

0051322

## CERTIFICATE OF ANALYSIS

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

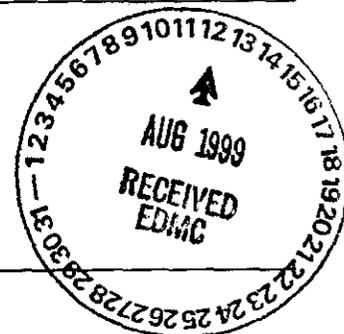
May 28, 1999

Attention: Joan Kessner

---

SAF Number	:	B99-002
Date First Sample Received	:	May 4, 1999
Number of Samples	:	One
Sample Type	:	Soil
SDG Number	:	W02767
Data Deliverable	:	15 Day Priority

---



### I. Introduction

On May 4, 1999 the Quanterra Environmental Services Richland Laboratory (QESRL) received one-priority soil sample for a 15-day priority radiochemical and chemical analysis. Upon receipt, the sample was assigned the following laboratory ID numbers to correspond with the Bechtel Hanford, Inc. (BHI) specific IDs:

<u>QESRL ID#</u>	<u>BHI ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
9CVGJE10	B0VD45	Soil	5/4/99

### 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:

**Alpha Spectroscopy**  
Plutonium-238, -239/40 by method RICH-RC-5010  
Uranium-234, -235, -238 by method RICH-RC-5030  
Americium -241 by method RICH-RC- 5019  
**Gamma Spectroscopy**

0002

Bechtel Hanford, Inc.  
May 28, 1999  
Page 2

---

Gamma Scan by method RICH-RC-5017  
**Gas Proportional Counting**  
Total Strontium by method RICH-RC-5006  
**Liquid Scintillation Counting**  
Nickel-63 by method RICH-RC-5069

### III. Quality Control

The analytical results for each analysis performed under SDG W02767 includes a minimum of two Laboratory Control Samples (LCS) and one method (reagent) blank. Any exceptions have been noted in the "Comments" section.

Quality control sample results are reported in the same units as sample results.

### IV. Comments

#### **Alpha Spectroscopy**

Plutonium-238, -239/40 by method RICH-RC-5062

The LCS, batch blank, sample duplicate (B0VD45) and sample results are within contractual requirements.

Uranium-234, -235, -238 by method RICH-RC-5030

The LCS, batch blank, sample duplicate (B0VD45) and sample results are within contractual requirements.

Americium -241 by method RICH-RC- 5019

The LCS, batch blank, sample duplicate (B0VD45) and sample results are within contractual requirements.

#### **Gamma Spectroscopy**

Gamma Scan by method RICH-RC-5017

The LCS, batch blank, sample duplicate (B0VD45) and sample results are within contractual requirements.

#### **Gas Proportional Counting**

Total Strontium by method RICH-RC-5006

The LCS, batch blank, sample duplicate (B0VD45) and sample results are within contractual requirements.

Bechtel Hanford, Inc.  
May 28, 1999  
Page 3

---

**Liquid Scintillation Counting**

Nickel-63 by method RICH-RC-5069

The LCS, batch blank, sample duplicate (B0VD45) and sample results are within contractual requirements.

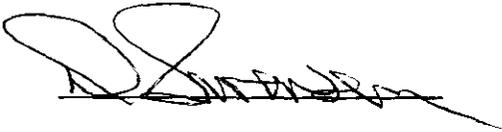
**Chemical Analyses**

Chromium Hex by EPA method 7196

The LCS, sample duplicate (B0VD45), batch blank, matrix spike (B0VD45) and sample 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:



Doug Swenson  
Project Manager

### SAMPLE RESULTS

**LAB NAME:** QUANTERRA, Richland      **SDG: /RPT GRP:** W02767 / 7852  
**LAB SAMPLE ID:** 9CVGJE10      **MATRIX:** SOIL  
**CLIENT ID:** B0VD45      **DATE RECEIVED:** 5/6/99 11:30:00 AM

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
HEXCHROME	8.00E-02	U	N/A	N/A	8.00E-02	mg/kg	N/A	EPA7196
AM-241	2.19E-01	J	6.9E-02	7.9E-02	2.45E-02	pCi/g	72.94%	RICHRC5080
PU-238	1.38E-02	U	2.4E-02	2.4E-02	4.93E-02	pCi/g	59.99%	RICHRC5010
PU239/40	2.21E-01	J	7.8E-02	8.8E-02	3.62E-02	pCi/g	59.99%	RICHRC5010
U-234	4.49E-01	J	1.1E-01	1.4E-01	3.70E-02	pCi/g	63.80%	RICHRC5079
U-235	1.86E-02	U	2.3E-02	2.3E-02	2.99E-02	pCi/g	63.80%	RICHRC5079
U-238	5.36E-01	J	1.2E-01	1.5E-01	2.63E-02	pCi/g	63.80%	RICHRC5079
AM-241	1.49E-02	U	7.0E-02	7.0E-02	1.17E-01	pCi/g		RICHRC5017
CO-60	-5.35E-03	U	1.3E-02	1.3E-02	2.25E-02	pCi/g		RICHRC5017
CS-137	4.16E+00		4.2E-01	4.2E-01	2.56E-02	pCi/g		RICHRC5017
EU-152	3.65E-02	U	4.3E-02	4.3E-02	7.30E-02	pCi/g		RICHRC5017
EU-154	9.22E-03	U	4.2E-02	4.2E-02	7.23E-02	pCi/g		RICHRC5017
EU-155	7.08E-02	U	4.0E-02	4.0E-02	6.84E-02	pCi/g		RICHRC5017
RA-226	4.98E-01		7.9E-02	7.9E-02	4.52E-02	pCi/g		RICHRC5017
RA-228	7.27E-01		1.3E-01	1.3E-01	7.67E-02	pCi/g		RICHRC5017
U-238	6.14E-01		9.1E-02	9.1E-02	5.01E-02	pCi/g		RICHRC5017
STRONTIUM	1.17E+00		1.2E-01	3.3E-01	9.19E-02	pCi/g	69.50%	RICHRC5006
NI-63	3.91E+00	U	2.2E-01	4.1E+00	6.13E+00	pCi/g	82.76%	RICHRC5069

Number of Results: 18

Result = IDL When Not Detected

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

Quanterra Analytical Services, Inc  
rptChemRadSample; v3.41

0005

### DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland      SDG: /RPT GRP: W02767 / 7852  
LAB SAMPLE ID: CVGJE1AR      MATRIX: SOIL  
CLIENT ID: B0VD45 DUP      DATE RECEIVED: 5/6/99 11:30:00 AM  
ORIG LAB SAMPLE ID: 9CVGJE10

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
NI-63	1.20E+00	U	6.9E-02	3.6E+00	5.55E+00	pCi/g	91.06%	RICHRC5069	3.91E+00	105.87%

Number of Results:

### DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland      SDG: /RPT GRP: W02767 / 7852  
LAB SAMPLE ID: CVGJE1CR      MATRIX: SOIL  
CLIENT ID: B0VD45 DUP      DATE RECEIVED: 5/6/99 11:30:00 AM  
ORIG LAB SAMPLE ID: 9CVGJE10

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
PU-238	5.07E-03	U	1.2E-02	1.2E-02	2.76E-02	pCi/g	68.59%	RICHRC5010	1.38E-02	92.62%
PU239/40	2.04E-01	J	7.0E-02	7.9E-02	2.76E-02	pCi/g	68.59%	RICHRC5010	2.21E-01	8.10%

Number of Results:

Result = IDL When Not Detected

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

Quanterra Analytical Services, Inc  
rptChemRadDup; v3.41

0007

### DUPLICATE RESULTS

**LAB NAME:** QUANTERRA, Richland      **SDG: /RPT GRP:** W02767 / 7852  
**LAB SAMPLE ID:** CVGJE1DR      **MATRIX:** SOIL  
**CLIENT ID:** B0VD45 DUP      **DATE RECEIVED:** 5/6/99 11:30:00 AM  
**ORIG LAB SAMPLE ID:** 9CVGJE10

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
U-234	5.75E-01	J	1.3E-01	1.7E-01	3.55E-02	pCi/g	58.96%	RICHRC5079	4.49E-01	24.67%
U-235	1.03E-02	U	2.0E-02	2.0E-02	4.41E-02	pCi/g	58.96%	RICHRC5079	1.86E-02	57.79%
U-238	5.88E-01	J	1.3E-01	1.7E-01	4.03E-02	pCi/g	58.96%	RICHRC5079	5.36E-01	9.29%

Number of Results:

Result = IDL When Not Detected

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

Quanterra Analytical Services, Inc  
rptChemRadDup; v3.41

0008

**DUPLICATE RESULTS**

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02767 / 7852  
LAB SAMPLE ID: CVGJE1ER MATRIX: SOIL  
CLIENT ID: B0VD45 DUP DATE RECEIVED: 5/6/99 11:30:00 AM  
ORIG LAB SAMPLE ID: 9CVGJE10

ANALYTE	DUP RESULT	COUNTING Q ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
AM-241	1.48E-01	J 5.4E-02	6.0E-02	1.99E-02	pCi/g	79.54%	RICHRC5080	2.19E-01	38.58%

Number of Results:

### DUPLICATE RESULTS

**LAB NAME:** QUANTERRA, Richland      **SDG: /RPT GRP:** W02767 / 7852  
**LAB SAMPLE ID:** CVGJE1FR      **MATRIX:** SOIL  
**CLIENT ID:** B0VD45 DUP      **DATE RECEIVED:** 5/6/99 11:30:00 AM  
**ORIG LAB SAMPLE ID:** 9CVGJE10

ANALYTE	DUP RESULT	Q	COUNTING ERROR ( 2 s)	TOTAL ERROR ( 2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
AM-241	-8.88E-02	U	7.0E-02	7.0E-02	1.12E-01	pCi/g		RICHRC5017	1.49E-02	280.82%
CO-60	6.34E-03	U	1.5E-02	1.5E-02	2.64E-02	pCi/g		RICHRC5017	-5.35E-03	2373.61%
CS-137	4.53E+00		4.6E-01	4.6E-01	2.97E-02	pCi/g		RICHRC5017	4.16E+00	8.48%
EU-152	4.22E-02	U	6.2E-02	6.2E-02	9.04E-02	pCi/g		RICHRC5017	3.65E-02	14.42%
EU-154	-1.59E-02	U	4.8E-02	4.8E-02	8.03E-02	pCi/g		RICHRC5017	9.22E-03	749.37%
EU-155	3.30E-02	U	4.9E-02	4.9E-02	8.23E-02	pCi/g		RICHRC5017	7.08E-02	72.77%
RA-226	5.80E-01		8.5E-02	8.5E-02	5.32E-02	pCi/g		RICHRC5017	4.98E-01	15.21%
RA-228	6.75E-01		1.2E-01	1.2E-01	9.72E-02	pCi/g		RICHRC5017	7.27E-01	7.49%
U-238	6.09E-01		9.2E-02	9.2E-02	6.39E-02	pCi/g		RICHRC5017	6.14E-01	0.70%

Number of Results:

Result = IDL When Not Detecte

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

Quanterra Analytical Services, Inc  
rptChemRadDup; v3.41

0010

### DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02767 / 7852  
LAB SAMPLE ID: CVGJE1GR MATRIX: SOIL  
CLIENT ID: B0VD45 DUP DATE RECEIVED: 5/6/99 11:30:00 AM  
ORIG LAB SAMPLE ID: 9CVGJE10

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
STRONTIUM	1.35E+00		1.2E-01	3.8E-01	1.01E-01	pCi/g	70.50%	RICHRC5006	1.17E+00	14.50%

Number of Results:

Result = IDL When Not Detecte

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

Quanterra Analytical Services, Inc  
rptChemRadDup; v3.41

0011

### DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland      SDG: /RPT GRP: W02767 / 7852  
LAB SAMPLE ID: CVGJE1JR      MATRIX: SOIL  
CLIENT ID: B0VD45      DATE RECEIVED: 5/6/99 11:30:00 AM  
ORIG LAB SAMPLE ID: 9CVGJE10

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
HEXCHROME	8.00E-02	U	N/A	N/A	8.00E-02	mg/kg	N/A	EPA7196	8.00E-02	0.00%

Number of Results:

Result = IDL When Not Detecte

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

Quanterra Analytical Services, Inc  
rptChemRadDup; v3.41

0012

### BLANK RESULTS

LAB NAME: QUANTERRA, Richland      SDG: /RPT GRP: W02767 / 7852  
LAB SAMPLE ID: CVJXM11B      MATRIX: SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
NI-63	5.19E-01	U	3.1E-02	3.7E+00	6.10E+00	pCi/g	88.40%	RICHRC5069

Number of Results:

### BLANK RESULTS

LAB NAME: QUANTERRA, Richland      SDG: /RPT GRP: W02767 / 7852  
LAB SAMPLE ID: CVJXP11B      MATRIX: SOIL

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	1.3E-02	1.40E-02	pCi/g	81.02%	RICHRC5010
PU239/40	0.00E+00	U	0.0E+00	1.3E-02	1.40E-02	pCi/g	81.02%	RICHRC5010

Number of Results:

### BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02767 / 7852  
LAB SAMPLE ID: CVJXQ11B MATRIX: SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
U-234	-4.58E-03	U	3.5E-03	3.6E-03	5.06E-02	pCi/g	56.39%	RICHRC5079
U-235	3.60E-03	U	1.7E-02	1.7E-02	5.06E-02	pCi/g	56.39%	RICHRC5079
U-238	1.31E-02	U	2.3E-02	2.3E-02	4.62E-02	pCi/g	56.39%	RICHRC5079

Number of Results:

### BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02767 / 7852  
LAB SAMPLE ID: CVJXR11B MATRIX: SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	4.22E-03	U	1.3E-02	1.3E-02	3.31E-02	pCi/g	62.66%	RICHRC5080

Number of Results:

### BLANK RESULTS

**LAB NAME:** QUANTERRA, Richland      **SDG: /RPT GRP:** W02767 / 7852  
**LAB SAMPLE ID:** CVJXT11X      **MATRIX:** SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	1.17E-02	U	1.3E-02	1.3E-02	1.87E-02	pCi/g		RICHRC5017
CO-60	3.65E-03	U	7.6E-03	7.6E-03	1.43E-02	pCi/g		RICHRC5017
CS-137	2.81E-03	U	7.9E-03	7.9E-03	1.40E-02	pCi/g		RICHRC5017
EU-152	3.18E-03	U	2.1E-02	2.1E-02	3.67E-02	pCi/g		RICHRC5017
EU-154	1.04E-02	U	2.1E-02	2.1E-02	3.83E-02	pCi/g		RICHRC5017
EU-155	-2.18E-03	U	1.6E-02	1.6E-02	2.72E-02	pCi/g		RICHRC5017
RA-226	8.99E-02	J	3.2E-02	3.2E-02	2.66E-02	pCi/g		RICHRC5017
RA-228	1.14E-01	U	3.4E-02	3.4E-02	6.73E-02	pCi/g		RICHRC5017
U-234	9.13E-02		4.9E-02	4.9E-02	4.98E-02	pCi/g		RICHRC5017

Number of Results:

Result = IDL When Not Detected

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

Quanterra Analytical Services, Inc  
rptChemRadBlank; v3.41

0017

### BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02767 / 7852  
LAB SAMPLE ID: CVJXV11B MATRIX: SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
STRONTIUM	9.67E-04	U	3.3E-02	3.3E-02	7.46E-02	pCi/g	95.20%	RICHRC5006

Number of Results:

### BLANK RESULTS

LAB NAME: QUANTERRA, Richland      SDG: /RPT GRP: W02767 / 7852  
LAB SAMPLE ID: CVLM311B      MATRIX: SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
HEXCHROME	0.00E+00	U	N/A	N/A	2.00E-03	mg/L	N/A	EPA7196

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02767 / 7852  
LAB SAMPLE ID: CVJXM12S MATRIX: SOIL

---

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
NI-63	4.70E+02		7.3E+00	3.5E+01	5.13E+00	pCi/g	97.13%	6.09E+02	77.21%

---

Number of Results:

### LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02767 / 7852  
LAB SAMPLE ID: CVJXP12S MATRIX: SOIL

---

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
PU-238	4.60E-03	U	9.2E-03	9.2E-03	1.25E-02	pCi/g	72.07%	3.39E+00	0.14%
PU239/40	3.26E+00		2.4E-01	6.1E-01	1.25E-02	pCi/g	72.07%	3.39E+00	96.11%

Number of Results:

### LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland      SDG: /RPT GRP: W02767 / 7852  
LAB SAMPLE ID: CVJXQ12S      MATRIX: SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
U-234	7.54E-01	J	1.2E-01	1.8E-01	2.81E-02	pCi/g	87.98%	8.67E-01	86.96%
U-235	1.38E-02	U	1.6E-02	1.7E-02	1.90E-02	pCi/g	87.98%	3.96E-02	34.89%
U-238	8.45E-01	J	1.3E-01	1.9E-01	2.67E-02	pCi/g	87.98%	9.09E-01	92.97%

Number of Results:

Result = IDL When Not Detected

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

Quanterra Analytical Services, Inc  
rptChemRadLcs; v3.41

0022

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02767 / 7852  
LAB SAMPLE ID: CVJXR12S MATRIX: SOIL

---

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
AM-241	4.26E+00		3.0E-01	8.0E-01	2.69E-02	pCi/g	74.61%	4.52E+00	94.07%

---

Number of Results:

### LABORATORY CONTROL SAMPLE

**LAB NAME:** QUANTERRA, Richland      **SDG: /RPT GRP:** W02767 / 7852  
**LAB SAMPLE ID:** CVJXT12M      **MATRIX:** SOIL

ANALYTE	RESULT	COUNTING Q ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
CS-137	3.60E-01	5.7E-02	5.7E-02	3.70E-02	pCi/g		0.00E+00	#Div/0!
RA-226	1.04E+00	1.3E-01	1.3E-01	1.01E-01	pCi/g		0.00E+00	#Div/0!
RA-228	2.21E+00	2.8E-01	2.8E-01	1.13E-01	pCi/g		0.00E+00	#Div/0!
U-238	1.10E+00	1.3E-01	1.3E-01	6.12E-02	pCi/g		0.00E+00	#Div/0!

Number of Results:

### LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland      SDG: /RPT GRP: W02767 / 7852  
LAB SAMPLE ID: CVJXV12S      MATRIX: SOIL

---

ANALYTE	RESULT	COUNTING Q ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
STRONTIUM	1.17E+00	1.0E-01	3.2E-01	7.01E-02	pCi/g	95.00%	1.14E+00	102.65%

---

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland      SDG: /RPT GRP: W02767 / 7852  
LAB SAMPLE ID: CVLM312S      MATRIX: SOIL

---

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
HEXCHROME	9.16E-01		N/A	N/A	2.00E-03	mg/L	N/A	1.00E+00	91.60%

---

Number of Results:

### MATRIX SPIKE RESULTS

LAB NAME: QUANTERRA, Richland      SDG: /RPT GRP: W02767 / 7852  
 LAB SAMPLE ID: CVGJE19W      MATRIX: SOIL

ANALYTE	SPIKE RESULT* Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
NI-63	4.69E+02	7.9E+00	3.5E+01	6.22E+00	pCi/g	3.91E+00	6.10E+02	76.92%

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.

Quanterra Analytical Services, Inc  
 rptChemRadMatrixSpike; v3.41

0027

### MATRIX SPIKE RESULTS

LAB NAME: QUANTERRA, Richland      SDG: /RPT GRP: W02767 / 7852  
LAB SAMPLE ID: CVGJE1HW      MATRIX: SOIL

ANALYTE	SPIKE RESULT* Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED RECOVERY
HEXCHROME	3.09E+01	N/A	N/A	8.00E-02	mg/kg	8.00E-02	4.12E+01 75.00%

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:** W02767 / 7852  
**LAB SAMPLE ID:** CVGJE1KW      **MATRIX:** SOIL

ANALYTE	SPIKE RESULT* Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
HEXCHROME	6.05E+02	N/A	N/A	8.00E-02	mg/kg	8.00E-02	7.03E+02	86.08%

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.

Quanterra Analytical Services, Inc  
rptChemRadMatrixSpike; v3.41

0029

# RADIOCHEMISTRY

Lot Number: <u>JAED60174</u>				
Client ID: <u>BWT</u>				
Due Date: <u>5/21/99</u>				
QC Batch Number: <u>9127377</u>			SDG Number: <u>W02767</u>	
Method Test Parameter: <u>SX - Am 241</u>				
Matrix: <u>Solid</u>				
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 <sup>nd</sup> Level Review (✓)
<b>A. Calibration</b>				
1. Is the calibration documentation included where applicable?			/	
<b>B. Sample Analysis</b>				
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?	/			
<b>C. QC Samples</b>				
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?	/			
<b>D. Other:</b>				
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: *[Signature]* Date: 5/25/99

Second Level Review: *[Signature]* Date: 5/28/99

LS-038, Rev.5, 4/99

RADIOCHEMISTRY

Lot Number: <u>J9E060174</u>				
Client ID: <u>BHI</u>				
Due Date: <u>5/21/99</u>				
QC Batch Number: <u>9127375</u>			SDG Number: <u>W02767</u>	
Method Test Parameter: <u>SO - Pu</u>				
Matrix: <u>Solid</u>				
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 <sup>nd</sup> Level Review (✓)
<b>A. Calibration</b>			✓	
1. Is the calibration documentation included where applicable?				✓
<b>B. Sample Analysis</b>				
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?	✓			✓
<b>C. QC Samples</b>				
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?	✓			✓
<b>D. Other:</b>				
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: *[Signature]*

Second Level Review: *[Signature]*

Date: 5/21/99

Date: 5/28/99

LS-038, Rev.5, 4/99

Lot Number: J9E 06 0174  
 Client ID: BME  
 Due Date: 5/21/99  
 QC Batch Number: 9127376 SDG Number: W02767  
 Method Test Parameter: SR - 4.10  
 Matrix: So<sup>1</sup>

Review Item	Yes (✓)	No (✓)	N/A (✓)	2 <sup>nd</sup> 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: [Signature]  
 Second Level Review: [Signature]

Date: 5/20/99  
 Date: 5/18/99

LS-038, Rev.5, 4/99

**Data Review Checklist  
RADIOCHEMISTRY**

Lot Number: <u>J9E060174</u>				
Client ID: <u>127642</u>				
Due Date: <u>5-21-99</u>				
QC Batch Number: <u>9127378</u>			SDG Number: <u>2767</u>	
Method Test Parameter: <u>Gamma</u>				
Matrix: <u>Soil</u>				
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 <sup>nd</sup> Level Review (✓)
<b>A. Calibration</b>				
1. Is the calibration documentation included where applicable?			✓	
<b>B. Sample Analysis</b>				
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?	✓			✓
<b>C. QC Samples</b>				
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?	✓			✓
<b>D. Other</b>				
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: [Signature] Date: 5-26-99  
 Second Level Review: [Signature] Date: 5/28/99

Data Review Checklist  
RADIOCHEMISTRY

Lot Number: <u>598060174</u>				
Client ID: <u>BH2</u>				
Due Date: <u>5/21/99</u>				
QC Batch Number: <u>9122329</u>			SDG Number:	
Method Test Parameter: <u>TSR</u>				
Matrix: <u>SOIL</u>				
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 <sup>nd</sup> Level Review (✓)
<b>A. Calibration</b>				
1. Is the calibration documentation included where applicable?			✓	
<b>B. Sample Analysis</b>				
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?	✓			✓
<b>C. QC Samples</b>				
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?	✓			✓
<b>D. Other</b>				
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: Jacqueline Waddell Date: 5/19/99  
 Second Level Review: [Signature] Date: 5/28/99

LS-038, Rev.5, 4/99

RADIOCHEMISTRY

Lot Number:	J9E060174			
Client ID:	BHZ			
Due Date:	5/21/99			
QC Batch Number:	9127373	SDG Number:		
Method Test Parameter:	NE63			
Matrix:	Solid			
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 <sup>nd</sup> 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: *Juliana O'Neill* Date: 5/27/99  
 Second Level Review: *[Signature]* Date: 5/28/99



Richland Laboratory  
Data Review Check List  
METALS

Work Order Number(s): <u>CVGJE101</u> <u>QC Batch 9130436</u>				
Lab Sample Numbers or SDG: <u>WO 2767</u>				
Method/Test/Parameter: <u>CR+6 in soil</u>				
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 <sup>nd</sup> Level Review (✓)
<b>A. Initial Calibration</b>				
1. Performed at required frequency with required number of levels?	✓			✓
2. Correlation coefficient within QC limits?	✓			
3. Initial calibration verification (ICV) analyzed immediately after calibration and results within QC limits?	✓			✓
4. Initial calibration blank (ICB) analyzed immediately after ICV and concentrations of all parameters $\leq$ reporting limit?	✓			✓
<b>B. Continuing Calibration</b>				
1. CCV analyzed at required frequency and all parameters within QC limits?	✓			✓
2. CCB analyzed at required frequency and all results $\leq$ reporting limit?	✓			✓
<b>C. Sample Analysis</b>				
1. Were any samples with concentrations above the linear range for any parameter diluted and reanalyzed?	✓			✓
2. Were all sample holding times met?	✓			✓
<b>D. QC Samples</b>				
1. All results for the preparation blank below limits?	✓			✓
2. MS or MS/MSD recoveries within QC limits and %RPD (for MSD) acceptable?	✓			✓
3. LCS percent recovery within QC limits and %RPD (for LCSD) acceptable?	✓			✓
4. Analytical spikes within QC limits where applicable?			✓	
5. ICP only: One serial dilution performed per SDG?			✓	
6. ICP only: CRDL standard (CRI or CRA) analyzed at required frequency?			✓	
7. ICP only: Interference check samples (ICSA, ICSAB) and HICAL analyzed at the required frequencies and within QC limits?			✓	

Review Item	Yes (✓)	No (✓)	N/A (✓)	2 <sup>nd</sup> Level Review (✓)
<b>E. Other</b>				
1. Are all nonconformances included and noted?			✓	
2. Is the correct date and time of analysis shown?	✓			✓
3. Did the analyst sign and date the front page of the analytical run?	✓			✓
4. Correct methodology used?	✓			✓
5. Transcriptions checked?	✓			✓
6. Calculations checked at minimum frequency?	✓			✓
7. Units checked?	✓			✓

Comments on any "No" response:

C1 - PbCrO<sub>4</sub> spike required 20 fold dilution

Analyst: Roxie Ross

Date: 5-19-99

Second-Level Review: [Signature]

Date: 5/27/99

# CHAIN OF CUSTODY FORMS

10-10-99

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-002-90		Page 1 of 1	
Collector Fahlberg/Kerkow		Company Contact R Coffman		Telephone No. 373-6425		Project Coordinator TRENT, SJ		Price Code	
Project Designation 100 BC Areas - Full Protocol		Sampling Location 100B/C 116-B-3		SAF No. B99-002				Data Turnaround <b>15 Days</b>	
Ice Chest No. <b>ERC 96-070</b>		Field Logbook No. EL 1327-3		Method of Shipment <b>HAND DELIVER GOV. VEHICLE</b>					
Shipped To Quanterra Incorporated		Offsite Property No. <b>N/A</b>		Bill of Lading/Air Bill No. <b>N/A</b>					
				COA <b>R16B112600</b>					

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	Cool 4C	None	None	None							
	Type of Container	P	aG	aG	aG	Marinelli							
	No. of Container(s)	1	1	1	1	1							
Special Handling and/or Storage	Volume	20mL	60mL	60mL	125mL	500mL							

SDA  
WO2767

Dne 5-21-99

SAMPLE ANALYSIS

JAE060174

Activity Scan	Chromium Hex - 7196	See item (1) in Special Instructions.	ICP Metals - 6010A (SW-846) {Chromium, Lead}; Mercury - 7471 - (CV)	See item (2) in Special Instructions.									
---------------	---------------------	---------------------------------------	---	---------------------------------------	--	--	--	--	--	--	--	--	--

Sample No.	Matrix *	Sample Date	Sample Time										
B0VD45 <b>CVGJE</b>	Soil	<b>5.4.99</b>	<b>1243</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>					<b>B0VD56</b>

CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By <b>R. Fahlberg</b>	Date/Time <b>5.4.99</b>	Received By <b>R. Fahlberg</b>	Date/Time <b>5.4.99</b>	(1) Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63				(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Uranium-238)		Soil Water Vapor Other Solid Other Liquid	
Relinquished By <b>REF 1-C</b>	Date/Time <b>5699 1030</b>	Received By <b>SJGALE</b>	Date/Time <b>5699 1030</b>	NOTE: COLLECTOR UNAVAILABLE TO SIGN COC							
Relinquished By <b>SJGALE</b>	Date/Time <b>5699 1130</b>	Received By <b>K. A. Stenling</b>	Date/Time <b>5699</b>								
Relinquished By	Date/Time	Received By	Date/Time								

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

0039

# ERC Radiological Counting Facility Analysis Report

RCF Number RCF5929Sample Date & Time 5/4/99 1243Project ID: 116-B-3SAF Number: B99-001Date Analyzed 5/5/99Sample ID: B0VD56

## Gamma Energy Analysis

Nuclide	Activity (pCi/g)	Error (pCi/g)	MDC (pCi/g)
K-40	1.3E+01	+/- 1.7E+00	5.6E-01
Co-60	< 2.3E-02		2.3E-02
Cs-137	4.7E+00	+/- 2.3E-01	3.8E-02
Eu-152 #	< 4.8E-02		4.8E-02
Eu-154	< 3.6E-02		3.6E-02
Eu-155	< 7.4E-02		7.4E-02
Th-232d	7.7E-01	+/- 1.0E-01	3.0E-01
U-235	< 1.9E-01		1.9E-01
Np-237	< 6.0E-02		6.0E-02
U-238	< 5.1E+00		5.1E+00
U-238d	6.0E-01	+/- 9.7E-02	5.4E-02
Am-241	< 5.7E-02		5.7E-02

Total GEA (pCi/g)	1.9E+01	+/-	2.1E+00
-------------------	---------	-----	---------

	Activity (pCi/g)	Error (pCi/g)
Gross Alpha**	< 2.7E-01	
Gross Beta	1.7E+01	+/- 1.5E+00

Alpha MDC (pCi/g)	2.7E-01
Beta MDC (pCi/g)	9.6E+00

### Definitions:

All errors reported at 2 standard deviations.

N/R = no result or analysis not requested. <MDC = Less than detection limit.

All GEA results reported as "<" list the Minimum Detectable Concentration (MDC) value for that radionuclide.

Rounding error may result in the reported total GEA activity differing from the sum of the > MDC GEA values in the second significant digit.

### For soils and natural samples, the following applies:

The analysis of U-238 is based on the activity of Pa-234m.

The analysis of Np-237 is based on the activity of Pa-233.

U-238dau is the activity of Pb-214 and Bi-214, short lived daughter products of U-238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.

Th-232dau is the activity of Ac-228, Pb-212, and Tl-208, short lived daughter products of Th-232. Equilibrium between parent and daughter products may not exist in disturbed materials.

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

\*\*The gross alpha results are not corrected for mass absorption

# No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Analyst

*Kathleen Robertson*  
*DeMers* 5/5/99

Report To

Randy Coffman

Dave St John

Fax

373-9779

372-9487

Report Printed: Wednesday, May 05, 1999

0040

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received: 56-99 1130 SG#: W02167  
Work Order Number: J9E060174 SAF #: B99-002 B99-041  
Shipping Container ID: ERC96-070 Chain of Custody # B99-002-90

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 40C  
5. Vermiculite/packing materials is Wet  Dry   
6. Number of samples in shipping container: 9  
7. Sample holding times exceeded? Yes  No

8. Samples have: <input checked="" type="checkbox"/> tape <input checked="" type="checkbox"/> custody seals <input type="checkbox"/> hazard labels <input type="checkbox"/> appropriate sample labels
9. Samples are: <input checked="" type="checkbox"/> in good condition <input type="checkbox"/> broken <input type="checkbox"/> leaking <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: L. A. [Signature] Date: 56-99  
Telephoned To: \_\_\_\_\_ On \_\_\_\_\_ By \_\_\_\_\_

# Client Sample Screening Results

06-May-99

(B) 5/6/99

CLIENT CODE	ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B			
BHI	B0VD45		5/6/99 12:49:00 PM	QUAD21A	5/6/99 2:24:54 PM	B0VD45	30	18	0.4825	114	2.6875			
	CVGJE	SOIL		Bkg:	5/6/99 5:09:36 AM	BKG	800	94	0.1175	890	1.1125			
Anl Date: 5/6/99		Tot Sa, Alq: 7.40E+02		, 9.26E+01		Alp; (Dpm/ 3.08E+00		(uCV/ 1.11E-05		(pCV/ 1.50E+01 ± 6.6E+00		CAT	3.3E+00	Lab
Ppt mg: 92.6 ✓		Units: mg ✓		, mg		Bet; Alq: 5.91E+00		Sa: 2.13E-05		Llg: 2.88E+01 ± 4.0E+00		I	3.5E+00	Alq Llg

0042  
06-May-99

COC Signature Page

W02767

Batch #: 9127377

Initials/Date

Procedure #

Released By	<u>RA 5/7/99</u>	<u>RICHRC0009</u>
Received	<u>TAZ 5/7/99</u>	<u>RICHRC0013</u>
Released By	<u>TAZ 5/10/99</u>	<u>n/a</u>
Received	<u>SK 5/10/99</u>	<u>RC5019</u>
Released By	<u>SK 5/13/99</u>	<u>n/a</u>
Received	<u>Ⓢ 5/13/99</u>	<u>RICHRC5080</u>
Released By	<u>Ⓢ 5/20/99</u>	<u>n/a</u>
Received	<u>Ⓢ 5/22/99</u>	<u>RICHRC5003</u>
Released By	<u>Ⓢ 5/22/99</u>	<u>n/a</u>
Received	<u>SK 5/22/99</u>	<u>RICHRC0003 REV 7</u> <i>5/22/99 AS</i>
Released By	<u>/ 5/24/99</u>	<u>n/a</u>
Received	<u>TAZ 5/25/99</u>	<u>RICHRC0002/2</u>
Released By	<u>TAZ 5/25/99</u>	<u>n/a</u>
Received		

*Handwritten initials and date: TAZ 5/25/99*

RQC053

Quanterra Incorporated  
RAD PREP BENCH WORKSHEET

Run Date: 5/07/99  
Time: 17:10:10

<u>Prep</u>	<u>Sep1</u>	<u>Sep2</u>	
---	---	---	Samples Covered
---	---	---	Labware Labeled
---	---	---	Verify Test/Container
---	---	---	Samples Ordered Sequentially
---	---	---	Logbooks Entered

\*\*\*\*\*  
 \*  
 \* QC BATCH: 9127377 \*  
 \*  
 \*\*\*\*\*

Prep Dt/Tm/Person: 5/07/99 0  
 Sep1 Dt/Tm/Person: 0/00/00 0000  
 Sep2 Dt/Tm/Person: 0/00/00 0000  
 Cocktail Date/Time: 0/00/00

W02767

SX: Americium-241 by Alpha Spec  
 6I: PuAm PrpRC5013/RC5019, SepRC5080 (5003)/RC5010 (5039)  
 5I: RCH: HANFORD ANALYTICAL

ANL DUE	LOT#,MSRUN#/ WORK ORDER	CLIENT MATRIX	INIT/ FINAL	DISH	GEOM	PPT1WT	pH	COUNT TIME	MID/AVE DATE/TIME	TRACER ID/ SPIKE ID	CRDL	UNITS
5/21/99	J9E060174-001 CVGJE-1-0EX	SOLID									1	pCi/g
5/21/99	J9E060174-001 CVGJE-1-06	SOLID									1	pCi/g
0/00/00	J9E070000-377 CVJXR-1-01B	SOLID									1	pCi/g
0/00/00	J9E070000-377 CVJXR-1-02C	SOLID									1	pCi/g

**PRIORITY**

NUMBER OF WORK ORDERS IN BATCH: 4

0044

COC Signature Page

W02767

Batch #: 9127375

Initials/Date

Procedure #

Released By	Initials/Date	Procedure #
Released By	<del>RA</del> 5-7-99	RICKC0009
Received	TAL 5/7/99	RICKC-5013
Released By	TAL 5/10/99	n/a
Received	SK 5/10/99	RC-5019
Released By	SK 5/13/99	n/a
Received	Ⓢ 5/13/99	RICKRC5080
Released By	Ⓢ 5/18/99	n/a
Received	LE 5-19-99 ed'd 5-19-99	RICKRC5039.1
Released By	LE 5-19-99	n/a
Received	f 5/19/99	RICKA00028
Released By	f 5/20/99	n/a
Received	TAL 5/21/99	RICKRC0002/2
Released By	TAL 5/21/99	n/a
Received		

RQC053

Quanterra Incorporated  
RAD PREP BENCH WORKSHEET

Run Date: 5/07/99  
Time: 17:09:14

Prep	Sep1	Sep2	Samples Covered
---	---	---	Labware Labeled
---	---	---	Verify Test/Container
---	---	---	Samples Ordered Sequentially
---	---	---	Logbooks Entered

\*\*\*\*\*  
 \* QC BATCH: 9127375 \*  
 \*  
 \*\*\*\*\*

Prep Dt/Tm/Person:	5/07/99	0
Sep1 Dt/Tm/Person:	0/00/00	00000
Sep2 Dt/Tm/Person:	0/00/00	00000
Cocktail Date/Time:	0/00/00	

*work order*

SO: Plutonium-238,239/40 by Alpha Spec  
 6I: PuAm PrpRC5013/RC5019, SepRC5080 (5003)/RC5010 (5039)  
 5I: RCH: HANFORD ANALYTICAL

ANL DUE	LOT#,MSRUN#/ WORK ORDER	CLIENT MATRIX	INIT/ FINAL	DISH	GEOM	PPT1WT	pH	COUNT TIME	MID/AVE DATE/TIME	TRACER ID/ SPIKE ID	CRDL	UNITS
5/21/99	J9E060174-001 CVGJE-1-0CX	SOLID									1	pCi/g
5/21/99	J9E060174-001 CVGJE-1-05	SOLID									1	pCi/g
0/00/00	J9E070000-375 CVJXP-1-01B	SOLID									1	pCi/g
0/00/00	J9E070000-375 CVJXP-1-02C	SOLID									1	pCi/g

**PRIORITY**

NUMBER OF WORK ORDERS IN BATCH: 4

0046

COC Signature Page

W02767

Batch #:	Initials/Date	Procedure #
9127376		
Released By	<u>RA 5/7/99</u>	<u>Rickk0009</u>
Received	<u>RA 5/7/99</u>	<u>RICKK0013</u>
Released By	<u>RA 5/10/99</u>	n/a
Received	<u>SIC 5/10/99</u>	<u>RC5019</u>
Released By	<u>SIC 5/13/99</u>	n/a
Received	<u>RA 5-13-99</u>	<u>RC 5079</u>
Released By	<u>RA 5/25/99</u>	n/a
Received	<u>RB 5/25/99</u>	<u>Ri DRK5039</u>
Released By	<u>RB 5/25/99</u>	n/a
Received	<u>RA 5/25/99</u>	<u>RICKK0001</u>
Released By	<u>RA 5/26/99</u>	n/a
Received	<u>RA 5/26/99</u>	<u>RICKK0012/2</u>
Released By	<u>RA 5/26/99</u>	n/a
Received		

RQC053

Quanterra Incorporated  
RAD PREP BENCH WORKSHEET

Run Date: 5/07/99  
Time: 17:09:41

Prep	Sep1	Sep2	
---	---	---	Samples Covered
---	---	---	Labware Labeled
---	---	---	Verify Test/Container
---	---	---	Samples Ordered Sequentially
---	---	---	Logbooks Entered

\*\*\*\*\*  
 \* QC BATCH: 9127376 \*  
 \*\*\*\*\*

Prep Dt/Tm/Person: 5/07/99 0  
 Sep1 Dt/Tm/Person: 0/00/00 0000  
 Sep2 Dt/Tm/Person: 0/00/00 0000  
 Cocktail Date/Time: 0/00/00

W027107

SR: Uranium-234,235,238 by Alpha Spec  
 7S: UIso PrpRC5013/RC5019, SepRC5079 (5039)  
 5I: RCH: HANFORD ANALYTICAL

ANL DUE	LOT#,MSRUN#/ WORK ORDER	CLIENT MATRIX	INIT/ FINAL	DISH	GEOM	PPT1WT	pH	COUNT TIME	MID/AVE DATE/TIME	TRACER ID/ SPIKE ID	CRDL	UNITS
5/21/99	J9E060174-001 CVGJR-1-0DX	SOLID									1	pCi/g
5/21/99	J9E060174-001 CVGJE-1-02	SOLID									1	pCi/g
0/00/00	J9E070000-376 CVJXQ-1-01B	SOLID									1	pCi/g
0/00/00	J9E070000-376 CVJXQ-1-02C	SOLID									1	pCi/g

**PRIORITY**

NUMBER OF WORK ORDERS IN BATCH: 4

0048

COC Signature Page

W02767

Batch #: 9127378

	Initials/Date	Procedure #
Released By	JA 5-7-99	RICKR00009
Received	TR 5/7/99	RICKR05013/5017
Released By	TR 5/10/99	n/a
Received	CS 5/10/99	RICKR00007
Released By	CS 5/24/99	n/a
Received	DC 5-24-99	RICKR00002-2
Released By	DK 5-26-99	n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		

RQC053

Quanterra Incorporated  
RAD PREP BENCH WORKSHEET

Run Date: 5/07/99  
Time: 17:10:36

<u>Prep</u>	<u>Sep1</u>	<u>Sep2</u>	Samples Covered
_____	_____	_____	Labware Labeled
_____	_____	_____	Verify Test/Container
_____	_____	_____	Samples Ordered Sequentially
_____	_____	_____	Logbooks Entered

\*\*\*\*\*  
 \*  
 \* QC BATCH: 9127378 \*  
 \*  
 \*\*\*\*\*

Prep Dt/Tm/Person:	5/07/99	0
Sep1 Dt/Tm/Person:	0/00/00	0000
Sep2 Dt/Tm/Person:	0/00/00	0000
Cocktail Date/Time:	0/00/00	

*W02967*  
 T9: Gamma by HPGE 10 day ingrowth  
 AX: Gamma PrpRC5013/5017  
 SI: RCH: HANFORD ANALYTICAL

<u>ANL</u> <u>DUE</u>	<u>LOT#,MSRUN#/ WORK ORDER</u>	<u>CLIENT</u> <u>MATRIX</u>	<u>INIT/ FINAL</u>	DISH	GEOM	PPT1WT	pH	COUNT TIME	MID/AVE DATE/TIME	TRACER ID/ SPIKE ID	CRDL	UNITS
5/21/99	J9E060174-001 CVGJE-1-0FX	SOLID										pCi/g
5/21/99	J9E060174-001 CVGJE-1-08	SOLID										pCi/g
0/00/00	J9E070000-378 CVJXT-1-01B	SOLID										pCi/g
0/00/00	J9E070000-378 CVJXT-1-02C	SOLID										pCi/g

**PRIORITY**

NUMBER OF WORK ORDERS IN BATCH: 4

050

COC Signature Page

602767

Batch #:	Initials/Date	Procedure #
9127379		
Released By	<del>RTM</del> 5/7/99	RichRC0009
Received	TAL 5/7/99	RICHRC0013
Released By	TAL 5/10/99	n/a
Received	SK 5/10/99	RC5013
Released By	SIC 5/11/99	n/a
Received	RTM 5/11/99	RichRC5006/2
Released By	RTM 5/17/99	n/a
Received	CS 5/17/99	RichRC0013
Released By	CS 5/17/99 CS 5/18/99	n/a
Received	JW 5/17/99	RICHRC0002/2
Released By	JW 5/19/99	n/a
Received		
Released By		n/a
Received		

RQC053

Quanterra Incorporated  
RAD PREP BENCH WORKSHEET

Run Date: 5/07/99  
Time: 17:11:05

<u>Prep</u>	<u>Sep1</u>	<u>Sep2</u>	
---	---	---	Samples Covered
---	---	---	Labware Labeled
---	---	---	Verify Test/Container
---	---	---	Samples Ordered Sequentially
---	---	---	Logbooks Entered

\*\*\*\*\*  
 \*  
 \* QC BATCH: 9127379 \*  
 \*  
 \*\*\*\*\*

Prep Dt/Tm/Person:	5/07/99	0
Sep1 Dt/Tm/Person:	0/00/00	0000
Sep2 Dt/Tm/Person:	0/00/00	0000
Cocktail Date/Time:	0/00/00	

*W02767*  
 TH: Total Strontium by GPC  
 CH: Sr-Total PrpRC5013, SepRC5006  
 SI: RCH: HANFORD ANALYTICAL

ANL DUE	LOT#,MSRUN#/ WORK ORDER	CLIENT MATRIX	INIT/ FINAL	DISH	GEOM	PPT1WT	pH	COUNT TIME	MID/AVE DATE/TIME	TRACER ID/ SPIKE ID	CRDL	UNITS
5/21/99	J9E060174-001 CVGJE-1-0GX	SOLID									1	pCi/g
5/21/99	J9E060174-001 CVGJE-1-03	SOLID									1	pCi/g
0/00/00	J9E070000-379 CVJXV-1-01B	SOLID									1	pCi/g
0/00/00	J9E070000-379 CVJXV-1-02C	SOLID									1	pCi/g

**PRIORITY**

NUMBER OF WORK ORDERS IN BATCH: 4

052

COC Signature Page

W02767

Batch #: 9127373

	Initials/Date	Procedure #
Released By	<del>RA</del> 57-99	RICK0009
Received	TR 5/7/99	RICHRE 5013
Released By	TR 5/10/99	n/a
Received	5/10/99 SK	RC 5019
Released By	SK 5/13/99	n/a
Received	EB 5/13/99	RICHRE 5069
Released By	EB 5/13/99	n/a
Received	RA 5/13/99	RICHRE0001 Rev1
Released By	M 5/17/99	n/a
Received	(B) 5/17/99	RICHMT 5002
Released By	(B) 5/17/99	n/a
Received	TR 5/27/99	RICHRE 0002/2
Released By	TR 5/27/99	n/a
Received		

RQC053

Quanterra Incorporated  
RAD PREP BENCH WORKSHEET

Run Date: 5/07/99  
Time: 17:08:42

<u>Prep</u>	<u>Sep1</u>	<u>Sep2</u>	Samples Covered
---	---	---	Labware Labeled
---	---	---	Verify Test/Container
---	---	---	Samples Ordered Sequentially
---	---	---	Logbooks Entered

\*\*\*\*\*  
 \* QC BATCH: 9127373 \*  
 \*  
 \*\*\*\*\*

Prep Dt/Tm/Person: 5/07/99 0  
 Sep1 Dt/Tm/Person: 0/00/00 00000  
 Sep2 Dt/Tm/Person: 0/00/00 00000  
 Cocktail Date/Time: 0/00/00

W02767

S4: Nickel by ICP and Nickel-63 by Liquid Scint  
 AF: Ni-63 PrpRC5013/5019, SepRC5069  
 5I: RCH: HANFORD ANALYTICAL

<u>ANL</u> <u>DUE</u>	<u>LOT#,MSRUN#/ WORK ORDER</u>	<u>CLIENT</u> <u>MATRIX</u>	<u>INIT/ FINAL</u>	DISH	GEOM	PPT1WT	pH	COUNT TIME	MID/AVE DATE/TIME	TRACER ID/ SPIKE ID	CRDL	UNITS
5/21/99	J9E060174-001 CVGJE-1-0AX	9127180 SOLID									30	pCi/g
5/21/99	J9E060174-001 CVGJE-1-04	9127180 SOLID									30	pCi/g
5/21/99	J9E060174-001 CVGJE-1-09S	9127180 SOLID									30	pCi/g
0/00/00	J9E070000-373 CVJXM-1-01B	SOLID									30	pCi/g
0/00/00	J9E070000-373 CVJXM-1-02C	SOLID									30	pCi/g

**PRIORITY**

NUMBER OF WORK ORDERS IN BATCH: 5

054

COC Signature Page

Batch #:	9130436	Initials/Date	Procedure #
Released By	<del>HA</del> 5/18/99	PickRC0009	
Received	(B) 5/18/99	(B) 5/18/99 RICHRC5005 R.3	
Released By	(B) 5/19/99	n/a	
Received			
Released By		n/a	
Received			
Released By		n/a	
Received			
Released By		n/a	
Received			
Released By		n/a	
Received			
Released By		n/a	
Received			

RQC050

Quanterra Incorporated  
WET CHEM BATCHSHEET  
Richland

Run Date: 5/10/99  
Time: 18:14:37

PRODUCTION FIGURES - WET CHEM

TOTAL NUMBER	SAMPLE NUMBER	QC	RE-RUN MATRIX	RE-RUN OTHER	MISC NUMBER	TOTAL HOURS	EXPANDED DELIVERABLE
--------------	---------------	----	---------------	--------------	-------------	-------------	----------------------

METHOD:	EA Chromium, Hexavalent (7196A)						
QC BATCH #:	9130436			INITIALS:		DATA ENTRY:	
PREP DATE:	5/10/99			PREP		INITIALS	
USER:	ROSSR			ANAL		DATE	

Work Order	Lab Number	Structured Analysis	Exp. Del.	Analysis Date	Sample ID:
CVGJE-1-01	J-9E060174-001	XX A DW EA 5I			B0VD45
CVGJE-1-0H	J-9E060174-001-S	XX A DW EA 5I			B0VD45
CVGJE-1-0K	J-9E060174-001-S	XX A DW EA 5I			B0VD45
CVGJE-1-0J	J-9E060174-001-X	XX A DW EA 5I			B0VD45 DUP
CVLM3-1-01	J-9E100000-436-B	XX A DW EA 5I			INTRA-LAB BLANK
CVLM3-1-02	J-9E100000-436-C	XX A DW EA 5I			INTRA-LAB CHECK

Control Limits

(75-125)  
(75-125)  
(80-120)

9500

**Analytical Data Package Prepared For**

**Bechtel Hanford**

**Chemical Analysis By**

**Quanterra Environmental Services  
*St. Louis Laboratory***

Sample Delivery Group Number: W02767

BHI Identification Number  
B0VD45

Quanterra Identification Number  
21260-001



000001

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

May 21, 1999

Attention: Joan Kessner

---

Project Number	:	550.186
SDG	:	W02767
Number of Samples	:	One (1)
Sample Matrix	:	Soil
Data Deliverable	:	Summary
Date SDG Closed	:	May 06, 1999

---

### II. Introduction

On May 6, 1999, one (1) "soil" sample was received by Quanterra, Richland and transferred to Quanterra, St. Louis for chemical analysis. The sample was received at Quanterra, St. Louis on May 7, 1999 at a temperature of 4 °C. Upon receipt, the sample was given the following laboratory ID number to correspond with the specific client ID's:

<u>St. Louis ID</u>	<u>BHI ID</u>	<u>SAF ID</u>	<u>Matrix</u>	<u>Date of Receipt</u>
21260-001	B0VD45	B99-002	SOIL	06-MAY-99

### 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 - 6010 (SW-846) {Chromium & Lead}  
   Mercury - 7471 - (CV)

Deviation from Request:        No Deviation from requested methods.

000002

Bechtel Hanford Incorporated  
May 21, 1999  
Project Number: 550.186  
SDG: W02767  
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 priority results were transmitted on 5/20/99.

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.

"No comments" were noted for this analysis.

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

Reviewed and approved:



Shiela M. Louvier

St. Louis Project Manager

000003

W027167

Quanterra May 11, 1999 04:29 pm  
Account: 10722 Project: 550.186 Quanterra-Richland QAS No. 550.186 Rev. 2  
Master Sample Login: 21260

Project Manager: S. Louvier

Reviewed by and Date: *J Smith* 5-12-99

Sample Header Template:

Sample No.	Client ID	C-Matrix	Date Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
# Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers: % Filled)	
21260-001 SAF B99-002/ CR, PB ONLY	B0VD45	Soil	04-MAY-99 12:43	06-MAY-99 11:30	20-MAY-99	AIRBORNE	1	Screening not Required
1 AN - Amber Glass-120ML	HG/7471/Q4	S	NONE	18-MAY-99	01-JUN-99	R18B	(442022:100)	
1	ICAP/6010/Q4	S	NONE	18-MAY-99	31-OCT-99	R18B	(442022:100)	
1	PM/IT/Q4	S	NONE	18-MAY-99	31-OCT-99	R18B	(442022:100)	
21260-001MS	B0VD45	Soil	04-MAY-99 12:43	06-MAY-99 11:30	20-MAY-99	AIRBORNE	1	Screening not Required
1 AN - Amber Glass-120ML	HG/7471/Q4	S	NONE	18-MAY-99	01-JUN-99	R18B	(442022:100)	
1	ICAP/6010/Q4	S	NONE	18-MAY-99	31-OCT-99	R18B	(442022:100)	
21260-001MSD	B0VD45	Soil	04-MAY-99 12:43	06-MAY-99 11:30	20-MAY-99	AIRBORNE	1	Screening not Required
1 AN - Amber Glass-120ML	HG/7471/Q4	S	NONE	18-MAY-99	01-JUN-99	R18B	(442022:100)	
1	ICAP/6010/Q4	S	NONE	18-MAY-99	31-OCT-99	R18B	(442022:100)	

000004

3\*=Sample has not been rad screened.



UVOZ 1161  
Bechtel Hanford Inc.

UCL 018001

Q-27038 40

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-002-90

Page 1 of 1

Collector Fahlberg/Kerkow	Company Contact R Coffman	Telephone No. 373-6425	Project Coordinator TRENT, SJ	Price Code	Data Turnaround <b>15 Days</b>
Project Designation 100 BC Areas - Full Protocol	Sampling Location 100B/C 116-B-3	SAF No. B99-002			
Ice Chest No. <b>ERC 96-070</b>	Field Logbook No. EL 1327-3	Method of Shipment <b>HAND DELIVER GOV. VEHICLE</b>			
Shipped To Quanterra Incorporated	Offsite Property No. <b>N/A</b>	Bill of Lading/Air Bill No. <b>N/A</b>			
			COA <b>R16B112600</b>		

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	Cool 4C	None	None	None				
	Type of Container	P	aG	aG	aG	Marinelli				
Special Handling and/or Storage	No. of Container(s)	1	1	1	1	1				
	Volume	20mL	60mL	60mL	125mL	500mL				
<b>SPG</b> <b>WOZ167</b>	<b>SAMPLE ANALYSIS</b>	<b>Due 5-21-99</b>	Activity Scan	Chromium Hex - 7196	See item (1) in Special Instructions.	ICP Metals - 6010A (SW-846) (Chromium, Lead); Mercury - 7471 - (CV)	See item (2) in Special Instructions.			
<b>CVGJE</b>	Soil	5-4-99	1243	X	X	X	X	X		<b>BOVD 56</b>

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By <b>R. Fahlberg</b>	Date/Time <b>5-4-99</b>	Received By <b>R. Fahlberg</b>	Date/Time <b>5-4-99</b>
Relinquished By <b>REF 1-C</b>	Date/Time <b>5699 1030</b>	Received By <b>SJ GALE</b>	Date/Time <b>5699 1030</b>
Relinquished By <b>SJ GALE</b>	Date/Time <b>5699 1130</b>	Received By <b>K. DeWentling</b>	Date/Time <b>5699</b>
Relinquished By <b>SJ GALE</b>	Date/Time <b>5-8-99</b>	Received By <b>SJ GALE</b>	Date/Time <b>5-8-99</b>

NOTE: COLLECTOR UNAVAILABLE TO SIGN COC

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

Login No.: 21260  
W02767

Condition Upon Receipt Variance Report  
St. Louis Laboratory

Client: Rickland/BHI  
Project No: 375 OH 550.186 JRS 510-99  
Shipper/No: Carbone

Date: 5-7-99 Time: 0805  
Initiated by: [Signature]  
RFA/COC Numbers: 10346, B99-002-90  
JRS 5-10-99

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/not tamper evident (circle all that apply).	

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

Temperature Variance Does Not Affect the Following Analyses: \_\_\_\_\_

Notes: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Corrective Action:

Client's Name: \_\_\_\_\_ Informed verbally on: \_\_\_\_\_ By: \_\_\_\_\_

Client's Name: \_\_\_\_\_ Informed in writing on: \_\_\_\_\_ By: \_\_\_\_\_

Sample(s) processed "as is". \_\_\_\_\_

Comments: \_\_\_\_\_ If released, notify: \_\_\_\_\_

Sample(s) on hold until: \_\_\_\_\_

Sample Control Supervisor Review: (or designate) [Signature] Date: 5-7-99

Project Management Review: Jennifer Smith Date: 5-10-99

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

# METALS

000003



Bechtel Hanford Incorporated  
3350 George Washington Way  
Richland, WA 99352

Project: 550.186

Category: ICAP Metals TAL + Lead  
Method: EPA 6010  
Matrix: SOLID

Sample Date : 05/04/99  
Receipt Date : 05/06/99  
Report Date : 05/18/99

Client ID: B0VD45

Quanterra ID : 21260-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection	
								Limit	Dilution
Chromium	7440-47-3	QCBLK199295-1	05/13/99	05/14/99	12.6	MG/KG		1.0	1
Lead	7439-92-1	QCBLK199295-1	05/13/99	05/14/99	4.5	MG/KG	B	10.3	1

000009



Bechtel Hanford Incorporated  
3350 George Washington Way  
Richland, WA 99352

Project: 550.186

Category: ICAP Metals TAL + Lead  
Method: EPA 6010  
Matrix: SOLID

Sample Date : 05/04/99  
Receipt Date : 05/06/99  
Report Date : 05/18/99

Client ID: B0VD45

Quanterra ID : 21260-001MS

---

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection	
								Limit	Dilution
Chromium	7440-47-3	QCBLK199295-1	05/13/99	05/14/99	100	%REC			1
Lead	7439-92-1	QCBLK199295-1	05/13/99	05/14/99	93	%REC			1

---

000010



Bechtel Hanford Incorporated  
3350 George Washington Way  
Richland, WA 99352

Project: 550.186

Category: ICAP Metals TAL + Lead  
Method: EPA 6010  
Matrix: SCLID

Sample Date : 05/04/99  
Receipt Date : 05/06/99  
Report Date : 05/18/99

Client ID: B0VD45

Quanterra ID : 21260-001MSD

---

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result Unit	Qual.	Detection Limit	Dilution
Chromium	7440-47-3	QCBLK199295-1	05/13/99	05/14/99	92 %REC			1
Lead	7439-92-1	QCBLK199295-1	05/13/99	05/14/99	91 %REC			1

---

000011



Bechtel Hanford Incorporated  
3350 George Washington Way  
Richland, WA 99152

Project: 550.186

Category: ICAP Metals  
Method: EPA 6010  
Matrix: SOLID

Sample Date : NA  
Receipt Date : NA  
Report Date : 05/18/99

Client ID: NA

Quanterra ID : QCBLK199295-1

---

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result Unit	Qual.	Detection Limit	Dilution
Chromium	7440-47-3	QCBLK199295-1	05/13/99	05/14/99	0.16 MG/KG	U	1.0	1
Lead	7439-92-1	QCBLK199295-1	05/13/99	05/14/99	0.12 MG/KG	U	10.0	1

---

000012



Bechtel Hanford Incorporated  
3350 George Washington Way  
Richland, WA 99352

Project: 550.186

Category: ICAP Metals  
Method: EPA 6010  
Matrix: SOLID

Sample Date : NA  
Receipt Date : NA  
Report Date : 05/18/99

Client ID: NA

Quanterra ID : QCLCS199295-1

---

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result Unit	Qual.	Detection Limit	Dilution
Chromium	7440-47-3	QCBLK199295-1	05/13/99	05/14/99	106 %REC			1
Lead	7439-92-1	QCBLK199295-1	05/13/99	05/14/99	99 %REC			1

---

000013



Bechtel Hanford Incorporated  
3350 George Washington Way  
Richland, WA 99352

Project: 550.186

Category: Mercury  
Method: SW846 7471  
Matrix: SCLID

Sample Date : 05/04/99  
Receipt Date : 05/06/99  
Report Date : 05/18/99

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
BOVD45	21260-001	Mercury	7439-97-6	QCBLK199307-1	05/13/99	05/13/99	0.02	MG/KG	B	0.034	1
BOVD45	21260-001MS	Mercury	7439-97-6	QCBLK199307-1	05/13/99	05/13/99	91	%REC			1
BOVD45	21260-001MSD	Mercury	7439-97-6	QCBLK199307-1	05/13/99	05/13/99	87	%REC			1
NA	QCLCS199307-1	Mercury	7439-97-6	QCBLK199307-1	05/13/99	05/13/99	96	%REC			2
NA	QCBLK199307-1	Mercury	7439-97-6	QCBLK199307-1	05/13/99	05/13/99	0.017	MG/KG	U	0.033	1

000014















