECVRY</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>WORK ORDER #</u>	
LCS Lot-Sample#: FOB250000-177 Prep Batch #...: 0056177								
Lead	1000	1044.50	ug/L	104	SW846 6010B	02/25-02/28/00	D910K12R	
			Dilution Factor: 1					
Chromium	1000	1076.30	ug/L	108	SW846 6010B	02/25-02/28/00	D910K12J	
			Dilution Factor: 1					

NOTE(S):

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