Quanterra

W02996.QES

Quanterra
2800 George Washington Way
Richland, Washington 99352-1613

509 375-3131 Telephone
509 375-5590 Fax

00052752

CERTIFICATE OF ANALYSIS

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

January 23, 2000

Attention: Joan Kessner

RECEIVED MAR 20 2000 EDMC

FEB 2000 RECEIVED Data Log In

SAF Number	:	B00-003
Date SDG Closed	:	December 30, 1999
Number of Samples	:	Six (6)
Sample Type	:	Other (Solid)
SDG Number	:	W02996
Data Deliverable	:	Summary

I. Introduction

On December 30, 1999, six other (solid matrix) samples were received at the Quanterra Richland Laboratory (QRL) for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Bechtel Hanford, Inc. (BHI) specific IDs:

QESRL ID#	BHI ID#	MATRIX	DATE OF RECEIPT
9D710J10	B0WY50	OTHER	12/30/99
9D710Q10	B0X9Y8	OTHER	12/30/99
9D710T10	B0X9Y9	OTHER	12/30/99
9D710V10	B0X9Y6	OTHER	12/30/99
9D710W10	B0X9Y7	OTHER	12/30/99
9D710X10	~~B09Y5~~ B0X9Y5	OTHER	12/30/99

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
Americium-241 by method RICH-RC-5080

Uranium-234, -235, -238 by method RICH-RC-5079
Gamma Spectroscopy
Gamma Scan by method RICH-RC-5017
Gas Proportional Counting
Total Strontium by method RICH-RC-5006

III. Quality Control

The analytical results for each analysis performed under SDG W02996 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

IV. Comments

Alpha Spectroscopy

Plutonium-238, -239/40 by method RICH-RC-5079:
Results are not included in this report for samples B0WY50 and B0WY50 duplicate analysis. Tracer was not recovered due to matrix interferences, therefore results cannot be calculated. The samples exhibited matrix difficulties throughout separation processes. This analytical batch will not include a duplicate analysis result. Except as noted, the LCS, batch blank and sample results are within contractual requirements.

Americium-241 by method RICH-RC-5080:
Results are not included in this report for samples B0WY50 and B0WY50 duplicate analysis. Tracer was not recovered due to matrix interferences, therefore results cannot be calculated. The samples exhibited matrix difficulties throughout separation processes. This analytical batch will not include a duplicate analysis result. Except as noted, the LCS, batch blank and sample results are within contractual requirements.

Uranium-234, -235, -238 by method RICH-RC-5079:
Results are not included in this report for sample B0WY50. Tracer was not recovered due to matrix interferences, therefore results cannot be calculated. The sample exhibited matrix difficulties throughout separation processes. The MDA achieved for sample B0X9Y6 does not meet the CRDL due to a reduced volume analyzed based on the sample matrix (metal coupon). The data are reported with the MDAs achieved. Except as noted, the LCS, batch blank, samples and sample duplicate (B0X9Y8) results are within contractual requirements.

Gamma Spectroscopy

Gamma Scan by method RICH-RC-5017:

The MDAs achieved for samples B0WY50, B0X9Y8 and B0X9Y7 do not meet the CRDL due to insufficient volumes and/or inadequate density for the counting geometry used (matrix effects). The results are reported with the MDAs achieved. Excpet as noted, the LCS, batch blank, sample and sample duplicate (B0X9Y9) results are within contractual requirements.

Gas Proportional Counting

Total Strontium by method RICH-RC-5006:

Results are not included in this report for sample B0WY50. Tracer was not recovered due to matrix interferences, therefore results cannot be calculated. The sample exhibited matrix difficulties throughout separation processes. The MDA achieved for sample B0X9Y6 duplicate analysis does not meet the CRDL due to a reduced volume analyzed based on the sample matrix (metal coupon). The sample was analyzed using standard volume and both the MDA and duplicate results RPD are within requirements, therefore the duplicate result is reported with the MDA achieved. Except as noted, the LCS, batch blank, sample and sample duplicate (B0X9Y6) 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

Jackie Waddell
Project Manager

Quanterra

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02996 / 9592
LAB SAMPLE ID:	9D710J10	MATRIX:	OTHER
CLIENT ID:	B0WY50	DATE RECEIVED:	12/30/99 12:40:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
CO-60	2.87E-02	U	5.4E-02	5.4E-02	9.70E-02	pCi/g		RICHRC5017
CS-137	8.43E-03	U	4.4E-02	4.4E-02	7.59E-02	pCi/g		RICHRC5017
EU-152	3.68E-02	U	1.0E-01	1.0E-01	1.74E-01	pCi/g		RICHRC5017
EU-154	4.62E-02	U	1.6E-01	1.6E-01	2.83E-01	pCi/g		RICHRC5017
EU-155	-2.69E-02	U	7.3E-02	7.3E-02	1.22E-01	pCi/g		RICHRC5017

Number of Results: 5

Result = IDL When Not Detected

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

Quanterra

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02996 / 9592
LAB SAMPLE ID:	9D710Q10	MATRIX:	OTHER
CLIENT ID:	B0X9Y8	DATE RECEIVED:	12/30/99 12:40:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	-3.31E-04	U	6.6E-04	6.6E-04	1.67E-02	pCi/g	91.03%	RICHRC5080
PU-238	-6.51E-04	U	9.2E-04	9.3E-04	1.86E-02	pCi/g	73.46%	RICHRC5010
PU239/40	0.00E+00	U	0.0E+00	1.0E-02	1.10E-02	pCi/g	73.46%	RICHRC5010
U-234	7.91E-03	U	1.5E-02	1.5E-02	3.09E-02	pCi/g	80.60%	RICHRC5079
U-235	3.54E-03	U	1.1E-02	1.1E-02	2.78E-02	pCi/g	80.60%	RICHRC5079
U-238	3.11E-03	U	1.9E-02	1.9E-02	5.16E-02	pCi/g	80.60%	RICHRC5079
CO-60	5.22E-02	U	4.3E-02	4.3E-02	8.01E-02	pCi/g		RICHRC5017
CS-137	5.50E-02	U	4.2E-02	4.2E-02	7.36E-02	pCi/g		RICHRC5017
EU-152	5.43E-02	U	9.8E-02	9.8E-02	1.67E-01	pCi/g		RICHRC5017
EU-154	-5.14E-02	U	1.2E-01	1.2E-01	1.98E-01	pCi/g		RICHRC5017
EU-155	3.64E-03	U	6.5E-02	6.5E-02	1.10E-01	pCi/g		RICHRC5017
STRONTIUM	7.98E-02	U	5.6E-02	6.0E-02	1.06E-01	pCi/g	90.50%	RICHRC5006

Number of Results: 12

Quanterra

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02996 / 9592
LAB SAMPLE ID:	9D710T10	MATRIX:	OTHER
CLIENT ID:	B0X9Y9	DATE RECEIVED:	12/30/99 12:40:00 PM

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	1.1E-02	1.26E-02	pCi/g	88.43%	RICHRC5080
PU-238	0.00E+00	U	0.0E+00	9.9E-03	1.10E-02	pCi/g	77.97%	RICHRC5010
PU239/40	-6.50E-04	U	9.2E-04	9.3E-04	1.85E-02	pCi/g	77.97%	RICHRC5010
U-234	6.94E-02	J	3.8E-02	3.9E-02	3.11E-02	pCi/g	91.92%	RICHRC5079
U-235	-7.74E-04	U	1.1E-03	1.1E-03	2.21E-02	pCi/g	91.92%	RICHRC5079
U-238	1.05E-01	J	4.5E-02	4.9E-02	2.41E-02	pCi/g	91.92%	RICHRC5079
CO-60	-1.41E-02	U	2.2E-02	2.2E-02	3.60E-02	pCi/g		RICHRC5017
CS-137	9.72E-02	J	3.4E-02	3.4E-02	3.35E-02	pCi/g		RICHRC5017
EU-152	-1.21E-02	U	4.5E-02	4.5E-02	7.62E-02	pCi/g		RICHRC5017
EU-154	-1.05E-02	U	6.7E-02	6.7E-02	1.14E-01	pCi/g		RICHRC5017
EU-155	2.30E-02	U	3.9E-02	3.9E-02	6.61E-02	pCi/g		RICHRC5017
STRONTIUM	1.38E+01		4.8E-01	3.7E+00	1.20E-01	pCi/g	96.40%	RICHRC5006

Number of Results: 12

Result = IDL When Not Detected

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

Quanterra

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02996 / 9592
LAB SAMPLE ID:	9D710V10	MATRIX:	OTHER
CLIENT ID:	B0X9Y6	DATE RECEIVED:	12/30/99 12:40:00 PM

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	2.2E-01	2.48E-01	pCi/g	72.19%	RICHRC5080
PU-238	0.00E+00	U	0.0E+00	1.8E-01	2.01E-01	pCi/g	78.02%	RICHRC5010
PU239/40	0.00E+00	U	0.0E+00	1.8E-01	2.01E-01	pCi/g	78.02%	RICHRC5010
U-234	-1.10E-01	U	6.4E-01	6.4E-01	2.47E+00	pCi/g	27.57%	RICHRC5079
U-235	-1.46E-01	U	1.2E-01	1.2E-01	1.80E+00	pCi/g	27.57%	RICHRC5079
U-238	-1.10E-01	U	6.4E-01	6.4E-01	2.47E+00	pCi/g	27.57%	RICHRC5079
CO-60	-6.57E-04	U	2.5E-02	2.5E-02	4.39E-02	pCi/g		RICHRC5017
CS-137	6.68E-04	U	2.5E-02	2.5E-02	4.30E-02	pCi/g		RICHRC5017
EU-152	-4.93E-03	U	6.0E-02	6.0E-02	1.00E-01	pCi/g		RICHRC5017
EU-154	-3.75E-02	U	7.7E-02	7.7E-02	1.29E-01	pCi/g		RICHRC5017
EU-155	4.58E-02	U	6.1E-02	6.1E-02	1.01E-01	pCi/g		RICHRC5017
STRONTIUM	6.32E+01		1.2E+00	1.7E+01	1.44E-01	pCi/g	63.80%	RICHRC5006

Number of Results: 12

Quanterra

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02996 / 9592
LAB SAMPLE ID:	9D710W10	MATRIX:	OTHER
CLIENT ID:	B0X9Y7	DATE RECEIVED:	12/30/99 12:40:00 PM

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	1.0E-02	1.15E-02	pCi/g	98.82%	RICHRC5080
PU-238	6.95E-03	U	1.5E-02	1.5E-02	3.04E-02	pCi/g	55.47%	RICHRC5010
PU239/40	0.00E+00	U	0.0E+00	1.8E-02	2.05E-02	pCi/g	55.47%	RICHRC5010
U-234	2.68E-01	J	7.9E-02	9.2E-02	3.26E-02	pCi/g	71.59%	RICHRC5079
U-235	4.38E-03	U	1.2E-02	1.2E-02	2.87E-02	pCi/g	71.59%	RICHRC5079
U-238	2.99E-01	J	8.3E-02	9.8E-02	2.63E-02	pCi/g	71.59%	RICHRC5079
CO-60	2.26E-02	U	3.4E-02	3.4E-02	6.27E-02	pCi/g		RICHRC5017
CS-137	-4.40E-03	U	3.4E-02	3.4E-02	5.72E-02	pCi/g		RICHRC5017
EU-152	-1.69E-02	U	1.1E-01	1.1E-01	1.42E-01	pCi/g		RICHRC5017
EU-154	-7.36E-02	U	1.1E-01	1.1E-01	1.77E-01	pCi/g		RICHRC5017
EU-155	1.01E-01	U	1.5E-01	1.5E-01	2.42E-01	pCi/g		RICHRC5017
STRONTIUM	2.22E+02		2.0E+00	5.9E+01	1.27E-01	pCi/g	75.30%	RICHRC5006

Number of Results: 12

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

Quanterra

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02996 / 9592
LAB SAMPLE ID:	9D710X10	MATRIX:	OTHER
CLIENT ID:	B0X9Y5	DATE RECEIVED:	12/30/99 12:40:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	-3.55E-04	U	7.1E-04	7.1E-04	1.79E-02	pCi/g	98.20%	RICHRC5080
PU-238	4.63E-03	U	1.2E-02	1.2E-02	3.04E-02	pCi/g	70.52%	RICHRC5010
PU239/40	-4.89E-04	U	9.8E-04	9.8E-04	2.46E-02	pCi/g	70.52%	RICHRC5010
U-234	2.21E-01	J	7.0E-02	8.0E-02	3.23E-02	pCi/g	78.05%	RICHRC5079
U-235	-4.36E-04	U	8.7E-04	8.8E-04	2.19E-02	pCi/g	78.05%	RICHRC5079
U-238	2.05E-01	J	6.7E-02	7.6E-02	2.91E-02	pCi/g	78.05%	RICHRC5079
CO-60	5.84E-03	U	2.2E-02	2.2E-02	3.77E-02	pCi/g		RICHRC5017
CS-137	-8.33E-03	U	2.1E-02	2.1E-02	3.52E-02	pCi/g		RICHRC5017
EU-152	-1.08E-02	U	5.0E-02	5.0E-02	8.32E-02	pCi/g		RICHRC5017
EU-154	-9.37E-03	U	6.5E-02	6.5E-02	1.10E-01	pCi/g		RICHRC5017
EU-155	4.82E-02	U	3.6E-02	3.6E-02	6.22E-02	pCi/g		RICHRC5017
STRONTIUM	1.24E-01	U	8.8E-02	9.3E-02	1.68E-01	pCi/g	59.10%	RICHRC5006

Number of Results: 12

Quanterra

DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02996 / 9592
LAB SAMPLE ID:	D710Q17R	MATRIX:	OTHER
CLIENT ID:	B0X9Y8 DUP	DATE RECEIVED:	12/30/99 12:40:00 P
ORIG LAB SAMPLE ID:	9D710Q10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
U-234	3.89E-02	J	3.1E-02	3.2E-02	3.11E-02	pCi/g	73.19%	RICHRC5079	7.91E-03	132.40%
U-235	3.49E-03	U	1.2E-02	1.2E-02	3.29E-02	pCi/g	73.19%	RICHRC5079	3.54E-03	1.33%
U-238	4.91E-02	J	3.5E-02	3.6E-02	3.60E-02	pCi/g	73.19%	RICHRC5079	3.11E-03	176.19%

Number of Results: 3

Result = IDL When Not Detecte

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

Quanterra Analyticall Services, Inc
rptChemRadDup; v3.41

Quanterra

DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG: /RPT GRP:**	W02996 / 9592
LAB SAMPLE ID:	D710T17R	**MATRIX:**	OTHER
CLIENT ID:	B0X9Y9 DUP	**DATE RECEIVED:**	12/30/99 12:40:00 P
ORIG LAB SAMPLE ID:	9D710T10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
CO-60	-5.99E-03	U	2.5E-02	2.5E-02	4.22E-02	pCi/g		RICHRC5017	-1.41E-02	80.84%
CS-137	9.52E-02	J	3.2E-02	3.2E-02	3.95E-02	pCi/g		RICHRC5017	9.72E-02	2.03%
EU-152	2.56E-03	U	7.3E-02	7.3E-02	9.45E-02	pCi/g		RICHRC5017	-1.21E-02	306.65%
EU-154	-7.29E-02	U	7.5E-02	7.5E-02	1.21E-01	pCi/g		RICHRC5017	-1.05E-02	149.57%
EU-155	1.26E-02	U	5.2E-02	5.2E-02	8.77E-02	pCi/g		RICHRC5017	2.30E-02	58.65%

Number of Results: 5

Result = IDL When Not Detecte

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

Quanterra Analyticall Services, Inc
rptChemRadDup; v3.41

Quanterra

DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02996 / 9592
LAB SAMPLE ID:	D710V17R	MATRIX:	OTHER
CLIENT ID:	B0X9Y6 DUP	DATE RECEIVED:	12/30/99 12:40:00 P
ORIG LAB SAMPLE ID:	9D710V10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
STRONTIUM	7.68E+01		5.7E+00	2.1E+01	2.81E+00	pCi/g	98.30%	RICHRC5006	6.32E+01	19.39%

Number of Results: 1

Result = IDL When Not Detecte

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

Quanterra Analyticall Services, Inc
rptChemRadDup; v3.41

Quanterra

BLANK RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG /RPT GRP:**	W02996 / 9592
LAB SAMPLE ID:	D72FA11B	**MATRIX:**	OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	4.79E-03	U	1.3E-02	1.3E-02	3.14E-02	pCi/g	67.03%	RICHRC5010
PU239/40	-5.04E-04	U	1.0E-03	1.0E-03	2.53E-02	pCi/g	67.03%	RICHRC5010

Number of Results: 2

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

Quanterra

BLANK RESULTS

LAB NAME:	QUANTERRA, Richland	SDG /RPT GRP:	W02996 / 9592
LAB SAMPLE ID:	D72FD11B	MATRIX:	OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	8.21E-03	U	1.2E-02	1.2E-02	1.11E-02	pCi/g	100.15%	RICHRC5080

Number of Results: 1

Result = IDL When Not Detected

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

Quanterra

BLANK RESULTS

LAB NAME:	QUANTERRA, Richland	SDG /RPT GRP:	W02996 / 9592
LAB SAMPLE ID:	D72FF11B	MATRIX:	OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
U-234	-2.52E-03	U	2.1E-03	2.1E-03	3.12E-02	pCi/g	78.33%	RICHRC5079
U-235	3.99E-03	U	1.1E-02	1.1E-02	2.62E-02	pCi/g	78.33%	RICHRC5079
U-238	-5.68E-03	U	1.1E-02	1.1E-02	4.95E-02	pCi/g	78.33%	RICHRC5079

Number of Results: 3

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

Quanterra

BLANK RESULTS

LAB NAME:	QUANTERRA, Richland	SDG /RPT GRP:	W02996 / 9592
LAB SAMPLE ID:	D72FL11B	MATRIX:	OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
CO-60	2.06E-02	U	2.1E-02	2.1E-02	3.83E-02	pCi/g		RICHRC5017
CS-137	-7.78E-03	U	2.0E-02	2.0E-02	3.38E-02	pCi/g		RICHRC5017
EU-152	2.61E-02	U	4.7E-02	4.7E-02	7.99E-02	pCi/g		RICHRC5017
EU-154	-2.65E-02	U	6.0E-02	6.0E-02	1.01E-01	pCi/g		RICHRC5017
EU-155	1.43E-02	U	3.3E-02	3.3E-02	5.77E-02	pCi/g		RICHRC5017

Number of Results: 5

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

Quanterra

BLANK RESULTS

LAB NAME:	QUANTERRA, Richland	SDG /RPT GRP:	W02996 / 9592
LAB SAMPLE ID:	D72FN11B	MATRIX:	OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
STRONTIUM	1.02E-01	U	6.9E-02	7.4E-02	1.29E-01	pCi/g	72.80%	RICHRC5006

Number of Results: 1

Result = IDL When Not Detected

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

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02996 / 9592
LAB SAMPLE ID:	D72FA12S	MATRIX:	OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
PU239/40	2.54E+00		3.2E-01	6.0E-01	4.74E-02	pCi/g	39.94%	2.29E+00	110.87%

Number of Results: 1

Result = IDL When Not Detecte

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

Quanterra Analytical Services, Inc

rptChemRadLcs; v3.41

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02996 / 9592
LAB SAMPLE ID:	D72FD12S	MATRIX:	OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
AM-241	2.28E+00		2.0E-01	4.4E-01	1.73E-02	pCi/g	97.54%	2.29E+00	99.57%

Number of Results: 1

Result = IDL When Not Detecte

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

Quanterra Analytical Services, Inc

rptChemRadLcs; v3.41

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02996 / 9592
LAB SAMPLE ID:	D72FF12S	MATRIX:	OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
U-234	6.87E-01	J	1.2E-01	1.7E-01	2.60E-02	pCi/g	82.99%	8.66E-01	79.33%
U-235	2.40E-02	U	2.3E-02	2.4E-02	2.95E-02	pCi/g	82.99%	3.95E-02	60.70%
U-238	8.11E-01	J	1.3E-01	1.9E-01	3.23E-02	pCi/g	82.99%	9.07E-01	89.36%

Number of Results: 3

Result = IDL When Not Detecte

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

Quanterra Analytical Services, Inc

rptChemRadLcs; v3.41

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02996 / 9592
LAB SAMPLE ID:	D72FL12S	MATRIX:	OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
CS-137	1.19E+00		1.5E-01	1.5E-01	8.29E-02	pCi/g		9.83E-01	121.05%

Number of Results: 1

Result = IDL When Not Detecte

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

Quanterra Analytical Services, Inc

rptChemRadLcs; v3.41

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02996 / 9592
LAB SAMPLE ID:	D72FN12S	MATRIX:	OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
STRONTIUM	1.37E+00		1.5E-01	3.9E-01	1.08E-01	pCi/g	96.00%	1.14E+00	120.81%

Number of Results: 1

Result = IDL When Not Detecte

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

Quanterra Analytical Services, Inc

rptChemRadLcs; v3.41

Quanterra

Data Review Checklist
RADIOCHEMISTRY

Lot Number: J9C300199				
Client ID: BHI				
Due Date: 1/14/00				
QC Batch Number: 8004215		SDG Number: 2996		
Method Test Parameter: SX-AM				
Matrix: Other				
Review Item	Yes (√)	No (√)	N/A (√)	2nd Level Review (√)
A. Calibration 1. Is the calibration documentation included where applicable?			✓	
B. Sample Analysis 1. Are the sample yields within acceptance criteria?	✓	✓		✓
2. Were all sample holding times met?			✓	✓
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			✓
C. QC Samples 1. Is the blank yield within acceptance criteria?	✓			✓
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			✓
3. 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: D710J10A & D710J103 failed analyses due to matrix.

First Level Review: Jackie Waddell Date: 1/23/00

Second Level Review: Lee Scott Date: 1/28/00

LS-038, Rev.5, 4/99

Quanterra

Data Review Checklist
RADIOCHEMISTRY

Lot Number: J9L300199				
Client ID: BHI				
Due Date: 1/14/00				
QC Batch Number: 0002213		SDG Number: 3996		
Method Test Parameter: SO-Pu ISO				
Matrix: Other				
Review Item	Yes (√)	No (√)	N/A (√)	2nd Level Review (√)
A. Calibration 1. Is the calibration documentation included where applicable?			✓	
B. Sample Analysis 1. Are the sample yields within acceptance criteria?	✓	✓		✓
2. Were all sample holding times met?			✓	✓
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			✓
C. QC Samples 1. Is the blank yield within acceptance criteria?	✓			✓
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			✓
3. 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: D710J106 & D710J107 failed analyses due to matrix

First Level Review: Jackie Waddell Date: 1/23/00

Second Level Review: [signature] Date: 1/26/00

LS-038, Rev.5, 4/99

Quanterra

Data Review Checklist
RADIOCHEMISTRY

Lot Number: J9L300199				
Client ID: BHI				
Due Date: 1/14/00				
QC Batch Number: 0004216		SDG Number: 2996		
Method Test Parameter: SR-UISO				
Matrix: Other				
Review Item	Yes (√)	No (√)	N/A (√)	2nd Level Review (√)
A. Calibration 1. Is the calibration documentation included where applicable?			✓	
B. Sample Analysis 1. Are the sample yields within acceptance criteria?	✓	✓		✓
2. Were all sample holding times met?			✓	
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			✓
C. QC Samples 1. Is the blank yield within acceptance criteria?	✓			✓
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			✓
3. 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: D710T104 failed analysis due to matrix

First Level Review: Jackie Wadgeer Date: 1/23/00

Second Level Review: Ann Scott Date: 1/28/00

LS-038, Rev.5, 4/99

Quanterra

Data Review Checklist
RADIOCHEMISTRY

Lot Number: J9L 300199				
Client ID: BHI				
Due Date: 1-14-00				
QC Batch Number: 0004220		SDG Number: 2996		
Method Test Parameter: gamma				
Matrix: soil				
Review Item	Yes (√)	No (√)	N/A (√)	2nd Level Review (√)
A. Calibration 1. Is the calibration documentation included where applicable?			✓	
B. Sample Analysis 1. Are the sample yields within acceptance criteria?			✓	
2. Were all sample holding times met?	✓			
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			
C. QC Samples 1. Is the blank yield within acceptance criteria?			✓	
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			
3. 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: MDAS not met D710J101 Co, Eu(all) D710Q101 Eu 152, 154, D710W101 Eu 154, 155 NCM J01051

First Level Review: Pam Kreutzer Date: 1-19-00

Second Level Review: Jackie Waddell Date: 1/23/00

LS-038, Rev.5, 4/99

0027

Quanterra

Clouseau

Nonconformance Memo

NCM #:	J01051	Classification:	Anomaly
NCM Initiated By:	Pam Kenitzer	Status:	CLOSED
Date Opened:	01/19/00	Production Area:	Environmental - Prep
Date Closed:	01/20/00	Tests:	Gamma by GER
		Lot #'s (Sample #'s):	J9L300199 (1,2,5)
		QC Batch:	0004220
Nonconformance:	MDA not met		
Subcategory:	Insufficient Volume		

Problem Description / Root Cause

Name	Date	Description
Pam Kenitzer	01/19/00	Sample D710J101 did not meet CRDL for isotopes Co60, and all Eu isotopes. Sample D710Q101 for Eu 152 and 154. Sample D710W101 for Eu 154 and 155.

Corrective Action

Name	Date	Corrective Action
Dale OConnell	01/20/00	Report data with MDAs achieved.

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	01/20/00	01/20/00	by narrative
	Response	Response Details		
	No response saved			

Approval History

Name	Date Approved:	Position
Pam Kenitzer	01/19/00	Group Leader
Dale OConnell	01/20/00	Group Leader
Jackie Waddell	01/20/00	Project Manager
Jodie Carnes	01/20/00	Quality Assurance

Quanterra

Data Review Checklist
RADIOCHEMISTRY

Lot Number:	J9L300199
Client ID:	BHI
Due Date:	1/14/00
QC Batch Number:	0004221
SDG Number:	J9L96
Method Test Parameter:	TH-75R
Matrix:	Other

Review Item	Yes (√)	No (√)	N/A (√)	2nd Level Review (√)
A. Calibration 1. Is the calibration documentation included where applicable?			✓	
B. Sample Analysis 1. Are the sample yields within acceptance criteria?	✓	✓		✓
2. Were all sample holding times met?			✓	✓
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			✓
C. QC Samples 1. Is the blank yield within acceptance criteria?	✓			✓
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			✓
3. 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: D710 J105 failed analysis due to matrix

First Level Review: Jackie Waldrep Date: 1/23/00

Second Level Review: Ken Scott Date: 1/28/00

LS-038, Rev.5, 4/99

CHAIN OF CUSTODY

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-003-09	Page 1 of 1

Collector: Doug Bowers	Company Contact: J Adler	Telephone No.: 373-4316	Project Coordinator: TRENT, SJ
Project Designation: 331-A Virology Laboratory Building	Sampling Location: 300 Area		SAF No.: B00-003
Ice Chest No.: ~~ERC 99.033~~ ERC 96-087 12-30-99 DJB	Field Logbook No.: EFL 1133-7	COA: X28314PNNL	Method of Shipment: Hand Delivered
Shipped To: ~~Radiological Counting Facility~~ Quanterra DJB 12-30-99	Offsite Property No.: N/A		Bill of Lading/Air Bill No.: N/A

Price Code: 9K

Air Quality ☐

Data Turnaround: 24 Hours

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None									
Type of Container	G/P	GG									
No. of Container(s)	1	1									
Volume	20mL only	250 ml AG									
	Rad Screen										

SAMPLE ANALYSIS

SDGW02996 J9L300199

Sample No.	Matrix *	Sample Date	Sample Time	[illegible]	[illegible]	RCF#							
~~Box B16~~	~~Other Solid~~	~~12-28-99~~	~~0950~~	~~X~~	X	6953			DJB 12-30-99				
~~Box B17~~ Bowy50	other solid	12-28-99	1000	~~X~~	X	6954							
DJB 12-30-99									D710J				

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 12-28-99/1049	Received By: R. Thoren	Date/Time: 12.28.99/1049
Relinquished By: R. Thoren	Date/Time: 12.28.99/1230	Received By: CW Landes / CW Landes	Date/Time: 12-28-99/1230
Relinquished By: CW Landes / CW Landes	Date/Time: 12-30-99/1155	Received By: Doug Bowers / Doug Bowers	Date/Time: 12-30-99/1155
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 12-30-99/1240	Received By: K. Schuckett / [illegible]	Date/Time: 12/30/99 12:40
Relinquished By	Date/Time	Received By: DJB 12-30-99	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

C.O.C. split this is a copy of origonal. DJB 12-30-99 BOX B17 is changed to Bowy50 to go to Quanterra

Matrix *
S=Soil
SE=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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B00-003-08	Page 1 of 1
Collector Doug Bowers	Company Contact J Adler	Telephone No. 373-4316	Project Coordinator TRENT, SJ	Price Code 9K Air Quality ☐
Project Designation 331-A Virology Laboratory Building	Sampling Location 300 Area 331 A bldg		SAF No. B00-003	Data Turnaround 15 Days
Ice Chest No. ERC96-082	Field Logbook No. EFL 1133-7	COA X28314PNNL	Method of Shipment Fed Ex	
Shipped To ~~TMA/RECRA~~ Quanterra DJB 12-21-99	Offsite Property No.		Bill of Lading/Air Bill No.	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None									
Type of Container	aG	aG									
No. of Container(s)	1 DJB 12-27-99	1									
Volume	~~60~~mL 120	120mL									
	ICP Metals - 6010A (TAL)	See item (1) in Special Instructions.									

SDG
W02996

SAMPLE ANALYSIS

J9L300199

Sample No.	Matrix *	Sample Date	Sample Time									
BOX9Y8	Other Solid	12-27-99	1215		X			BOXB12	—	D710Q		
BOX9Y9	other Solid	12-27-99	1229		X			BOXB13	—	D710T		
BOXB02	other Solid	12-27-99	1332	X				BOXB18				
BOXB03	other Solid	12-27-99	1347	X				BOXB19				
BOXB04	other Solid	12-27-99	1411	X				BOXB20				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	12-27-99/1600	Ref 1A	12-27-99/1600
Ref 1A	12-30-99/1000	Doug Bowers	12-30-99/1000
Doug Bowers	12-30-99/1240	Keith Whitehall	12/30/99 12:40

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Isotopic Plutonium; Isotopic Uranium; Americium-241; Strontium-89,90 -- Total Sr

Matrix *
S=Soil
SE=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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B00-003-08	Page 1 of 1
Collector: Doug Bowers	Company Contact: J Adler	Telephone No.: 373-4316	Project Coordinator: TRENT, SJ	Price Code: 9K; Data Turnaround: 15 Days
Project Designation: 331-A Virology Laboratory Building	Sampling Location: 300 Area 331 A bldg		SAF No.: B00-003	Air Quality ☐
Ice Chest No. EAC 96-082	Field Logbook No.: EFL 1133-7	COA: X28314PNNL	Method of Shipment: Fed Ex	
Shipped To: ~~TMA/RECRA~~ Quanterra DJB 12-21-99	Offsite Property No.		Bill of Lading/Air Bill No.	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None										
Type of Container	aG	aG										
No. of Container(s)	1	1										
Volume	~~60mL~~ DJB 12-27-99 120	120mL										
	ICP Metals - 6010A (TAL)	See item (1) in Special Instructions.										

SAMPLE ANALYSIS

SDG W02996 J9L300199

Sample No.	Matrix *	Sample Date	Sample Time										
BOXB05	Other Solid	12-27-99	1428	X			BOXB21						
BOXB06	other Solid	12-27-99	1435	X			BOXB22						

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 12-27-99/1600	Received By: Ref 1A	Date/Time: 12-27-99/1600
Relinquished By: Ref 1A	Date/Time: 12-30-99/1000	Received By: Doug Bowers / Doug Bowers	Date/Time: 12-30-99/1000
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 12-30-99/1240	Received By: R. Lehrschall / [signature]	Date/Time: 12/30/99 12:40
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Isotopic Plutonium; Isotopic Uranium; Americium-241; Strontium-89,90 -- Total Sr

Matrix *
S=Soil
SE=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

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

BHI-EE-011 (10/99)

33

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B00-003-08	Page 1 of 1
Collector Doug Bowers	Company Contact J Adler	Telephone No. 373-4316	Project Coordinator TRENT, SJ	Price Code 9K Air Quality ☐
Project Designation 331-A Virology Laboratory Building	Sampling Location 300 Area		SAF No. B00-003	Data Turnaround 15 Days
Ice Chest No. ERC 96-082	Field Logbook No. EFL 1133-78 DJB 12-28-99	COA X28314PNNL	Method of Shipment Fed Ex	
Shipped To ~~TMA/RECRA~~ Quanterra DJB 12-21-99	Offsite Property No.		Bill of Lading/Air Bill No.	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None									
Type of Container	aG	aG									
No. of Container(s)	1	1									
Volume	60mL	~~120mL~~ 250 DJB 12-28-99									
SAMPLE ANALYSIS	ICP Metals - 6010A (TAL)	See item (1) in Special Instructions									

SDG W02996 J9L300199

Sample No.	Matrix *	Sample Date	Sample Time										
BOX9Y6	Other Solid	12-28-99	0922		X	BOXB14	—	—	D710V				
BOX9Y7	other solid	12-28-99	0950		X	BOXB16	—	—	D710W				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	12-28-99/1130	RcF/A	12-28-99/1130
RcF/A	12-30-99/1000	Doug Bowers	12-30-99/1000
Doug Bowers	12-30-99/1240	K. Ehrschall	12/30/99 12:40

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Isotopic Plutonium; Isotopic Uranium; Americium-241; Strontium-89,90 -- Total Sr

Matrix *
S=Soil
SE=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

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

BHI-EE-011 (10/99)

034

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B00-003-08	Page 1 of 1
Collector: Doug Bowers	Company Contact: J Adler	Telephone No.: 373-4316	Project Coordinator: TRENT, SJ	Price Code: 9K; Data Turnaround: 15 Days
Project Designation: 331-A Virology Laboratory Building	Sampling Location: 300 Area		SAF No.: B00-003	Air Quality: ☐
Ice Chest No.: ERC96-082	Field Logbook No.: EFL 1133-78 DJB 12-28-99	COA: X28314PNNL	Method of Shipment: Fed Ex	
Shipped To: ~~TMA/RECRA~~ Quanterra DJB 12-21-99	Offsite Property No.		Bill of Lading/Air Bill No.	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None									
Type of Container	aG	aG									
No. of Container(s)	1 DJB 12-28-99	1									
Volume	~~60~~mL 120 ml	~~120~~mL 250 DJB 12-28-99									
SAMPLE ANALYSIS	ICP Metals - 6010A (TAL)	See item (1) in Special Instructions.									

SDGW02996 J9L300199

Sample No.	Matrix *	Sample Date	Sample Time										
BOXB07	Other Solid	12-28-99	0655	X				BOXB23					
BOXB08	other Solid	12-28-99	0718	X				BOXB24					
BOWY49	other Solid	12-28-99	0718	X				BOXB24					
BOXB09	other Solid	12-28-99	0725	X				BOXB25					
BOX9Y5	other Solid	12-28-99	0850		X — DNOX			BOXB15					

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	12-28-99/1130	Ref 1A	12-28-99/1130
Ref 1A	12-30-99/1000	Doug Bowers	12-30-99/1000
Doug Bowers	12-30-99/1240	K. Lehrschall	12/30/99 12:40

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Isotopic Plutonium; Isotopic Uranium; Americium-241; Strontium-89,90 – Total Sr

Matrix *: S=Soil; SE=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

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

BHI-EE-011 (10/99)

035

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received: 12/30/99 12/40 SG#: W02996

Work Order Number: J9L300199 SAF #: B00-003

Shipping Container ID: ERC96-082 Chain of Custody # B00-003-08-09

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 4°
5. Vermiculite/packing materials is Wet [✓] Dry [ ]
6. Number of samples in shipping container: 15
7. Sample holding times exceeded? Yes [ ] No [✓]

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

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

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

Sample Custodian/Laboratory: Keith Lakebrill Date: 12/30/99 12:40

Telephoned To: _____ On _____ By _____

Client Sample Screening Results

03-Jan-00

(B) 1/3/00

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
BHI B0X9V6D6XWA		1/3/2000 9:54:00 AM	QUAD21B	1/3/2000 2:23:02 PM	B0X9V6D6XWA	30	11	0.276666667	235	6.97333333
D6XWA	SOLID		Bkg:	1/3/2000 1:39:02 PM	BKG	100	9	0.09	86	0.86

Anl Date: 1/3/00 Tot Sa, Alq: 9.26E+01 , 1.23E+02 Alp; (Dpm/ 1.69E+00 (uCi/ 5.74E-04 (pCi/ 6.19E+00 ± 4.9E+00 CAT I 8.1E+00 Lab Alq
Ppt mg: 123 Units: g , mg Bet; Alq): 1.60E+01 Sa): 5.42E-03 L|g): 5.85E+01 ± 4.4E+00 1.7E+00 L|g

BHI B0X9V7D6XWD		1/3/2000 9:54:00 AM	QUAD21D	1/3/2000 2:23:02 PM	B0X9V7D6XWD	30	8	0.116666667	116	3.05666667
D6XWD	SOLID		Bkg:	1/3/2000 1:39:02 PM	BKG	100	15	0.15	81	0.81

Anl Date: 1/3/00 Tot Sa, Alq: 1.09E+02 , 8.77E+01 Alp; (Dpm/ 5.58E-01 (uCi/ 3.13E-04 (pCi/ 2.87E+00 ± 5.7E+00 CAT I 1.7E+01 Lab Alq
Ppt mg: 87.7 Units: g , mg Bet; Alq): 6.75E+00 Sa): 3.79E-03 L|g): 3.47E+01 ± 4.3E+00 2.9E+00 L|g

BHI B0X9Y5D710X		1/3/2000 9:54:00 AM	QUAD22B	1/3/2000 2:23:04 PM	B0X9Y5D710X	30	9	0.22	106	2.22333333
D710X	SOLID		Bkg:	1/3/2000 1:39:05 PM	BKG	100	8	0.08	131	1.31

Anl Date: 1/3/00 Tot Sa, Alq: 1.81E+02 , 1.06E+02 Alp; (Dpm/ 1.39E+00 (uCi/ 1.07E-03 (pCi/ 5.90E+00 ± 5.9E+00 CAT I 8.5E+00 Lab Alq
Ppt mg: 106.1 Units: g , mg Bet; Alq): 4.80E+00 Sa): 3.68E-03 L|g): 2.04E+01 ± 3.4E+00 4.9E+00 L|g

BHI B0X9Y6D710W		1/3/2000 9:54:00 AM	QUAD22C	1/3/2000 2:23:04 PM	B0X9Y6D710W	30	11	0.216666667	519	16.25
D710W	SOLID		Bkg:	1/3/2000 1:39:05 PM	BKG	100	15	0.15	105	1.05

Anl Date: 1/3/00 Tot Sa, Alq: 1.88E+02 , 9.01E+01 Alp; (Dpm/ 2.02E-01 (uCi/ 1.90E-04 (pCi/ 1.01E+00 ± 5.7E+00 CAT I 4.9E+01 Lab Alq
Ppt mg: 90.1 Units: g , mg Bet; Alq): 3.52E+01 Sa): 3.30E-02 L|g): 1.76E+02 ± 8.3E+00 5.7E-01 L|g

BHI B0X9Y7D710V		1/3/2000 9:54:00 AM	QUAD22D	1/3/2000 2:23:04 PM	B0X9Y7D710V	30	16	0.393333333	1083	34.88
D710V	SOLID		Bkg:	1/3/2000 1:39:05 PM	BKG	100	14	0.14	122	1.22

Anl Date: 1/3/00 Tot Sa, Alq: 1.01E+02 , 7.00E+01 Alp; (Dpm/ -3.39E-02 (uCi/ -2.21E-05 (pCi/ -2.18E-01 ± 7.1E+00 CAT I 1.0E+02 Lab Alq
Ppt mg: 70 Units: g , mg Bet; Alq): 7.43E+01 Sa): 4.85E-02 L|g): 4.78E+02 ± 1.5E+01 2.1E-01 L|g

BHI B0X9Y8D710Q		1/3/2000 9:54:00 AM	QUAD23B	1/3/2000 2:48:36 PM	B0X9Y8D710Q	30	5	0.066666667	40	0.48333333
D710Q	SOLID		Bkg:	1/3/2000 1:39:08 PM	BKG	100	10	0.1	85	0.85

Anl Date: 1/3/00 Tot Sa, Alq: 9.08E+01 , 3.47E+01 Alp; (Dpm/ 2.80E-01 (uCi/ 3.30E-04 (pCi/ 3.63E+00 ± 9.5E+00 CAT I 1.4E+01 Lab Alq
Ppt mg: 34.7 Units: g , mg Bet; Alq): 9.52E-01 Sa): 1.12E-03 L|g): 1.24E+01 ± 6.3E+00 8.1E+00 L|g

0037

(B) 1/3/00

CLIENT CODE	ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
BHI	B0X9Y9D710T		1/3/2000 9:54:00 AM	QUAD23C	1/3/2000 2:48:36 PM	B0X9Y9D710T	30	10	0.223333333	185	5.02666667
	D710T	SOLID		Bkg:	1/3/2000 1:39:08 PM	BKG	100	11	0.11	114	1.14

Anl Date:	1/3/00	Tot Sa, Alq:	1.59E+02	,	1.19E+02	Alp;	(Dpm/	1.32E+00	(uCi/	7.95E-04	(pCi/	4.99E+00	± 5.3E+00	CAT	1.0E+01	Lab
Ppt mg:	118.7	Units:	g	,	mg	Bet;	Alq):	1.10E+01	Sa):	6.68E-03	L|g):	4.19E+01	± 3.9E+00	I	2.4E+00	Alq L|g

Quanterra

COC Signature Page

W02996

Lot or Batch #: 000415	Initials/Date	Procedure #
Released By	1-10-00	RichRC0009
Received	1-10-00	RC 5016
Released By	1-12-00	n/a
Received	1-12-00	RICHRC5016-2
Released By	1-19-00	n/a
Received	QB 1-20-00	RC5080
Released By	RB 1-21-00	n/a
Received	SD 1/21/00	RC5003-2
Released By	SD 1/22/00	n/a
Received	1/22/00	RICHRC0008R1
Released By	1/22/00	n/a
Received	1/23/00	RICHRC0002D
Released By	1/23/00	n/a
Received		

RC-131, Rev.1, 6/99

RQC053

Parent Batch:
Associated Batches:
:
:
:
:

Quanterra Incorporated
Information Sheet Rad Prep

****
* *
* QC BATCH: 0004215 *
* *
****

W02996

SX: Americium-241 by Alpha Spec
6L: PuAm PrpRC5016, SepRC5080(5003)/RC5010(5
5I: CLIENT: HANFORD

Run Date: 1/04/00
Time: 11:49:27

Page: 1

Analytical Due Date: 1/14/00

Project Manager: JW2

Lot# Work Order	Client	Analyt Matrix	Due	Client Name Aliquot	Geometry	Count Time	Mid/Ave Date/Time	Tracer ID Spike ID	CRDL	Units	Screen Info - (Ci) Alpha	Beta	PM Bin
J9L300199-001 X D710J-1-0A	OTHER	SOLID	1/14/00	Bechtel Hanford, .0000		.000	12/28/99 10:00		1.00E+00	pCi/g	**NYS 99 12/99	**NYS	JW2
Comments:													
J9L300199-001 D710J-1-03	OTHER	SOLID	1/14/00	Bechtel Hanford, .0000		.000	12/28/99 10:00		1.00E+00	pCi/g	**NYS 99 12/99	**NYS	JW2
Comments:													
J9L300199-001 S D710J-1-09	OTHER	SOLID	1/14/00	Bechtel Hanford, .0000		.000	12/28/99 10:00			pCi/g	**NYS 99 12/99	**NYS	JW2
Comments:													
J9L300199-002 D710Q-1-03	OTHER	SOLID	1/14/00	Bechtel Hanford, .0000		.000	12/27/99 12:15		1.00E+00	pCi/g	3.63E-12 99 12/99	1.24E-11	JW2
Comments:													
J9L300199-003 D710T-1-03	OTHER	SOLID	1/14/00	Bechtel Hanford, .0000		.000	12/27/99 12:29		1.00E+00	pCi/g	4.99E-12 99 12/99	4.19E-11	JW2
Comments:													
J9L300199-004 D710V-1-03	OTHER	SOLID	1/14/00	Bechtel Hanford, .0000		.000	12/28/99 9:22		1.00E+00	pCi/g	0.0E+00 99 12/99	4.78E-10	JW2
Comments:				0.1g									
J9L300199-005 D710W-1-03	OTHER	SOLID	1/14/00	Bechtel Hanford, .0000		.000	12/28/99 9:50		1.00E+00	pCi/g	1.01E-12 99 12/99	1.76E-10	JW2
Comments:													
J9L300199-006 D710X-1-03	OTHER	SOLID	1/14/00	Bechtel Hanford, .0000		.000	12/28/99 8:50		1.00E+00	pCi/g	5.90E-12 99 12/99	2.04E-11	JW2
Comments:													
J0A040000-215 B D72FD-1-01	BIOLOGICAL		1/14/00	Bechtel Hanford,			12/28/99 10:00		1.00E+00	pCi/g	**NA	**NA	JW2
Comments:													

Seq. Analysis Pu

QC Batch # 0004213

0040

```
************************
*                      *
*  QC BATCH: 0004215   *
*                      *
************************
```

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

		Tracer Yield	Type	QC Control Limits
BLANK CRDL			RPD	
Americium 241	1.00E+00			

** 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.

Quanterra

COC Signature Page

WO 29996

Lot or Batch #: 0004213	Initials/Date	Procedure #
Released By	1-10-00	Richrc00cg
Received	1-10-00	RC 5016
Released By	1-12-00	n/a
Received	1-12-00	RICHRC5016-2
Released By	1-19-00	n/a
Received	RB 1-20-00	RC5080/5010
Released By	RB 1-21-00	n/a
Received	SD 1/21/00 for SP	RC5039-2
Released By	OD 1/21/2000	R 1/21/2000 n/a
Received	OD 1/21/2000	RICHRD0008Rev1
Released By	CS 1/22/00	n/a
Received	JW 1/23/00	RICHRC0002b
Released By	JW 1/23/00	n/a
Received		

RC-131, Rev.1, 6/99

RQC053

Parent Batch:
Associated Batches:
:
:
:
:

PRIORITY

Quanterra Incorporated
Information Sheet Rad Prep

****
* *
* QC BATCH: 0004213 *
* *
****

W02996

PRIORITY

Run Date: 1/04/00
Time: 11:48:15

Page: 1

SO: Plutonium-238,239/40 by Alpha Spec
6L: PuAm PrpRC5016, SepRC5080(5003)/RC5010(5
5I: CLIENT: HANFORD

Analytical Due Date: 1/14/00

Project Manager: JW2

Lot# Work Order	Client	Analyt Matrix	Due	Client Aliquot	Name Geometry	Count Time	Mid/Ave Date/Time	Tracer ID Spike ID	CRDL	Units	Screen Info - (Ci) Alpha	Beta	PM Bin
J9L300199-001 D710J-1-06	OTHER	SOLID	1/14/00		Bechtel Hanford, .0000	.000	12/28/99 10:00		1.00E+00	pCi/g	**NYS 99	**NYS 12/99	JW2
Comments:													
J9L300199-001 X D710J-1-07	OTHER	SOLID	1/14/00		Bechtel Hanford, .0000	.000	12/28/99 10:00		1.00E+00	pCi/g	**NYS 99	**NYS 12/99	JW2
Comments:													
J9L300199-001 S D710J-1-08	OTHER	SOLID	1/14/00		Bechtel Hanford, .0000	.000	12/28/99 10:00			pCi/g	**NYS 99	**NYS 12/99	JW2
Comments:													
J9L300199-002 D710Q-1-06	OTHER	SOLID	1/14/00		Bechtel Hanford, .0000	.000	12/27/99 12:15		1.00E+00	pCi/g	3.63E-12 99	1.24E-11 12/99	JW2
Comments:													
J9L300199-003 D710T-1-06	OTHER	SOLID	1/14/00		Bechtel Hanford, .0000	.000	12/27/99 12:29		1.00E+00	pCi/g	4.99E-12 99	4.19E-11 12/99	JW2
Comments:													
J9L300199-004 D710V-1-06	OTHER	SOLID	1/14/00		Bechtel Hanford, .0000	.000	12/28/99 9:22		1.00E+00	pCi/g	0.0E+00 99	4.78E-10 12/99	JW2
Comments:				0.1g									
J9L300199-005 D710W-1-06	OTHER	SOLID	1/14/00		Bechtel Hanford, .0000	.000	12/28/99 9:50		1.00E+00	pCi/g	1.01E-12 99	1.76E-10 12/99	JW2
Comments:													
J9L300199-006 D710X-1-06	OTHER	SOLID	1/14/00		Bechtel Hanford, .0000	.000	12/28/99 8:50		1.00E+00	pCi/g	5.90E-12 99	2.04E-11 12/99	JW2
Comments:													
J0A040000-213 B D72FA-1-01	BIOLOGICAL		1/14/00		Bechtel Hanford,		12/28/99 10:00		1.00E+00	pCi/g	**NA	**NA	JW2
Comments:													

Seq. Analysis Am

QC Batch # 0004215

0043

```
************************
*                      *
*  QC BATCH: 0004213   *
*                      *
************************
```

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	Tracer Yield	Type	QC Control Limits
Plutonium 238	1.00E+00	RPD	
Plutonium 239/4	1.00E+00	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.

Quantera

COC Signature Page

W02996

Lot or Batch #: 0004216	Initials/Date	Procedure #
Released By	1-10-00	RichRC0009
Received	1-10-00	RC 5016
Released By	1-12-00	n/a
Received	1-12-00	5016-2 RICHRC ~~[illegible]~~ 1-19-00
Released By	1-19-00	n/a
Received	01-19-00	RC 5079
Released By	01-20-00	n/a
Received	1/20/00	RC5039/2
Released By	1/21/00	~~[illegible]~~ n/a
Received	1/21/2000	RICHRD0008 Rev1
Released By	1/22/00	n/a
Received	1/23/00	RICHRC0002/2
Released By	1/23/00	n/a
Received		

RC-131, Rev.1, 6/99

1st ext 5039/2 1/20/99

RQC053

Parent Batch:
Associated Batches:
:
:
:
:

Quanterra Incorporated
Information Sheet Rad Prep

****
* *
* QC BATCH: 0004216 *
* *
****

WX2996

SR: Uranium-234,235,238 by Alpha Spec
7W: UIso PrpRC5016, SepRC5079(5039)
5I: CLIENT: HANFORD

Run Date: 1/04/00
Time: 11:53:07

Analytical Due Date: 1/14/00
Project Manager: JW2

Lot# Work Order	Client	Analyt Matrix	Due Aliquot	Client Name Geometry	Count Time	Mid/Ave Date/Time	Tracer ID Spike ID	CRDL	Units	Screen Info - (Ci) Alpha	Beta	PM Bin
J9L300199-001 D710J-1-04	OTHER	SOLID	1/14/00	Bechtel Hanford, .0000	.000	12/28/99 10:00		1.00E+00	pCi/g	**NYS 99	**NYS 12/99	JW2
Comments:												
J9L300199-002 D710Q-1-04	OTHER	SOLID	1/14/00	Bechtel Hanford, .0000	.000	12/27/99 12:15		1.00E+00	pCi/g	3.63E-12 99	1.24E-11 12/99	JW2
Comments:												
J9L300199-002 X D710Q-1-07	OTHER	SOLID	1/14/00	Bechtel Hanford, .0000	.000	12/27/99 12:15		1.00E+00	pCi/g	3.63E-12 99	1.24E-11 12/99	JW2
Comments:												
J9L300199-003 D710T-1-04	OTHER	SOLID	1/14/00	Bechtel Hanford, .0000	.000	12/27/99 12:29		1.00E+00	pCi/g	4.99E-12 99	4.19E-11 12/99	JW2
Comments:												
J9L300199-004 D710V-1-04	OTHER	SOLID	1/14/00	Bechtel Hanford, .0000	.000	12/28/99 9:22		1.00E+00	pCi/g	0.0E+00 99	4.78E-10 12/99	JW2
Comments:												
J9L300199-005 D710W-1-04	OTHER	SOLID	1/14/00	Bechtel Hanford, .0000	.000	12/28/99 9:50		1.00E+00	pCi/g	1.01E-12 99	1.76E-10 12/99	JW2
Comments:												
J9L300199-006 D710X-1-04	OTHER	SOLID	1/14/00	Bechtel Hanford, .0000	.000	12/28/99 8:50		1.00E+00	pCi/g	5.90E-12 99	2.04E-11 12/99	JW2
Comments:												
J0A040000-216 B D72FF-1-01	BIOLOGICAL		1/14/00	Bechtel Hanford,		12/27/99 12:15		1.00E+00	pCi/g	**NA	**NA	JW2
Comments:												
J0A040000-216 C D72FF-1-02	BIOLOGICAL		1/14/00	Bechtel Hanford,		12/27/99 12:15			pCi/g	**NA	**NA	JW2
Comments:												

0.1g

0046

```
************************
*                      *
*  QC BATCH: 0004216   *
*                      *
************************
```

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

		Tracer Yield	Type	QC Control Limits
BLANK CRDL				
Uranium 234	1.00E+00		RPD	
Uranium 238	1.00E+00		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

Quanterra

CCC Signature Page

W02996

Lot or Batch #: 0004220

	Initials/Date	Procedure #
Released By	1-10-00	Richc0009
Received	1-10-00	RC 5017
Released By	1-12-00	n/a
Received	1-12-2000	RICHRD0007 Rev 2
Released By	1-17-00	n/a
Received	PK 1-17-00	RICHRC0002
Released By	PK 1-18-00 (PK 1-19-00)	n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		

RC-131, Rev.1, 6/99

RQC053

Parent Batch:
Associated Batches:
:
:
:
:

Quanterra Incorporated
Information Sheet Rad Prep

****
* *
* QC BATCH: 0004220 *
* *
****

Run Date: 1/04/00
Time: 11:55:07

Page: 1

TA: Gamma by HPGE
AW: Gamma PrpRC5017
5I: CLIENT: HANFORD
WO2996

Analytical Due Date: 1/14/00

Project Manager: JW2

Lot# Work Order	Client	Analyt Matrix	Due	Client Name Aliquot	Geometry	Count Time	Mid/Ave Date/Time	Tracer ID Spike ID	CRDL	Units	Screen Info - (Ci) Alpha	Beta	PM Bin
J9L300199-001 D710J-1-01 Comments:	OTHER	SOLID	1/14/00	Bechtel Hanford, .0000		.000	12/28/99 10:00		5.00E-02	pCi/g	**NYS 99 12/99	**NYS	JW2
J9L300199-002 D710Q-1-01 Comments:	OTHER	SOLID	1/14/00	Bechtel Hanford, .0000		.000	12/27/99 12:15		5.00E-02	pCi/g	3.63E-12 99 12/99	1.24E-11	JW2
J9L300199-003 D710T-1-01 Comments:	OTHER	SOLID	1/14/00	Bechtel Hanford, .0000		.000	12/27/99 12:29		5.00E-02	pCi/g	4.99E-12 99 12/99	4.19E-11	JW2
J9L300199-003 X D710T-1-07 Comments:	OTHER	SOLID	1/14/00	Bechtel Hanford, .0000		.000	12/27/99 12:29		5.00E-02	pCi/g	4.99E-12 99 12/99	4.19E-11	JW2
J9L300199-004 D710V-1-01 Comments:	OTHER	SOLID	1/14/00	Bechtel Hanford, .0000		.000	12/28/99 9:22		5.00E-02	pCi/g	0.0E+00 99 12/99	4.78E-10	JW2
J9L300199-005 D710W-1-01 Comments:	OTHER	SOLID	1/14/00	Bechtel Hanford, .0000		.000	12/28/99 9:50		5.00E-02	pCi/g	1.01E-12 99 12/99	1.76E-10	JW2
J9L300199-006 D710X-1-01 Comments:	OTHER	SOLID	1/14/00	Bechtel Hanford, .0000		.000	12/28/99 8:50		5.00E-02	pCi/g	5.90E-12 99 12/99	2.04E-11	JW2
J0A040000-220 B D72FL-1-01 Comments:	BIOLOGICAL		1/14/00	Bechtel Hanford,			12/27/99 12:29		5.00E-02	pCi/g	**NA	**NA	JW2
J0A040000-220 C D72FL-1-02 Comments:	BIOLOGICAL		1/14/00	Bechtel Hanford,			12/27/99 12:29			pCi/g	**NA	**NA	JW2

0049

```
************************
*                      *
*  QC BATCH: 0004220   *
*                      *
************************
```

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		Tracer Yield	Type	QC Control Limits
Cobalt 60	5.00E-02		RPD	
Cesium 137	1.00E-01		RPD	
Europium 152	1.00E-01		RPD	
Europium 154	1.00E-01		RPD	
Europium 155	1.00E-01		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.

Quanterra

COC Signature Page

W02996

Lot or Batch #: 0004221

	Initials/Date	Procedure #
Released By	1-10-00	Rich00009
Received	1-10-00	RC 5016
Released By	1-12-00	n/a
Received	1-12-00	RICHRC 5016-2
Released By	1-17-00	n/a
Received	1-20-00	RICHRC5006.2
Released By	1-21-00	n/a
Received	1/21/2000	RICHRD0003R002
Released By	1/22/00	n/a
Received	1/23/00	RICHRC0002/2
Released By	1/23/00	n/a
Received		
Released By		n/a
Received		

RC-131, Rev.1, 6/99

RQC053

Parent Batch:
Associated Batches:
:
:
:
:

Quanterra Incorporated
Information Sheet Rad Prep

****
* *
* QC BATCH: 0004221 *
* *
****

W029916

TH: Total Strontium by GPC
CI: Sr-Total PrpRc5016, SepRC5006
SI: CLIENT: HANFORD

Run Date: 1/04/00
Time: 11:57:24

Page: 1

Analytical Due Date: 1/14/00
Project Manager: JW2

Lot# Work Order	Client	Analyt Matrix	Due Aliquot	Client Name Geometry	Count Time	Mid/Ave Date/Time	Tracer ID Spike ID	CRDL	Units	Screen Info - (Ci) Alpha	Beta	PM Bin
J9L300199-001 D710J-1-05	OTHER	1/14/00 SOLID		Bechtel Hanford, .0000	.000	12/28/99 10:00		1.00E+00	pCi/g	**NYS 99	**NYS 12/99	JW2
Comments:												
J9L300199-002 D710Q-1-05	OTHER	1/14/00 SOLID		Bechtel Hanford, .0000	.000	12/27/99 12:15		1.00E+00	pCi/g	3.63E-12 99	1.24E-11 12/99	JW2
Comments:												
J9L300199-003 D710T-1-05	OTHER	1/14/00 SOLID		Bechtel Hanford, .0000	.000	12/27/99 12:29		1.00E+00	pCi/g	4.99E-12 99	4.19E-11 12/99	JW2
Comments:												
J9L300199-004 D710V-1-05	OTHER	1/14/00 SOLID		Bechtel Hanford, .0000	.000	12/28/99 9:22		1.00E+00	pCi/g	0.0E+00 99	4.78E-10 12/99	JW2
Comments:												
J9L300199-004 X D710V-1-07	OTHER	1/14/00 SOLID		Bechtel Hanford, .0000	.000	12/28/99 9:22		1.00E+00	pCi/g	0.0E+00 99	4.78E-10 12/99	JW2
Comments:			6.2g									
J9L300199-005 D710W-1-05	OTHER	1/14/00 SOLID		Bechtel Hanford, .0000	.000	12/28/99 9:50		1.00E+00	pCi/g	1.01E-12 99	1.76E-10 12/99	JW2
Comments:												
J9L300199-006 D710X-1-05	OTHER	1/14/00 SOLID		Bechtel Hanford, .0000	.000	12/28/99 8:50		1.00E+00	pCi/g	5.90E-12 99	2.04E-11 12/99	JW2
Comments:												
J0A040000-221 B D72FN-1-01	BIOLOGICAL	1/14/00		Bechtel Hanford,		12/28/99 9:22		1.00E+00	pCi/g	**NA	**NA	JW2
Comments:												
J0A040000-221 C D72FN-1-02	BIOLOGICAL	1/14/00		Bechtel Hanford,		12/28/99 9:22			pCi/g	**NA	**NA	JW2
Comments:												

0052

```
************************
*                      *
*  QC BATCH: 0004221   *
*                      *
************************
```

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

		Tracer Yield	Type	QC Control Limits
BLANK CRDL				
Strontium	1.00E+00		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.

0053

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

314 298-8566 Telephone
314 298-8757 Fax

Quanterra Environmental Services

CASE NARRATIVE

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, Washington 99352

January 21, 2000

Attention: Joan Kessner

Project Number	:	33958
SDG	:	W02996
Number of Samples	:	nine (9)
Sample Matrix	:	Solid
Data Deliverable	:	Summary
Date SDG Closed	:	December 31, 1999

II. Introduction

On December 30, 1999, nine (9) "solid" samples were received by Quanterra, Richland and transferred to Quanterra, St. Louis for chemical analysis. The samples were received within temperature criteria. See the attached Sample Summary sheet for the client and lab Ids for these samples.

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 – 6010A (TAL)

Deviation from Request: There were no deviations.

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.

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.

Several compounds have matrix spike/matrix spike duplicate recoveries outside QC limits. In most cases this is due to the amount of the compound found in the unspiked sample. The LCS recoveries for all compounds are within control limits.

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

Reviewed and approved:

Marti Ward
St. Louis Project Manager

SAMPLE SUMMARY

F0A030118

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
D71MQ	001	B0XB07	12/28/99	06:55
D71N4	002	B0XB08	12/28/99	07:18
D71N6	003	B0WY49	12/28/99	07:18
D71N9	004	B0XB09	12/28/99	07:25
D71NA	005	B0XB05	12/27/99	14:28
D71NP	006	B0XB06	12/27/99	14:35
D71NT	007	B0XB02	12/27/99	13:32
D71NX	008	B0XB03	12/27/99	13:47
D71P1	009	B0XB04	12/27/99	14:11

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

F0A030118

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Inductively Coupled Plasma (ICP) Metals	SW846 6010B	SW846 3050B
Percent Moisture	MCAWW 160.3 MOD	MCAWW 160.3 MOD

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

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

CWR # 020556 2°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-003-08	Page 1 of 1

Collector: Doug Bowers	Company Contact: J Adler — Telephone No.: 373-4316	Project Coordinator: TRENT, SJ	Price Code: 9K — Data Turnaround: 15 Days
Project Designation: 331-A Virology Laboratory Building	Sampling Location: 300 Area	SAF No.: B00-003	Air Quality ☐
Ice Chest No.: ERC 96-082	Field Logbook No.: EFL 1133-78 DJB 12-29-99 — COA: X28314PNNL	Method of Shipment: Fed Ex	
Shipped To: ~~TMA/RECRA~~ Quantera DJB 12-21-99	Offsite Property No.	Bill of Lading/Air Bill No.	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None									
Type of Container	aG	aG	Did NOT Receive								
No. of Container(s)	1	1									
Volume	60mL	~~120~~mL 250 DJB 12-28-99									
SAMPLE ANALYSIS	ICP Metals - 6010A (TAL)	See item (1) in Special Instructions.									

SDG WO2996 J9L300199

Sample No.	Matrix *	Sample Date	Sample Time										
BOX946	Other Solid	12-28-99	0922		X	BOXB14	—	—	DJB	not received			
BOX947	other solid	12-28-99	0950		X	BOXB16	—	—	DJB	↓			

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By: Doug Bowers — Date/Time: Doug Bowers 12-29-99/1130	Received By: RCF/A 12-28-99/1130	(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Isotopic Plutonium; Isotopic Uranium; Americium-241; Strontium-89,90 -- Total Sr	S=Soil, SE=Sediment, SO=Solid, S=Sludge, W=Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, W1=Wipe, L=Liquid, V=Vegetation, X=Other
Relinquished By: RCF/A 12-30-99/1000	Received By: Doug Bowers 12-30-99/1000		
Relinquished By: Doug Bowers 12-30-99/1240	Received By: R. Schroeder / Kurt Gebhardt 12/30/99 12:40		
Relinquished By:	Received By: Jason Lumann 01-06-00 0850		
Relinquished By:	Received By:		
Relinquished By:	Received By:		

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B00-003-09	Page 1 of 1
Collector: Doug Bowers	Company Contact: J Adler	Telephone No.: 373-4316	Project Coordinator: TRENT, SJ	Price Code: 9K; Data Turnaround: 24 Hours
Project Designation: 331-A Virology Laboratory Building	Sampling Location: 300 Area		SAF No.: B00-003	Air Quality ☐
Ice Chest No.: ERC 96-087 12-30-99 ~~ERC 99.033~~ DJB	Field Logbook No.: EFL 1133-7	COA: X28314PNNL	Method of Shipment: Hand Delivered	
Shipped To: ~~Radiological Counting Facility~~ Quanterra DJB 12-30-99	Offsite Property No.: N/A		Bill of Lading/Air Bill No.: N/A	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None									
Type of Container	G/P	GL									
No. of Container(s)	1	1	Did NOT Receive								
Volume	20mL only	250 ml AG									
	Rad Screen										

SAMPLE ANALYSIS

SDGW02996 J9L300199

Sample No.	Matrix *	Sample Date	Sample Time	[illegible]	[illegible]	RCF#							
~~Box B16~~	~~Other Solid~~	~~12-28-99~~	~~0950~~	~~X~~	X	6953	✓		DJB 12-30-99			not received	
~~Box B17~~ Bowy50	other solid	12-28-99	1000	~~X~~	X	6954							
DJB 12-30-99									D7102				

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 12-28-99/1049	Received By: R. Thoren	Date/Time: 12.28.99/1049
Relinquished By: R. Thoren	Date/Time: 12.28.99/1230	Received By: CW Landes / CW Landes	Date/Time: 12-28-99/1230
Relinquished By: CW Landes / CW Landes	Date/Time: 12-30-99/1155	Received By: Doug Bowers / Doug Bowers	Date/Time: 12-30-99/1155
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 12-30-99/1240	Received By: K. Whitehill / [illegible]	Date/Time: 12/30/99 12:40
Relinquished By	Date/Time	Received By: [illegible]	Date/Time: 01-06-00 0850
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

C.O.C. split this is a copy of origonal. DJB 12-30-99 BOX B17 is changed to Bowy50 to go to Quanterra

Matrix *: S=Soil, SE=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

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

BHI-EE-011 (10/99)

CUR # ~~020566~~ 2°

Bechtel Hanford Inc. JT 12-31-99	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B00-003-08	Page 1 of 1
Collector: Doug Bowers	Company Contact: J Adler	Telephone No.: 373-4316	Project Coordinator: TRENT, SJ	Price Code: 9K; Air Quality ☐	Data Turnaround: 15 Days
Project Designation: 331-A Virology Laboratory Building	Sampling Location: 300 Area		SAF No.: B00-003	
Ice Chest No: ERC 96-082	Field Logbook No.: EFL 1133-78 RB 12-28-99	COA: X28314PNNL	Method of Shipment: Fed Ex	
Shipped To: ~~TMA/RECRA~~ Quantera 078 12-21-99	Offsite Property No.		Bill of Lading/Air Bill No.	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None									
Type of Container	aG	aG									
No. of Container(s)	1 078 12-21-99	1									
Volume	~~60~~mL 120 ml	~~120~~mL 250 ml 078 12-28-99									
SAMPLE ANALYSIS	ICP Metals - 6010A (TAL)	See item (1) in Special Instructions.									

SDG-W02996 J9230019 9

	Sample No.	Matrix *	Sample Date	Sample Time										
1	BOXB07	Other Solid	12-28-99	0675	X	100%	Full		BOXB23					
2	BOXB08	other solid	12-28-99	0718	X	|			BOXB24					
3	BOWY49	other solid	12-28-99	0718	X	|			BOXB24					
4	BOXB09	other solid	12-28-99	0725	X	V			BOXB25					
	BOXBY5	other solid	12-28-99	0850		X — DNOX			BOXB15	NOT received				

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By: Doug Bowers	Received By: Ref 1A	12-28-99/1130
Relinquished By: Ref 1A	Received By: Doug Bowers	12-30-99/1000
Relinquished By: Doug Bowers	Received By: R. Whitsell	12/30/99 12:40
Relinquished By:	Received By: Jason Neumann	12-31-99 0850
Relinquished By:	Received By:	
Relinquished By:	Received By:	

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Isotopic Plutonium; Isotopic Uranium; Americium-241; Strontium-89,90 -- Total Sr

Matrix *
S=Soil
SE=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

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

BHI-EE-011 (10/99)

CUR#020556 2°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B00-003-08	Page 1 of 1
Collector: Doug Bowers	Company Contact: J Adler	Telephone No.: 373-4316	Project Coordinator: TRENT, SJ	Price Code: 9K; Air Quality ☐; Data Turnaround: 15 Days
Project Designation: 331-A Virology Laboratory Building	Sampling Location: 300 Area 331 A bldg		SAF No.: B00-003	
Ice Chest No.: ERC 96-082	Field Logbook No.: EFL 1133-7	COA: X28314PNNL	Method of Shipment: Fed Ex	
Shipped To: ~~TMA/RECRA~~ Quanterra DJB 12-21-99	Offsite Property No.		Bill of Lading/Air Bill No.	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None										
Type of Container	aG	aG										
No. of Container(s)	1	1										
Volume	~~60mL~~ DJB 12-27-99 120	120mL										
	ICP Metals - 6010A (TAL)	See item (1) in Special Instructions.										

SAMPLE ANALYSIS

SDG W07996 J9L300199

	Sample No.	Matrix *	Sample Date	Sample Time										
5	BOXB05	Other Solid	12-27-99	1428	X	100%	full	BOXB21						
6	BOXB06	other Solid	12-27-99	1435	X	↓		BOXB22						

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By: Doug Bowers Date/Time: Doug Bowers 12-27-99/1600	Received By: Ref 1A Date/Time: 12-27-99/1600	(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Isotopic Plutonium; Isotopic Uranium; Americium-241; Strontium-89,90 – Total Sr	S=Soil, SE=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: Ref 1A Date/Time: 12-30-99/1000	Received By: Doug Bowers Date/Time: Doug Bowers 12-30-99/1000		
Relinquished By: Doug Bowers Date/Time: Doug Bowers 12-30-99/1240	Received By: R. Lehrschall Date/Time: [signature] 12/30/99 12:40		
Relinquished By: Date/Time:	Received By: Jason Neumann Date/Time: 12-31-99 0850		
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

BHI-EE-011 (10/99)

CUR # 020556 2°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-003-08	Page 1 of 1

Collector: Doug Bowers	Company Contact: J Adler — Telephone No.: 373-4316	Project Coordinator: TRENT, SJ	Price Code: 9K — Data Turnaround: 15 Days
Project Designation: 331-A Virology Laboratory Building	Sampling Location: 300 Area 331 A bldg	SAF No.: B00-003	Air Quality ☐
Ice Chest No.: ERC96-082	Field Logbook No.: EFL 1133-7 — COA: X28314PNNL	Method of Shipment: Fed Ex	
Shipped To: ~~TMA/RECRA~~ Quantera 078 12-21-99	Offsite Property No.	Bill of Lading/Air Bill No.	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SAMPLE ANALYSIS

SDG W02996 J9L300199

Preservation	None	None											
Type of Container	aG	aG											
No. of Container(s)	1 078 12-27-99	1											
Volume	~~60mL~~ 120	120mL											
	ICP Metals - 6010A (TAL)	See item (1) in Special Instructions.											
Sample No.	Matrix *	Sample Date	Sample Time										
BOX998	Other Solid	12-27-99	1215		X	not received		BOXB12	—		D710G		
BOX999	other Solid	12-27-99	1229		X	not received		BOXB13	—		D710F		
7 BOXB02	other Solid	12-27-99	1332	X	100% full			BOXB15					
8 BOXB03	other Solid	12-27-99	1347	X				BOXB17					
9 BOXB04	other Solid	12-27-99	1411	X				BOXB20					

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	12-27-99/1600	Ref 1A	12-27-99/1600
Ref 1A	12-30-99/1000	Doug Bowers	12-30-99/1000
Doug Bowers	12-30-99/1240	Keith Underhill	12/30/99 12:40
		Jason Neumann	12-31-99 0850

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Isotopic Plutonium; Isotopic Uranium; Americium-241; Strontium-89,90 -- Total Sr

Matrix *
S=Soil
SE=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

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

BHI-EE-011 (10/99)

cc: B. Jersey FOA030118-004

ERC Radiological Counting Facility Analysis Report

RCF Number RCF6950

Sample Date & Time 12/28/99 0725

Project ID: 331-A SAF Number: B00-003 Date Analyzed 12/29/99 11:06

Sample ID: B0XB25

Gamma Energy Analysis

Nuclide	Activity (pCi/g)	Error (pCi/g)	MDA (pCi/g)
Not Requested			

B0XB09

Total GEA (pCi/g)	N/A	+/-	N/A

	Activity (pCi/g)		Error (pCi/g)	Alpha MDA (pCi/g)
Gross Alpha**	5.4E-01	+/-	5.2E-01	3.3E-01
Gross Beta	8.7E+00	+/-	1.1E+00	Beta MDA (pCi/g) 4.8E+00

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested.
<MDA = Less than detection limit.

For soils and natural samples, the following applies:

**The gross alpha results are not corrected for mass absorbtion

Analysist T. J. Snider 12/30/99

Report To D. St John

Fax 372-9487

Report Printed: Thursday, December 30, 1999

003

ERC Radiological Counting Facility Analysis Report

RCF Number RCF6949 Sample Date & Time 12/28/99 0718

Project ID: 331-A SAF Number: B00-003 Date Analyzed 12/29/99 10:51

Sample ID: B0XB24

Gamma Energy Analysis

Nuclide	Activity (pCi/g)	Error (pCi/g)	MDA (pCi/g)

Not Requested

B0WY49

Total GEA (pCi/g)	N/A	+/-	N/A

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	9.6E-01	+/-	6.9E-01
Gross Beta	1.3E+01	+/-	1.4E+00

Alpha MDA (pCi/g)
5.2E-01
Beta MDA (pCi/g)
7.3E+00

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested.
<MDA = Less than detection limit.

For soils and natural samples, the following applies:

**The gross alpha results are not corrected for mass absorbtion

Analysist T. J. Snider 12/30/99

Report To D. St John

Fax 372-9487

Report Printed: Thursday, December 30, 1999

001

ERC Radiological Counting Facility Analysis Report

RCF Number RCF6948 Sample Date & Time 12/28/99 0655

Project ID: 331-A SAF Number: B00-003 Date Analyzed 12/29/99 9:06

Sample ID: B0XB23

Gamma Energy Analysis

Nuclide	Activity (pCi/g)	Error (pCi/g)	MDA (pCi/g)

Not Requested

Total GEA (pCi/g)	N/A	+/-	N/A

BOXB07

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	9.4E-01	+/-	6.3E-01
Gross Beta	1.1E+01	+/-	1.3E+00

Alpha MDA (pCi/g)
5.0E-01
Beta MDA (pCi/g)
6.1E+00

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested.
<MDA = Less than detection limit.

For soils and natural samples, the following applies:

**The gross alpha results are not corrected for mass absorbtion

Analysist T. J. Snider 12/30/99

Report To D. St John

Fax 372-9487

Report Printed: Thursday, December 30, 1999

ERC Radiological Counting Facility Analysis Report

RCF Number RCF6957

Sample Date & Time 12/27/99 1435

Project ID: 331-A SAF Number: B00-003

Date Analyzed 12/29/99 11:52

Sample ID: B0XB22

Gamma Energy Analysis

Nuclide	Activity (pCi/g)	Error (pCi/g)	MDA (pCi/g)

Not Requested

Total GEA (pCi/g)	N/A	+/-	N/A

BOX B06

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	9.4E-01	+/-	6.3E-01
Gross Beta	1.0E+01	+/-	1.2E+00

Alpha MDA (pCi/g)
4.9E-01
Beta MDA (pCi/g)
5.6E+00

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested.
<MDA = Less than detection limit.

For soils and natural samples, the following applies:

**The gross alpha results are not corrected for mass absorbtion

Analysist T. J. Snider 12/30/99

Report To D. St John

Fax 372-9487

Report Printed: Thursday, December 30, 1999

005

ERC Radiological Counting Facility Analysis Report

RCF Number RCF6956 Sample Date & Time 12/27/99 1428

Project ID: 331-A SAF Number: B00-003 Date Analyzed 12/29/99 11:37

Sample ID: B0XB21

Gamma Energy Analysis

Nuclide	Activity (pCi/g)	Error (pCi/g)	MDA (pCi/g)

Not Requested

BOXB05

Total GEA (pCi/g)	N/A	+/-	N/A

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	9.4E-01	+/-	6.3E-01
Gross Beta	1.2E+01	+/-	1.3E+00

Alpha MDA (pCi/g)
4.9E-01
Beta MDA (pCi/g)
6.4E+00

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested.
<MDA = Less than detection limit.

For soils and natural samples, the following applies:

**The gross alpha results are not corrected for mass absorbtion

Analysist T. J. Snider 12/30/99

Report To D. St John

Fax 372-9487

Report Printed: Thursday, December 30, 1999

009

ERC Radiological Counting Facility Analysis Report

RCF Number RCF6955

Sample Date & Time 12/27/99 1411

Project ID: 331-A SAF Number: B00-003 Date Analyzed 12/29/99 11:21

Sample ID: B0XB20

Gamma Energy Analysis

Nuclide	Activity (pCi/g)	Error (pCi/g)	MDA (pCi/g)
Not Requested			
Total GEA (pCi/g)	N/A	+/-	N/A

B0XB04

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	8.5E-01	+/-	6.7E-01
Gross Beta	1.4E+01	+/-	1.4E+00

Alpha MDA (pCi/g)
4.7E-01
Beta MDA (pCi/g)
7.6E+00

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested.
<MDA = Less than detection limit.

For soils and natural samples, the following applies:

**The gross alpha results are not corrected for mass absorbtion

Analysist T. J. Snider 12/30/99

Report To D. St John

Fax 372-9487

Report Printed: Thursday, December 30, 1999

008

ERC Radiological Counting Facility Analysis Report

RCF Number RCF6947 Sample Date & Time 12/27/99 1347

Project ID: 331-A SAF Number: B00-003 Date Analyzed 12/29/99 8:51

Sample ID: B0XB19

Gamma Energy Analysis

Nuclide	Activity (pCi/g)	Error (pCi/g)	MDA (pCi/g)

Not Requested

BOXB03

Total GEA (pCi/g)	N/A	+/-	N/A

	Activity (pCi/g)		Error (pCi/g)	Alpha MDA (pCi/g)
Gross Alpha**	8.1E-01	+/-	5.9E-01	4.4E-01
Gross Beta	7.6E+00	+/-	1.1E+00	Beta MDA (pCi/g) 4.3E+00

Definitions:

All errors reported at 2 standard deviations.
N/R = *no result or analysis not requested.*
<MDA = Less than detection limit.

For soils and natural samples, the following applies:

**The gross alpha results are not corrected for mass absorbtion

Analysist T. J. Snider 12/30/99

Report To D. St John

Fax 372-9487

Report Printed: Thursday, December 30, 1999

007

ERC Radiological Counting Facility Analysis Report

RCF Number RCF6946

Sample Date & Time 12/27/99 1332

Project ID: 331-A SAF Number: B00-003 Date Analyzed 12/29/99 8:36

Sample ID: B0XB18

Gamma Energy Analysis

Nuclide	Activity (pCi/g)	Error (pCi/g)	MDA (pCi/g)
Not Requested			
Total GEA (pCi/g)	N/A	+/-	N/A

BOXB02

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	8.4E-01	+/-	5.5E-01
Gross Beta	1.0E+01	+/-	1.1E+00

Alpha MDA (pCi/g)
4.4E-01
Beta MDA (pCi/g)
5.5E+00

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested.
<MDA = Less than detection limit.

For soils and natural samples, the following applies:

**The gross alpha results are not corrected for mass absorbtion

Analysist T. J. Snider 12/30/99

Report To D. St John

Fax 372-9487

Report Printed: Thursday, December 30, 1999

ERC Radiological Counting Facility Analysis Report

RCF Number RCF6953 **Sample Date & Time** 12/28/99 0950

Project ID: 331-A **SAF Number:** B00-003 **Date Analyzed** 12/29/99 12:08

Sample ID: B0XB16

Gamma Energy Analysis

Nuclide		Activity (pCi/g)	Error (pCi/g)	MDC (pCi/g)
K-40	<	2.2E+02		2.2E+02
Co-60	<	1.8E+01		1.8E+01
Cs-137	<	1.9E+01		1.9E+01
Eu-152	<	4.4E+01		4.4E+01
Eu-154	<	4.8E+01		4.8E+01
Eu-155	<	6.8E+01		6.8E+01
Th-232D	<	4.8E+01		4.8E+01
U-235	<	1.3E+02		1.3E+02
U-238	<	3.5E+03		3.5E+03
U-238D	<	2.9E+01		2.9E+01
Am-241	<	3.8E+01		3.8E+01

B0X9Y7

not received

Total GEA (pCi/g) +/-

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	1.6E+01	+/-	8.7E+00
Gross Beta	3.4E+02	+/-	7.2E+00

Alpha MDC (pCi/g) 6.2E+00

Beta MDC (pCi/g) 1.7E+02

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

Analyst T. J. Snider 12/30/99

Report To D. St John **Fax** 372-9487

Report Printed: Thursday, December 30, 1999

ERC Radiological Counting Facility Analysis Report

RCF Number RCF6954 Sample Date & Time 12/28/99 1000

Project ID: 331-A SAF Number: B00-003 Date Analyzed 12/29/99 1:19:

Sample ID: B0XB17

Gamma Energy Analysis

Nuclide		Activity (pCi/g)		Error (pCi/g)	MDC (pCi/g)
K-40		1.1E+02	+/-	4.0E+01	4.2E+01
Co-60	<	3.5E+00			3.5E+00
Cs-137	<	2.8E+00			2.8E+00
Eu-152	<	8.1E+00			8.1E+00
Eu-154	<	8.5E+00			8.5E+00
Eu-155	<	1.3E+01			1.3E+01
Ra-226	<	7.0E+01			7.0E+01
Th-232D	<	9.1E+00			9.1E+00
U-235	<	2.7E+01			2.7E+01
U-238		3.8E+02	+/-	3.3E+02	5.3E+01
U-238D	<	5.6E+00			5.6E+00
Am-241	<	6.9E+00			6.9E+00

NOT Received

Total GEA (pCi/g)	4.8E+02	+/-	3.7E+02

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	N/R	+/-	N/R
Gross Beta	N/R	+/-	N/R

Gnd manually calculated

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDA = 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 > MDA 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 absorbtion
No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Analyst T. J. Snider 12/30/99

Report To D. St John Fax 372-9487

Report Printed: Thursday, December 30, 1999

ERC Radiological Counting Facility Analysis Report

RCF Number RCF6952

Sample Date & Time 12/28/99 0922

Project ID: 331-A **SAF Number:** B00-003 **Date Analyzed** 12/29/99 11:06

Sample ID: B0XB14

Gamma Energy Analysis

Nuclide		Activity (pCi/g)	Error (pCi/g)	MDC (pCi/g)
K-40	<	1.2E+02		1.2E+02
Co-60	<	1.9E+01		1.9E+01
Cs-137	<	1.6E+01		1.6E+01
Eu-152	<	5.5E+01		5.5E+01
Eu-154	<	5.0E+01		5.0E+01
Eu-155	<	8.6E+01		8.6E+01
Th-232D	<	5.2E+01		5.2E+01
U-235	<	1.6E+02		1.6E+02
U-238	<	2.2E+03		2.2E+03
U-238D	<	4.4E+01		4.4E+01
Am-241	<	4.5E+01		4.5E+01

Box 9Y6 not received

Total GEA (pCi/g) +/-

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	5.6E+00	+/-	3.1E+00
Gross Beta	1.2E+02	+/-	4.1E+00

Alpha MDC (pCi/g)
2.4E+00
Beta MDC (pCi/g)
6.1E+01

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

Analyst T. J. Snider 12/30/99

Report To D. St John **Fax** 372-9487

Report Printed: Thursday, December 30, 1999

ERC Radiological Counting Facility Analysis Report

RCF Number RCF6951

Sample Date & Time 12/28/99 0850

Project ID: 331-A **SAF Number:** B00-003 **Date Analyzed** 12/29/99 9:22

Sample ID: B0XB15

Gamma Energy Analysis

Nuclide	Activity (pCi/g)	Error (pCi/g)	MDA (pCi/g)
Not Requested			
Total GEA (pCi/g)	N/A	+/- N/A	

B0X9Y5 (not received)

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	1.2E+00	+/-	6.9E-01
Gross Beta	1.2E+01	+/-	1.3E+00

Alpha MDA (pCi/g)
6.2E-01
Beta MDA (pCi/g)
6.8E+00

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested.
<MDA = Less than detection limit.

For soils and natural samples, the following applies:

**The gross alpha results are not corrected for mass absorbtion

Analysist T. J. Snider 12/30/99

Report To D. St John

Fax 372-9487

Report Printed: Thursday, December 30, 1999

ERC Radiological Counting Facility Analysis Report

RCF Number RCF6944 **Sample Date & Time** 12/27/99 1229

Project ID: 331-A **SAF Number:** B00-003 **Date Analyzed** 12/29/99 8:49:

Sample ID: B0XB13

Gamma Energy Analysis

Nuclide		Activity (pCi/g)		Error (pCi/g)	MDC (pCi/g)
K-40	<	8.3E+01			8.3E+01
Co-60	<	9.3E+00			9.3E+00
Cs-137	<	1.1E+01			1.1E+01
Eu-152	<	2.5E+01			2.5E+01
Eu-154	<	3.7E+01			3.7E+01
Eu-155	<	4.2E+01			4.2E+01
Th-232D	<	2.6E+01			2.6E+01
U-235	<	8.8E+01			8.8E+01
U-238	<	1.4E+03			1.4E+03
U-238D		1.8E+01	+/-	1.0E+01	1.7E+01
Am-241	<	2.6E+01			2.6E+01

B0X9X9 not received

Total GEA (pCi/g)	1.8E+01	+/-	1.0E+01

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	N/R	+/-	N/R
Gross Beta	N/R	+/-	N/R

GAB - manually calculated

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested, <MDA = 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 > MDA 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-238duu 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-232duu 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 absorbtion
No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Analyst T. J. Snider 12/30/99

Report To D. St John **Fax** 372-9487

Report Printed: Thursday, December 30, 1999

ERC Radiological Counting Facility Analysis Report

RCF Number RCF6943 **Sample Date & Time** 12/27/99 1215

Project ID: 331-A **SAF Number:** B00-003 **Date Analyzed** 12/28/99 2:22:

Sample ID: B0XB12 Qualitative only -

Gamma Energy Analysis

Nuclide		Activity (pCi/g)		Error (pCi/g)	MDC (pCi/g)
K-40		2.3E+01	+/-	1.8E+01	2.2E+01
Co-60	<	1.7E+00			1.7E+00
Cs-137	<	1.3E+00			1.3E+00
Eu-152	<	3.8E+00			3.8E+00
Eu-154	<	4.7E+00			4.7E+00
Eu-155	<	7.8E+00			7.8E+00
Ra-226	<	3.7E+01			3.7E+01
Th-232D	<	4.8E+00			4.8E+00
Th-234	<	2.2E+01			2.2E+01
U-235	<	1.5E+01			1.5E+01
U-238	<	2.6E+02			2.6E+02
U-238D		3.6E+00	+/-	3.3E+00	3.1E+00
Am-241	<	4.5E+00			4.5E+00
Total GEA (pCi/g)		2.7E+01	+/-	2.1E+01	

B0X9X8 not received

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	N/R	+/-	N/R
Gross Beta	N/R	+/-	N/R

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDA = 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 > MDA 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 absorbtion
No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Analyst T. J. Snider 12/30/99

Report To D. St John **Fax** 372-9487

Report Printed: Thursday, December 30, 1999

ERC Radiological Counting Facility Analysis Report

RCF Number RCF6945 **Sample Date & Time** 12/27/99 1307

Project ID: 331-A **SAF Number:** B00-003 **Date Analyzed** 12/29/99 9:50:

Sample ID: B0XB11

Gamma Energy Analysis

Nuclide		Activity (pCi/g)	Error (pCi/g)	MDC (pCi/g)
K-40	<	1.6E+02		1.6E+02
Co-60	<	1.4E+01		1.4E+01
Cs-137	<	1.5E+01		1.5E+01
Eu-152	<	4.9E+01		4.9E+01
Eu-154	<	3.6E+01		3.6E+01
Eu-155	<	7.2E+01		7.2E+01
Th-232D	<	4.6E+01		4.6E+01
Th-234	<	2.3E+02		2.3E+02
U-235	<	1.3E+02		1.3E+02
U-238	<	2.8E+03		2.8E+03
U-238D	<	2.8E+01		2.8E+01
Am-241	<	3.6E+01		3.6E+01

Not received

Total GEA (pCi/g) +/-

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	N/R	+/-	N/R
Gross Beta	N/R	+/-	N/R

GAS manually calculated

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDA = 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 > MDA 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 absorbtion
 # No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Analyst T. J. Snider 12/30/99

Report To D. St John **Fax** 372-9487

Report Printed: Thursday, December 30, 1999

Snider, Timothy J

From: Snider, Timothy J
Sent: Thursday, December 30, 1999 6:19 AM
To: Weiss, Richard L; Kessner, Joan H; Bowers, Douglas L; Trent, Stephen J
Subject: B0XB17 (RCF6954), B0XB11 (RCF6945), B0XB13 (RCF6944), B0XB12 (RCF6943)

All,

This is supplemental data to support the 15 samples that came in Tuesday afternoon.

B0XB12 (RCF 6943) did not have Gross alpha/beta compeleted due to the size of the rocks. Gamma Spectroscopy was completed, however qualitative only.

B0XB13 (RCF 6944) and B0XB11 (RCF 6945), the gross alpha/beta results were less than MDA on a Ludlum 2929. MDA is 7 pCi/gm alpha, and 53 pCi/gm beta.

B0XB17 (RCF 6954) Lead plug, was also counted in the Ludlum 2929 due to its size. The results for alpha were </= MDA, and for beta 18 pCi/gm.

The field work sheet will be attached to the fax.

As discussed with Joan Kessner, not all samples received gamma spectroscopy.

Timothy J. Snider
RCF Technical Lead
373-9731

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received: 12/30/99 12/40 SG#: 1102996

Work Order Number: J9L300199 SAF #: B00-003

Shipping Container ID: ERC96-082 Chain of Custody # B00-003-08-09

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 4°
5. Vermiculite/packing materials is Wet [✓] Dry [ ]
6. Number of samples in shipping container: 15
7. Sample holding times exceeded? Yes [ ] No [✓]

8. Samples have:
   - ✓ tape
   - ✓ custody seals
   - ✓ hazard labels
   - ✓ appropriate sample labels

9. Samples are:
   - ✓ in good condition
   - ____ broken
   - ____ leaking
   - ____ have air bubbles

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

Sample Custodian/Laboratory: Keith Lakebrill Date: 12/30/99 12:40

Telephoned To: _____ On _____ By _____

Quanterra
Environmental Services

020556

Login No.: F0A030118
W02996

Condition Upon Receipt Variance Report
St. Louis Laboratory

Client: Bechtel Hanford
Date: 12-31-99 Time: 0850
Project No: 33958
Initiated by: Jason Tiemann
Shipper/No: Airborne / 4012580412
RFA/COC Numbers: N/A

Condition/Variance (Check all that apply):

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

☐ No variances were noted during sample receipt. Cooler Temperature Upon Receipt: 2°

Temperature Variance Does Not Affect the Following Analyses: _____

Notes: Several Samples were not received, but are present on the COC. Refer to COC for exact samples not received

Corrective Action:

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

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

☐ Sample(s) processed "as is".

Comments:

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

Sample Control Supervisor Review: (or designee) Jason Tiemann Date: 12-31-99

Project Management Review: MWard Date: 1/4/00

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

SL-ADMIN-0004, Revised 12/12/98

BECHTEL HANFORD, INC.

Client Sample ID: B0XB07

TOTAL Metals

Lot-Sample #...: F0A030118-001 Matrix.....: SOLID
Date Sampled...: 12/28/99 Date Received..: 12/31/99
% Moisture.....: 1.3

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0020288						
Aluminum	7570	20.3	mg/kg	SW846 6010B	01/20-01/21/00	D71MQ102
		Dilution Factor: 1				
Antimony	ND	6.1	mg/kg	SW846 6010B	01/20/00	D71MQ105
		Dilution Factor: 1				
Barium	87.4	20.3	mg/kg	SW846 6010B	01/20/00	D71MQ108
		Dilution Factor: 1				
Beryllium	0.22 B	0.51	mg/kg	SW846 6010B	01/20/00	D71MQ10C
		Dilution Factor: 1				
Cadmium	0.30 B	0.51	mg/kg	SW846 6010B	01/20/00	D71MQ10F
		Dilution Factor: 1				
Calcium	67300	506	mg/kg	SW846 6010B	01/20-01/21/00	D71MQ10J
		Dilution Factor: 1				
Chromium	13.6	1.0	mg/kg	SW846 6010B	01/20/00	D71MQ10M
		Dilution Factor: 1				
Cobalt	49.3	5.1	mg/kg	SW846 6010B	01/20/00	D71MQ10Q
		Dilution Factor: 1				
Copper	177	2.5	mg/kg	SW846 6010B	01/20/00	D71MQ10U
		Dilution Factor: 1				
Iron	15500	10.1	mg/kg	SW846 6010B	01/20/00	D71MQ10X
		Dilution Factor: 1				
Magnesium	4850	506	mg/kg	SW846 6010B	01/20-01/21/00	D71MQ112
		Dilution Factor: 1				
Manganese	230	1.5	mg/kg	SW846 6010B	01/20/00	D71MQ115
		Dilution Factor: 1				
Nickel	7.7	4.1	mg/kg	SW846 6010B	01/20/00	D71MQ118
		Dilution Factor: 1				
Potassium	2210	506	mg/kg	SW846 6010B	01/20-01/21/00	D71MQ11C
		Dilution Factor: 1				

(Continued on next page)

BECHTEL HANFORD, INC.

Client Sample ID: B0XB07

TOTAL Metals

Lot-Sample #...: F0A030118-001 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Silver	ND	1.0	mg/kg	SW846 6010B	01/20/00	D71MQ11F
		Dilution Factor: 1				
Sodium	1240	506	mg/kg	SW846 6010B	01/20-01/21/00	D71MQ11J
		Dilution Factor: 1				
Vanadium	42.2	5.1	mg/kg	SW846 6010B	01/20/00	D71MQ11M
		Dilution Factor: 1				
Zinc	925	2.0	mg/kg	SW846 6010B	01/20/00	D71MQ11Q
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

BECHTEL HANFORD, INC.

Client Sample ID: B0XB08

TOTAL Metals

Lot-Sample #...: F0A030118-002 Matrix.....: SOLID
Date Sampled...: 12/28/99 Date Received..: 12/31/99
% Moisture.....: 1.3

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0020288						
Aluminum	6410	20.3	mg/kg	SW846 6010B	01/20-01/21/00	D71N4102
		Dilution Factor: 1				
Antimony	ND	6.1	mg/kg	SW846 6010B	01/20/00	D71N4103
		Dilution Factor: 1				
Barium	91.7	20.3	mg/kg	SW846 6010B	01/20/00	D71N4104
		Dilution Factor: 1				
Beryllium	0.21 B	0.51	mg/kg	SW846 6010B	01/20/00	D71N4105
		Dilution Factor: 1				
Cadmium	13.3	0.51	mg/kg	SW846 6010B	01/20/00	D71N4106
		Dilution Factor: 1				
Calcium	75500	506	mg/kg	SW846 6010B	01/20-01/21/00	D71N4107
		Dilution Factor: 1				
Chromium	10.2	1.0	mg/kg	SW846 6010B	01/20/00	D71N4108
		Dilution Factor: 1				
Cobalt	8.1	5.1	mg/kg	SW846 6010B	01/20/00	D71N4109
		Dilution Factor: 1				
Copper	19.3	2.5	mg/kg	SW846 6010B	01/20/00	D71N410A
		Dilution Factor: 1				
Iron	12700	10.1	mg/kg	SW846 6010B	01/20/00	D71N410C
		Dilution Factor: 1				
Magnesium	4840	506	mg/kg	SW846 6010B	01/20-01/21/00	D71N410D
		Dilution Factor: 1				
Manganese	229	1.5	mg/kg	SW846 6010B	01/20/00	D71N410E
		Dilution Factor: 1				
Nickel	8.6	4.1	mg/kg	SW846 6010B	01/20/00	D71N410F
		Dilution Factor: 1				
Potassium	2200	506	mg/kg	SW846 6010B	01/20-01/21/00	D71N410G
		Dilution Factor: 1				

(Continued on next page)

BECHTEL HANFORD, INC.

Client Sample ID: B0XB08

TOTAL Metals

Lot-Sample #...: F0A030118-002 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Silver	ND	1.0	mg/kg	SW846 6010B	01/20/00	D71N410H
		Dilution Factor: 1				
Sodium	1270	506	mg/kg	SW846 6010B	01/20-01/21/00	D71N410J
		Dilution Factor: 1				
Vanadium	32.3	5.1	mg/kg	SW846 6010B	01/20/00	D71N410K
		Dilution Factor: 1				
Zinc	176	2.0	mg/kg	SW846 6010B	01/20/00	D71N410L
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

BECHTEL HANFORD, INC.

Client Sample ID: B0WY49

TOTAL Metals

Lot-Sample #...: F0A030118-003 Matrix.....: SOLID
Date Sampled...: 12/28/99 Date Received..: 12/31/99
% Moisture.....: 1.3

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0020288						
Aluminum	6150	20.3	mg/kg	SW846 6010B	01/20-01/21/00	D71N6102
		Dilution Factor: 1				
Antimony	ND	6.1	mg/kg	SW846 6010B	01/20/00	D71N6103
		Dilution Factor: 1				
Barium	89.4	20.3	mg/kg	SW846 6010B	01/20/00	D71N6104
		Dilution Factor: 1				
Beryllium	0.21 B	0.51	mg/kg	SW846 6010B	01/20/00	D71N6105
		Dilution Factor: 1				
Cadmium	14.3	0.51	mg/kg	SW846 6010B	01/20/00	D71N6106
		Dilution Factor: 1				
Calcium	71700	507	mg/kg	SW846 6010B	01/20-01/21/00	D71N6107
		Dilution Factor: 1				
Chromium	10.1	1.0	mg/kg	SW846 6010B	01/20/00	D71N6108
		Dilution Factor: 1				
Cobalt	8.5	5.1	mg/kg	SW846 6010B	01/20/00	D71N6109
		Dilution Factor: 1				
Copper	15.4	2.5	mg/kg	SW846 6010B	01/20/00	D71N610A
		Dilution Factor: 1				
Iron	14100	10.1	mg/kg	SW846 6010B	01/20/00	D71N610C
		Dilution Factor: 1				
Magnesium	4920	507	mg/kg	SW846 6010B	01/20-01/21/00	D71N610D
		Dilution Factor: 1				
Manganese	241	1.5	mg/kg	SW846 6010B	01/20/00	D71N610E
		Dilution Factor: 1				
Nickel	8.8	4.1	mg/kg	SW846 6010B	01/20/00	D71N610F
		Dilution Factor: 1				
Potassium	2040	507	mg/kg	SW846 6010B	01/20-01/21/00	D71N610G
		Dilution Factor: 1				

(Continued on next page)

BECHTEL HANFORD, INC.

Client Sample ID: B0WY49

TOTAL Metals

Lot-Sample #...: F0A030118-003 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Silver	ND	1.0	mg/kg	SW846 6010B	01/20/00	D71N610H
		Dilution Factor: 1				
Sodium	1120	507	mg/kg	SW846 6010B	01/20-01/21/00	D71N610J
		Dilution Factor: 1				
Vanadium	36.6	5.1	mg/kg	SW846 6010B	01/20/00	D71N610K
		Dilution Factor: 1				
Zinc	163	2.0	mg/kg	SW846 6010B	01/20/00	D71N610L
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

BECHTEL HANFORD, INC.

Client Sample ID: B0XB09

TOTAL Metals

Lot-Sample #...: F0A030118-004 Matrix.....: SOLID
Date Sampled...: 12/28/99 Date Received..: 12/31/99
% Moisture.....: 2.1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0020288						
Aluminum	7590	20.4	mg/kg	SW846 6010B	01/20-01/21/00	D71N9102
		Dilution Factor: 1				
Antimony	ND	6.1	mg/kg	SW846 6010B	01/20/00	D71N9103
		Dilution Factor: 1				
Barium	95.0	20.4	mg/kg	SW846 6010B	01/20/00	D71N9104
		Dilution Factor: 1				
Beryllium	0.22 B	0.51	mg/kg	SW846 6010B	01/20/00	D71N9105
		Dilution Factor: 1				
Cadmium	ND	0.51	mg/kg	SW846 6010B	01/20/00	D71N9106
		Dilution Factor: 1				
Calcium	61300	511	mg/kg	SW846 6010B	01/20-01/21/00	D71N9107
		Dilution Factor: 1				
Chromium	122	1.0	mg/kg	SW846 6010B	01/20/00	D71N9108
		Dilution Factor: 1				
Cobalt	13.6	5.1	mg/kg	SW846 6010B	01/20/00	D71N9109
		Dilution Factor: 1				
Copper	11.1	2.6	mg/kg	SW846 6010B	01/20/00	D71N910A
		Dilution Factor: 1				
Iron	14600	10.2	mg/kg	SW846 6010B	01/20/00	D71N910C
		Dilution Factor: 1				
Magnesium	6040	511	mg/kg	SW846 6010B	01/20-01/21/00	D71N910D
		Dilution Factor: 1				
Manganese	249	1.5	mg/kg	SW846 6010B	01/20/00	D71N910E
		Dilution Factor: 1				
Nickel	6.6	4.1	mg/kg	SW846 6010B	01/20/00	D71N910F
		Dilution Factor: 1				
Potassium	1860	511	mg/kg	SW846 6010B	01/20-01/21/00	D71N910G
		Dilution Factor: 1				

(Continued on next page)

BECHTEL HANFORD, INC.

Client Sample ID: B0XB09

TOTAL Metals

Lot-Sample #...: F0A030118-004 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Silver	ND	1.0	mg/kg	SW846 6010B	01/20/00	D71N910H
		Dilution Factor: 1				
Sodium	1150	511	mg/kg	SW846 6010B	01/20-01/21/00	D71N910J
		Dilution Factor: 1				
Vanadium	40.3	5.1	mg/kg	SW846 6010B	01/20/00	D71N910K
		Dilution Factor: 1				
Zinc	1500	2.0	mg/kg	SW846 6010B	01/20/00	D71N910L
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

BECHTEL HANFORD, INC.

Client Sample ID: B0XB05

TOTAL Metals

Lot-Sample #...: F0A030118-005 Matrix.....: SOLID
Date Sampled...: 12/27/99 Date Received..: 12/31/99
% Moisture.....: 1.2

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0020288						
Aluminum	7680	20.2	mg/kg	SW846 6010B	01/20-01/21/00	D71NA102
		Dilution Factor: 1				
Antimony	ND	6.1	mg/kg	SW846 6010B	01/20/00	D71NA103
		Dilution Factor: 1				
Barium	88.6	20.2	mg/kg	SW846 6010B	01/20/00	D71NA104
		Dilution Factor: 1				
Beryllium	0.21 B	0.51	mg/kg	SW846 6010B	01/20/00	D71NA105
		Dilution Factor: 1				
Cadmium	ND	0.51	mg/kg	SW846 6010B	01/20/00	D71NA106
		Dilution Factor: 1				
Calcium	77800	506	mg/kg	SW846 6010B	01/20-01/21/00	D71NA107
		Dilution Factor: 1				
Chromium	8.8	1.0	mg/kg	SW846 6010B	01/20/00	D71NA108
		Dilution Factor: 1				
Cobalt	27.5	5.1	mg/kg	SW846 6010B	01/20/00	D71NA109
		Dilution Factor: 1				
Copper	29.2	2.5	mg/kg	SW846 6010B	01/20/00	D71NA10A
		Dilution Factor: 1				
Iron	15000	10.1	mg/kg	SW846 6010B	01/20/00	D71NA10C
		Dilution Factor: 1				
Magnesium	5000	506	mg/kg	SW846 6010B	01/20-01/21/00	D71NA10D
		Dilution Factor: 1				
Manganese	231	1.5	mg/kg	SW846 6010B	01/20/00	D71NA10E
		Dilution Factor: 1				
Nickel	6.4	4.0	mg/kg	SW846 6010B	01/20/00	D71NA10F
		Dilution Factor: 1				
Potassium	1910	506	mg/kg	SW846 6010B	01/20-01/21/00	D71NA10G
		Dilution Factor: 1				

(Continued on next page)

BECHTEL HANFORD, INC.

Client Sample ID: B0XB05

TOTAL Metals

Lot-Sample #...: F0A030118-005 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Silver	ND	1.0	mg/kg	SW846 6010B	01/20/00	D71NA10H
		Dilution Factor: 1				
Sodium	1120	506	mg/kg	SW846 6010B	01/20-01/21/00	D71NA10J
		Dilution Factor: 1				
Vanadium	42.3	5.1	mg/kg	SW846 6010B	01/20/00	D71NA10K
		Dilution Factor: 1				
Zinc	285	2.0	mg/kg	SW846 6010B	01/20/00	D71NA10L
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

BECHTEL HANFORD, INC.

Client Sample ID: B0XB06

TOTAL Metals

Lot-Sample #...: F0A030118-006 Matrix.....: SOLID
Date Sampled...: 12/27/99 Date Received..: 12/31/99
% Moisture.....: 1.4

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0020288						
Aluminum	7790	20.3	mg/kg	SW846 6010B	01/20-01/21/00	D71NP102
		Dilution Factor: 1				
Antimony	ND	6.1	mg/kg	SW846 6010B	01/20/00	D71NP103
		Dilution Factor: 1				
Barium	89.9	20.3	mg/kg	SW846 6010B	01/20/00	D71NP104
		Dilution Factor: 1				
Beryllium	0.22 B	0.51	mg/kg	SW846 6010B	01/20/00	D71NP105
		Dilution Factor: 1				
Cadmium	ND	0.51	mg/kg	SW846 6010B	01/20/00	D71NP106
		Dilution Factor: 1				
Calcium	74600	507	mg/kg	SW846 6010B	01/20-01/21/00	D71NP107
		Dilution Factor: 1				
Chromium	33.5	1.0	mg/kg	SW846 6010B	01/20/00	D71NP108
		Dilution Factor: 1				
Cobalt	32.2	5.1	mg/kg	SW846 6010B	01/20/00	D71NP109
		Dilution Factor: 1				
Copper	12.6	2.5	mg/kg	SW846 6010B	01/20/00	D71NP10A
		Dilution Factor: 1				
Iron	16600	10.1	mg/kg	SW846 6010B	01/20/00	D71NP10C
		Dilution Factor: 1				
Magnesium	6000	507	mg/kg	SW846 6010B	01/20-01/21/00	D71NP10D
		Dilution Factor: 1				
Manganese	243	1.5	mg/kg	SW846 6010B	01/20/00	D71NP10E
		Dilution Factor: 1				
Nickel	6.8	4.1	mg/kg	SW846 6010B	01/20/00	D71NP10F
		Dilution Factor: 1				
Potassium	2240	507	mg/kg	SW846 6010B	01/20-01/21/00	D71NP10G
		Dilution Factor: 1				

(Continued on next page)

BECHTEL HANFORD, INC.

Client Sample ID: B0XB06

TOTAL Metals

Lot-Sample #...: F0A030118-006 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Silver	ND	1.0	mg/kg	SW846 6010B	01/20/00	D71NP10H
		Dilution Factor: 1				
Sodium	1080	507	mg/kg	SW846 6010B	01/20-01/21/00	D71NP10J
		Dilution Factor: 1				
Vanadium	45.8	5.1	mg/kg	SW846 6010B	01/20/00	D71NP10K
		Dilution Factor: 1				
Zinc	171	2.0	mg/kg	SW846 6010B	01/20/00	D71NP10L
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

BECHTEL HANFORD, INC.

Client Sample ID: B0XB02

TOTAL Metals

Lot-Sample #...: F0A030118-007 Matrix.....: SOLID
Date Sampled...: 12/27/99 Date Received..: 12/31/99
% Moisture.....: 1.7

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0020288						
Aluminum	5230	20.3	mg/kg	SW846 6010B	01/20-01/21/00	D71NT102
		Dilution Factor: 1				
Antimony	ND	6.1	mg/kg	SW846 6010B	01/20/00	D71NT103
		Dilution Factor: 1				
Barium	209	20.3	mg/kg	SW846 6010B	01/20/00	D71NT104
		Dilution Factor: 1				
Beryllium	0.12 B	0.51	mg/kg	SW846 6010B	01/20/00	D71NT105
		Dilution Factor: 1				
Cadmium	ND	0.51	mg/kg	SW846 6010B	01/20/00	D71NT106
		Dilution Factor: 1				
Calcium	70700	508	mg/kg	SW846 6010B	01/20-01/21/00	D71NT107
		Dilution Factor: 1				
Chromium	20.7	1.0	mg/kg	SW846 6010B	01/20/00	D71NT108
		Dilution Factor: 1				
Cobalt	7.0	5.1	mg/kg	SW846 6010B	01/20/00	D71NT109
		Dilution Factor: 1				
Copper	16.4	2.5	mg/kg	SW846 6010B	01/20/00	D71NT10A
		Dilution Factor: 1				
Iron	16700	10.2	mg/kg	SW846 6010B	01/20/00	D71NT10C
		Dilution Factor: 1				
Magnesium	9170	508	mg/kg	SW846 6010B	01/20-01/21/00	D71NT10D
		Dilution Factor: 1				
Manganese	226	1.5	mg/kg	SW846 6010B	01/20/00	D71NT10E
		Dilution Factor: 1				
Nickel	15.9	4.1	mg/kg	SW846 6010B	01/20/00	D71NT10F
		Dilution Factor: 1				
Potassium	862	508	mg/kg	SW846 6010B	01/20-01/21/00	D71NT10G
		Dilution Factor: 1				

(Continued on next page)

BECHTEL HANFORD, INC.

Client Sample ID: B0XB02

TOTAL Metals

Lot-Sample #...: F0A030118-007 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Silver	ND	1.0	mg/kg	SW846 6010B	01/20/00	D71NT10H
		Dilution Factor: 1				
Sodium	703	508	mg/kg	SW846 6010B	01/20-01/21/00	D71NT10J
		Dilution Factor: 1				
Vanadium	48.3	5.1	mg/kg	SW846 6010B	01/20/00	D71NT10K
		Dilution Factor: 1				
Zinc	151	2.0	mg/kg	SW846 6010B	01/20/00	D71NT10L
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

BECHTEL HANFORD, INC.

Client Sample ID: B0XB03

TOTAL Metals

Lot-Sample #...: F0A030118-008 Matrix.....: SOLID
Date Sampled...: 12/27/99 Date Received..: 12/31/99
% Moisture.....: 2.7

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0020288						
Aluminum	7230	20.6	mg/kg	SW846 6010B	01/20-01/21/00	D71NX102
		Dilution Factor: 1				
Antimony	27.8	6.2	mg/kg	SW846 6010B	01/20/00	D71NX103
		Dilution Factor: 1				
Barium	230	20.6	mg/kg	SW846 6010B	01/20/00	D71NX104
		Dilution Factor: 1				
Beryllium	0.16 B	0.51	mg/kg	SW846 6010B	01/20/00	D71NX105
		Dilution Factor: 1				
Cadmium	68.9	0.51	mg/kg	SW846 6010B	01/20/00	D71NX106
		Dilution Factor: 1				
Calcium	124000	2570	mg/kg	SW846 6010B	01/20-01/21/00	D71NX107
		Dilution Factor: 5				
Chromium	741	1.0	mg/kg	SW846 6010B	01/20/00	D71NX108
		Dilution Factor: 1				
Cobalt	5.3	5.1	mg/kg	SW846 6010B	01/20/00	D71NX109
		Dilution Factor: 1				
Copper	42.8	2.6	mg/kg	SW846 6010B	01/20/00	D71NX10A
		Dilution Factor: 1				
Iron	10400	10.3	mg/kg	SW846 6010B	01/20/00	D71NX10C
		Dilution Factor: 1				
Magnesium	4340	514	mg/kg	SW846 6010B	01/20-01/21/00	D71NX10D
		Dilution Factor: 1				
Manganese	169	1.5	mg/kg	SW846 6010B	01/20/00	D71NX10E
		Dilution Factor: 1				
Nickel	9.8	4.1	mg/kg	SW846 6010B	01/20/00	D71NX10F
		Dilution Factor: 1				
Potassium	795	514	mg/kg	SW846 6010B	01/20-01/21/00	D71NX10G
		Dilution Factor: 1				

(Continued on next page)

BECHTEL HANFORD, INC.

Client Sample ID: B0XB03

TOTAL Metals

Lot-Sample #...: F0A030118-008 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Silver	ND	1.0	mg/kg	SW846 6010B	01/20/00	D71NX10H
		Dilution Factor: 1				
Sodium	1870	514	mg/kg	SW846 6010B	01/20-01/21/00	D71NX10J
		Dilution Factor: 1				
Vanadium	31.7	5.1	mg/kg	SW846 6010B	01/20/00	D71NX10K
		Dilution Factor: 1				
Zinc	313	2.1	mg/kg	SW846 6010B	01/20/00	D71NX10L
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

BECHTEL HANFORD, INC.

Client Sample ID: B0XB04

TOTAL Metals

Lot-Sample #...: F0A030118-009 Matrix.....: SOLID
Date Sampled...: 12/27/99 Date Received..: 12/31/99
% Moisture.....: 1.4

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0020288						
Aluminum	8480	20.3	mg/kg	SW846 6010B	01/20-01/21/00	D71P1102
		Dilution Factor: 1				
Antimony	ND	6.1	mg/kg	SW846 6010B	01/20/00	D71P1103
		Dilution Factor: 1				
Barium	102	20.3	mg/kg	SW846 6010B	01/20/00	D71P1104
		Dilution Factor: 1				
Beryllium	0.23 B	0.51	mg/kg	SW846 6010B	01/20/00	D71P1105
		Dilution Factor: 1				
Cadmium	ND	0.51	mg/kg	SW846 6010B	01/20/00	D71P1106
		Dilution Factor: 1				
Calcium	70000	507	mg/kg	SW846 6010B	01/20-01/21/00	D71P1107
		Dilution Factor: 1				
Chromium	84.6	1.0	mg/kg	SW846 6010B	01/20/00	D71P1108
		Dilution Factor: 1				
Cobalt	35.5	5.1	mg/kg	SW846 6010B	01/20/00	D71P1109
		Dilution Factor: 1				
Copper	12.8	2.5	mg/kg	SW846 6010B	01/20/00	D71P110A
		Dilution Factor: 1				
Iron	16300	10.1	mg/kg	SW846 6010B	01/20/00	D71P110C
		Dilution Factor: 1				
Magnesium	5650	507	mg/kg	SW846 6010B	01/20-01/21/00	D71P110D
		Dilution Factor: 1				
Manganese	225	1.5	mg/kg	SW846 6010B	01/20/00	D71P110E
		Dilution Factor: 1				
Nickel	7.1	4.1	mg/kg	SW846 6010B	01/20/00	D71P110F
		Dilution Factor: 1				
Potassium	2490	507	mg/kg	SW846 6010B	01/20-01/21/00	D71P110G
		Dilution Factor: 1				

(Continued on next page)

BECHTEL HANFORD, INC.

Client Sample ID: B0XB04

TOTAL Metals

Lot-Sample #...: F0A030118-009 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Silver	ND	1.0	mg/kg	SW846 6010B	01/20/00	D71P110H
		Dilution Factor: 1				
Sodium	1400	507	mg/kg	SW846 6010B	01/20-01/21/00	D71P110J
		Dilution Factor: 1				
Vanadium	43.9	5.1	mg/kg	SW846 6010B	01/20/00	D71P110K
		Dilution Factor: 1				
Zinc	149	2.0	mg/kg	SW846 6010B	01/20/00	D71P110L
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F0A030118 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: F0A200000-288 Prep Batch #...: 0020288						
Aluminum	**16.7 B**	**20.0**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D7LW3108**
		Dilution Factor: 1				
Antimony	ND	6.0	mg/kg	SW846 6010B	01/20/00	D7LW3109
		Dilution Factor: 1				
Barium	**0.13 B**	**20.0**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D7LW310A**
		Dilution Factor: 1				
Beryllium	ND	0.50	mg/kg	SW846 6010B	01/20/00	D7LW3101
		Dilution Factor: 1				
Cadmium	ND	0.50	mg/kg	SW846 6010B	01/20/00	D7LW3102
		Dilution Factor: 1				
Calcium	**31.7 B**	**500**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D7LW3103**
		Dilution Factor: 1				
Chromium	ND	1.0	mg/kg	SW846 6010B	01/20/00	D7LW3104
		Dilution Factor: 1				
Cobalt	ND	5.0	mg/kg	SW846 6010B	01/20/00	D7LW3105
		Dilution Factor: 1				
Copper	ND	2.5	mg/kg	SW846 6010B	01/20/00	D7LW3106
		Dilution Factor: 1				
Iron	**5.0 B**	**10.0**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D7LW3107**
		Dilution Factor: 1				
Magnesium	**14.0 B**	**500**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D7LW310K**
		Dilution Factor: 1				
Manganese	ND	1.5	mg/kg	SW846 6010B	01/20/00	D7LW310L
		Dilution Factor: 1				
Nickel	ND	4.0	mg/kg	SW846 6010B	01/20/00	D7LW310M
		Dilution Factor: 1				
Potassium	ND	500	mg/kg	SW846 6010B	01/20-01/21/00	D7LW310C
		Dilution Factor: 1				
Silver	ND	1.0	mg/kg	SW846 6010B	01/20/00	D7LW310D
		Dilution Factor: 1				

(Continued on next page)

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F0A030118 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Sodium	**33.9 B**	**500**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D7LW310F**
		Dilution Factor: 1				
Vanadium	ND	5.0	mg/kg	SW846 6010B	01/20/00	D7LW310G
		Dilution Factor: 1				
Zinc	ND	2.0	mg/kg	SW846 6010B	01/20/00	D7LW310H
		Dilution Factor: 1				

NOTE(S):

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

B Estimated result. Result is less than RL.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: F0A030118 **Matrix.....:** SOLID

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: F0A200000-288 **Prep Batch #...:** 0020288					
Aluminum	88	(60 - 140)	SW846 6010B Dilution Factor: 1	01/20-01/21/00	D7LW3111
Antimony	119	(18 - 182)	SW846 6010B Dilution Factor: 1	01/20/00	D7LW3112
Barium	113	(77 - 123)	SW846 6010B Dilution Factor: 1	01/20/00	D7LW310Q
Beryllium	113	(78 - 122)	SW846 6010B Dilution Factor: 1	01/20/00	D7LW310R
Cadmium	108	(77 - 123)	SW846 6010B Dilution Factor: 1	01/20/00	D7LW310T
Calcium	102	(75 - 125)	SW846 6010B Dilution Factor: 1	01/20-01/21/00	D7LW310U
Chromium	101	(77 - 123)	SW846 6010B Dilution Factor: 1	01/20/00	D7LW310V
Cobalt	104	(80 - 121)	SW846 6010B Dilution Factor: 1	01/20/00	D7LW310W
Copper	112	(82 - 118)	SW846 6010B Dilution Factor: 1	01/20/00	D7LW310X
Iron	120	(58 - 142)	SW846 6010B Dilution Factor: 1	01/20/00	D7LW3110
Magnesium	98	(81 - 119)	SW846 6010B Dilution Factor: 1	01/20-01/21/00	D7LW311C
Manganese	111	(77 - 123)	SW846 6010B Dilution Factor: 1	01/20/00	D7LW311D
Nickel	104	(78 - 122)	SW846 6010B Dilution Factor: 1	01/20/00	D7LW3113
Potassium	98	(74 - 132)	SW846 6010B Dilution Factor: 1	01/20-01/21/00	D7LW3114

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: F0A030118 Matrix.....: SOLID

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Silver	114	(75 - 126)	SW846 6010B	01/20/00	D7LW3115
		Dilution Factor: 1			
Sodium	102	(63 - 137)	SW846 6010B	01/20-01/21/00	D7LW3117
		Dilution Factor: 1			
Vanadium	114	(68 - 132)	SW846 6010B	01/20/00	D7LW3118
		Dilution Factor: 1			
Zinc	105	(77 - 123)	SW846 6010B	01/20/00	D7LW3119
		Dilution Factor: 1			

NOTE(S):

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

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: F0A030118 **Matrix.....:** SOLID
Date Sampled...: 12/28/99 **Date Received..:** 12/31/99

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: F0A030118-001 **Prep Batch #...:** 0020288							
Aluminum	218 N	(75 - 125)			SW846 6010B	01/20-01/21/00	D71MQ103
	221 N	(75 - 125)	0.06	(0-20)	SW846 6010B	01/20-01/21/00	D71MQ104
		Dilution Factor: 1					
Antimony	60 N	(75 - 125)			SW846 6010B	01/20/00	D71MQ106
	63 N	(75 - 125)	5.0	(0-20)	SW846 6010B	01/20/00	D71MQ107
		Dilution Factor: 1					
Barium	124	(75 - 125)			SW846 6010B	01/20/00	D71MQ109
	131 N	(75 - 125)	4.1	(0-20)	SW846 6010B	01/20/00	D71MQ10A
		Dilution Factor: 1					
Beryllium	124	(75 - 125)			SW846 6010B	01/20/00	D71MQ10D
	130 N	(75 - 125)	4.1	(0-20)	SW846 6010B	01/20/00	D71MQ10E
		Dilution Factor: 1					
Cadmium	107	(75 - 125)			SW846 6010B	01/20/00	D71MQ10G
	115	(75 - 125)	6.6	(0-20)	SW846 6010B	01/20/00	D71MQ10H
		Dilution Factor: 1					
Calcium	72 N	(75 - 125)			SW846 6010B	01/20-01/21/00	D71MQ10K
	95	(75 - 125)	1.6	(0-20)	SW846 6010B	01/20-01/21/00	D71MQ10L
		Dilution Factor: 1					
Chromium	114	(75 - 125)			SW846 6010B	01/20/00	D71MQ10N
	117	(75 - 125)	1.2	(0-20)	SW846 6010B	01/20/00	D71MQ10P
		Dilution Factor: 1					
Cobalt	136 N	(75 - 125)			SW846 6010B	01/20/00	D71MQ10R
	132 N	(75 - 125)	1.6	(0-20)	SW846 6010B	01/20/00	D71MQ10T
		Dilution Factor: 1					
Copper	0.0 N	(75 - 125)			SW846 6010B	01/20/00	D71MQ10V
	0.0 N	(75 - 125)	0.0	(0-20)	SW846 6010B	01/20/00	D71MQ10W
		Dilution Factor: 1					
Iron	0.0 N	(75 - 125)			SW846 6010B	01/20/00	D71MQ110
	0.0 N	(75 - 125)	0.0	(0-20)	SW846 6010B	01/20/00	D71MQ111
		Dilution Factor: 1					
Magnesium	126 N	(75 - 125)			SW846 6010B	01/20-01/21/00	D71MQ113
	125	(75 - 125)	0.77	(0-20)	SW846 6010B	01/20-01/21/00	D71MQ114
		Dilution Factor: 1					

(Continued on next page)

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: F0A030118 **Matrix.....:** SOLID
Date Sampled...: 12/28/99 **Date Received..:** 12/31/99

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Manganese	85	(75 - 125)			SW846 6010B	01/20/00	D71MQ116
	113	(75 - 125)	5.0	(0-20)	SW846 6010B	01/20/00	D71MQ117
		Dilution Factor: 1					
Nickel	104	(75 - 125)			SW846 6010B	01/20/00	D71MQ119
	109	(75 - 125)	4.0	(0-20)	SW846 6010B	01/20/00	D71MQ11A
		Dilution Factor: 1					
Potassium	123	(75 - 125)			SW846 6010B	01/20-01/21/00	D71MQ11D
	124	(75 - 125)	0.56	(0-20)	SW846 6010B	01/20-01/21/00	D71MQ11E
		Dilution Factor: 1					
Silver	116	(75 - 125)			SW846 6010B	01/20/00	D71MQ11G
	122	(75 - 125)	4.4	(0-20)	SW846 6010B	01/20/00	D71MQ11H
		Dilution Factor: 1					
Sodium	123	(75 - 125)			SW846 6010B	01/20-01/21/00	D71MQ11K
	124	(75 - 125)	0.63	(0-20)	SW846 6010B	01/20-01/21/00	D71MQ11L
		Dilution Factor: 1					
Vanadium	111	(75 - 125)			SW846 6010B	01/20/00	D71MQ11N
	116	(75 - 125)	2.5	(0-20)	SW846 6010B	01/20/00	D71MQ11P
		Dilution Factor: 1					
Zinc	700 N	(75 - 125)			SW846 6010B	01/20/00	D71MQ11R
	555 N	(75 - 125)	5.9	(0-20)	SW846 6010B	01/20/00	D71MQ11T
		Dilution Factor: 1					

NOTE(S):

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

Results and reporting limits have been adjusted for dry weight.

N Spiked analyte recovery is outside stated control limits.

W02996-QES

Quanterra
Environmental Services

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

314 298-8566 Telephone
314 298-8757 Fax

CASE NARRATIVE
Revised 2/7/00

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, Washington 99352

January 21, 2000

Attention: Joan Kessner

Project Number	:	33958
SDG	:	W02996
Number of Samples	:	nine (9)
Sample Matrix	:	Solid
Data Deliverable	:	Summary
Date SDG Closed	:	December 31, 1999

II. Introduction

On December 30, 1999, nine (9) "solid" samples were received by Quanterra, Richland and transferred to Quanterra, St. Louis for chemical analysis. The samples were received within temperature criteria. See the attached Sample Summary sheet for the client and lab Ids for these samples.

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 - 6010A (TAL)

Deviation from Request: There were no deviations.

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.

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.

Several compounds have matrix spike/matrix spike duplicate recoveries outside QC limits. In most cases this is due to the amount of the compound found in the unspiked sample. The LCS recoveries for all compounds are within control limits.

Revision: The original analysis request did not require Lead analysis. Lead was requested by the client. This report was revised to include the lead data. The matrix spike recoveries for Lead were outside control limits due to the amount of Lead present in the unspiked sample.

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

Reviewed and approved:

Marti Ward
St. Louis Project Manager

SAMPLE SUMMARY

F0A030118

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
D71MQ	001	B0XB07	12/28/99	06:55
D71N4	002	B0XB08	12/28/99	07:18
D71N6	003	B0WY49	12/28/99	07:18
D71N9	004	B0XB09	12/28/99	07:25
D71NA	005	B0XB05	12/27/99	14:28
D71NP	006	B0XB06	12/27/99	14:35
D71NT	007	B0XB02	12/27/99	13:32
D71NX	008	B0XB03	12/27/99	13:47
D71P1	009	B0XB04	12/27/99	14:11

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

F0A030118

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Inductively Coupled Plasma (ICP) Metals	SW846 6010B	SW846 3050B
Percent Moisture	MCAWW 160.3 MOD	MCAWW 160.3 MOD
Trace Inductively Coupled Plasma (ICP) Metals	SW846 6010B	SW846 3050B

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

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

BECHTEL HANFORD, INC.

Client Sample ID: B0XB07

TOTAL Metals

Lot-Sample #...: F0A030118-001 Matrix.....: SOLID
Date Sampled...: 12/28/99 Date Received..: 12/31/99
% Moisture.....: 1.3

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0020288						
Aluminum	7570	20.3	mg/kg	SW846 6010B	01/20-01/21/00	D71MQ102
		Dilution Factor: 1				
Antimony	ND	6.1	mg/kg	SW846 6010B	01/20/00	D71MQ105
		Dilution Factor: 1				
Barium	87.4	20.3	mg/kg	SW846 6010B	01/20/00	D71MQ108
		Dilution Factor: 1				
Beryllium	0.22 B	0.51	mg/kg	SW846 6010B	01/20/00	D71MQ10C
		Dilution Factor: 1				
Lead	569	0.30	mg/kg	SW846 6010B	01/20-01/21/00	D71MQ11U
		Dilution Factor: 1				
Cadmium	0.30 B	0.51	mg/kg	SW846 6010B	01/20/00	D71MQ10F
		Dilution Factor: 1				
Calcium	67300	506	mg/kg	SW846 6010B	01/20-01/21/00	D71MQ10J
		Dilution Factor: 1				
Chromium	13.6	1.0	mg/kg	SW846 6010B	01/20/00	D71MQ10M
		Dilution Factor: 1				
Cobalt	49.3	5.1	mg/kg	SW846 6010B	01/20/00	D71MQ10Q
		Dilution Factor: 1				
Copper	177	2.5	mg/kg	SW846 6010B	01/20/00	D71MQ10U
		Dilution Factor: 1				
Iron	15500	10.1	mg/kg	SW846 6010B	01/20/00	D71MQ10X
		Dilution Factor: 1				
Magnesium	4850	506	mg/kg	SW846 6010B	01/20-01/21/00	D71MQ112
		Dilution Factor: 1				
Manganese	230	1.5	mg/kg	SW846 6010B	01/20/00	D71MQ115
		Dilution Factor: 1				
Nickel	7.7	4.1	mg/kg	SW846 6010B	01/20/00	D71MQ118
		Dilution Factor: 1				

(Continued on next page)

BECHTEL HANFORD, INC.

Client Sample ID: B0XB07

TOTAL Metals

Lot-Sample #...: F0A030118-001 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Potassium	**2210**	**506**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71MQ11C**
		Dilution Factor: 1				
Silver	ND	1.0	mg/kg	SW846 6010B	01/20/00	D71MQ11F
		Dilution Factor: 1				
Sodium	**1240**	**506**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71MQ11J**
		Dilution Factor: 1				
Vanadium	**42.2**	**5.1**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71MQ11M**
		Dilution Factor: 1				
Zinc	**925**	**2.0**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71MQ11Q**
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

BECHTEL HANFORD, INC.

Client Sample ID: B0XB08

TOTAL Metals

Lot-Sample #...: F0A030118-002 Matrix.....: SOLID
Date Sampled...: 12/28/99 Date Received..: 12/31/99
% Moisture.....: 1.3

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0020288						
Aluminum	6410	20.3	mg/kg	SW846 6010B	01/20-01/21/00	D71N4102
		Dilution Factor: 1				
Antimony	ND	6.1	mg/kg	SW846 6010B	01/20/00	D71N4103
		Dilution Factor: 1				
Barium	91.7	20.3	mg/kg	SW846 6010B	01/20/00	D71N4104
		Dilution Factor: 1				
Beryllium	0.21 B	0.51	mg/kg	SW846 6010B	01/20/00	D71N4105
		Dilution Factor: 1				
Lead	3.7	0.30	mg/kg	SW846 6010B	01/20/00	D71N410M
		Dilution Factor: 1				
Cadmium	13.3	0.51	mg/kg	SW846 6010B	01/20/00	D71N4106
		Dilution Factor: 1				
Calcium	75500	506	mg/kg	SW846 6010B	01/20-01/21/00	D71N4107
		Dilution Factor: 1				
Chromium	10.2	1.0	mg/kg	SW846 6010B	01/20/00	D71N4108
		Dilution Factor: 1				
Cobalt	8.1	5.1	mg/kg	SW846 6010B	01/20/00	D71N4109
		Dilution Factor: 1				
Copper	19.3	2.5	mg/kg	SW846 6010B	01/20/00	D71N410A
		Dilution Factor: 1				
Iron	12700	10.1	mg/kg	SW846 6010B	01/20/00	D71N410C
		Dilution Factor: 1				
Magnesium	4840	506	mg/kg	SW846 6010B	01/20-01/21/00	D71N410D
		Dilution Factor: 1				
Manganese	229	1.5	mg/kg	SW846 6010B	01/20/00	D71N410E
		Dilution Factor: 1				
Nickel	8.6	4.1	mg/kg	SW846 6010B	01/20/00	D71N410F
		Dilution Factor: 1				

(Continued on next page)

BECHTEL HANFORD, INC.

Client Sample ID: B0XB08

TOTAL Metals

Lot-Sample #...: F0A030118-002 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Potassium	**2200**	**506**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71N410G**
		Dilution Factor: 1				
Silver	ND	1.0	mg/kg	SW846 6010B	01/20/00	D71N410H
		Dilution Factor: 1				
Sodium	**1270**	**506**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71N410J**
		Dilution Factor: 1				
Vanadium	**32.3**	**5.1**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71N410K**
		Dilution Factor: 1				
Zinc	**176**	**2.0**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71N410L**
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

BECHTEL HANFORD, INC.

Client Sample ID: B0WY49

TOTAL Metals

Lot-Sample #...: F0A030118-003 Matrix.....: SOLID
Date Sampled...: 12/28/99 Date Received..: 12/31/99
% Moisture.....: 1.3

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0020288						
Aluminum	**6150**	**20.3**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71N6102**
		Dilution Factor: 1				
Antimony	ND	6.1	mg/kg	SW846 6010B	01/20/00	D71N6103
		Dilution Factor: 1				
Barium	**89.4**	**20.3**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71N6104**
		Dilution Factor: 1				
Beryllium	**0.21 B**	**0.51**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71N6105**
		Dilution Factor: 1				
Lead	**3.5**	**0.30**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71N610M**
		Dilution Factor: 1				
Cadmium	**14.3**	**0.51**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71N6106**
		Dilution Factor: 1				
Calcium	**71700**	**507**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71N6107**
		Dilution Factor: 1				
Chromium	**10.1**	**1.0**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71N6108**
		Dilution Factor: 1				
Cobalt	**8.5**	**5.1**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71N6109**
		Dilution Factor: 1				
Copper	**15.4**	**2.5**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71N610A**
		Dilution Factor: 1				
Iron	**14100**	**10.1**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71N610C**
		Dilution Factor: 1				
Magnesium	**4920**	**507**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71N610D**
		Dilution Factor: 1				
Manganese	**241**	**1.5**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71N610E**
		Dilution Factor: 1				
Nickel	**8.8**	**4.1**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71N610F**
		Dilution Factor: 1				

(Continued on next page)

BECHTEL HANFORD, INC.

Client Sample ID: B0WY49

TOTAL Metals

Lot-Sample #...: F0A030118-003 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Potassium	**2040**	**507**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71N610G**
		Dilution Factor: 1				
Silver	ND	1.0	mg/kg	SW846 6010B	01/20/00	D71N610H
		Dilution Factor: 1				
Sodium	**1120**	**507**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71N610J**
		Dilution Factor: 1				
Vanadium	**36.6**	**5.1**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71N610K**
		Dilution Factor: 1				
Zinc	**163**	**2.0**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71N610L**
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

BECHTEL HANFORD, INC.

Client Sample ID: B0XB09

TOTAL Metals

Lot-Sample #...: F0A030118-004 Matrix.....: SOLID
Date Sampled...: 12/28/99 Date Received..: 12/31/99
% Moisture.....: 2.1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0020288						
Aluminum	**7590**	**20.4**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71N9102**
		Dilution Factor: 1				
Antimony	ND	6.1	mg/kg	SW846 6010B	01/20/00	D71N9103
		Dilution Factor: 1				
Barium	**95.0**	**20.4**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71N9104**
		Dilution Factor: 1				
Beryllium	**0.22 B**	**0.51**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71N9105**
		Dilution Factor: 1				
Lead	**411**	**0.31**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71N910M**
		Dilution Factor: 1				
Cadmium	ND	0.51	mg/kg	SW846 6010B	01/20/00	D71N9106
		Dilution Factor: 1				
Calcium	**61300**	**511**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71N9107**
		Dilution Factor: 1				
Chromium	**122**	**1.0**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71N9108**
		Dilution Factor: 1				
Cobalt	**13.6**	**5.1**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71N9109**
		Dilution Factor: 1				
Copper	**11.1**	**2.6**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71N910A**
		Dilution Factor: 1				
Iron	**14600**	**10.2**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71N910C**
		Dilution Factor: 1				
Magnesium	**6040**	**511**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71N910D**
		Dilution Factor: 1				
Manganese	**249**	**1.5**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71N910E**
		Dilution Factor: 1				
Nickel	**6.6**	**4.1**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71N910F**
		Dilution Factor: 1				

(Continued on next page)

BECHTEL HANFORD, INC.

Client Sample ID: B0XB09

TOTAL Metals

Lot-Sample #...: F0A030118-004 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Potassium	**1860**	**511**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71N910G**
		Dilution Factor: 1				
Silver	ND	1.0	mg/kg	SW846 6010B	01/20/00	D71N910H
		Dilution Factor: 1				
Sodium	**1150**	**511**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71N910J**
		Dilution Factor: 1				
Vanadium	**40.3**	**5.1**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71N910K**
		Dilution Factor: 1				
Zinc	**1500**	**2.0**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71N910L**
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

BECHTEL HANFORD, INC.

Client Sample ID: B0XB05

TOTAL Metals

Lot-Sample #...: F0A030118-005 Matrix.....: SOLID
Date Sampled...: 12/27/99 Date Received..: 12/31/99
% Moisture.....: 1.2

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0020288						
Aluminum	7680	20.2	mg/kg	SW846 6010B	01/20-01/21/00	D71NA102
		Dilution Factor: 1				
Antimony	ND	6.1	mg/kg	SW846 6010B	01/20/00	D71NA103
		Dilution Factor: 1				
Barium	88.6	20.2	mg/kg	SW846 6010B	01/20/00	D71NA104
		Dilution Factor: 1				
Beryllium	0.21 B	0.51	mg/kg	SW846 6010B	01/20/00	D71NA105
		Dilution Factor: 1				
Lead	664	0.30	mg/kg	SW846 6010B	01/20/00	D71NA10M
		Dilution Factor: 1				
Cadmium	ND	0.51	mg/kg	SW846 6010B	01/20/00	D71NA106
		Dilution Factor: 1				
Calcium	77800	506	mg/kg	SW846 6010B	01/20-01/21/00	D71NA107
		Dilution Factor: 1				
Chromium	8.8	1.0	mg/kg	SW846 6010B	01/20/00	D71NA108
		Dilution Factor: 1				
Cobalt	27.5	5.1	mg/kg	SW846 6010B	01/20/00	D71NA109
		Dilution Factor: 1				
Copper	29.2	2.5	mg/kg	SW846 6010B	01/20/00	D71NA10A
		Dilution Factor: 1				
Iron	15000	10.1	mg/kg	SW846 6010B	01/20/00	D71NA10C
		Dilution Factor: 1				
Magnesium	5000	506	mg/kg	SW846 6010B	01/20-01/21/00	D71NA10D
		Dilution Factor: 1				
Manganese	231	1.5	mg/kg	SW846 6010B	01/20/00	D71NA10E
		Dilution Factor: 1				
Nickel	6.4	4.0	mg/kg	SW846 6010B	01/20/00	D71NA10F
		Dilution Factor: 1				

(Continued on next page)

BECHTEL HANFORD, INC.

Client Sample ID: B0XB05

TOTAL Metals

Lot-Sample #...: F0A030118-005 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Potassium	**1910**	**506**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71NA10G**
		Dilution Factor: 1				
Silver	ND	1.0	mg/kg	SW846 6010B	01/20/00	D71NA10H
		Dilution Factor: 1				
Sodium	**1120**	**506**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71NA10J**
		Dilution Factor: 1				
Vanadium	**42.3**	**5.1**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71NA10K**
		Dilution Factor: 1				
Zinc	**285**	**2.0**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71NA10L**
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

BECHTEL HANFORD, INC.

Client Sample ID: B0XB06

TOTAL Metals

Lot-Sample #...: F0A030118-006 Matrix.....: SOLID
Date Sampled...: 12/27/99 Date Received..: 12/31/99
% Moisture.....: 1.4

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0020288						
Aluminum	**7790**	**20.3**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71NP102**
		Dilution Factor: 1				
Antimony	ND	6.1	mg/kg	SW846 6010B	01/20/00	D71NP103
		Dilution Factor: 1				
Barium	**89.9**	**20.3**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71NP104**
		Dilution Factor: 1				
Beryllium	**0.22 B**	**0.51**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71NP105**
		Dilution Factor: 1				
Lead	**601**	**0.30**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71NP10M**
		Dilution Factor: 1				
Cadmium	ND	0.51	mg/kg	SW846 6010B	01/20/00	D71NP106
		Dilution Factor: 1				
Calcium	**74600**	**507**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71NP107**
		Dilution Factor: 1				
Chromium	**33.5**	**1.0**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71NP108**
		Dilution Factor: 1				
Cobalt	**32.2**	**5.1**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71NP109**
		Dilution Factor: 1				
Copper	**12.6**	**2.5**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71NP10A**
		Dilution Factor: 1				
Iron	**16600**	**10.1**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71NP10C**
		Dilution Factor: 1				
Magnesium	**6000**	**507**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71NP10D**
		Dilution Factor: 1				
Manganese	**243**	**1.5**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71NP10E**
		Dilution Factor: 1				
Nickel	**6.8**	**4.1**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71NP10F**
		Dilution Factor: 1				

(Continued on next page)

BECHTEL HANFORD, INC.

Client Sample ID: B0XB06

TOTAL Metals

Lot-Sample #...: F0A030118-006 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Potassium	**2240**	**507**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71NP10G**
		Dilution Factor: 1				
Silver	ND	1.0	mg/kg	SW846 6010B	01/20/00	D71NP10H
		Dilution Factor: 1				
Sodium	**1080**	**507**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71NP10J**
		Dilution Factor: 1				
Vanadium	**45.8**	**5.1**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71NP10K**
		Dilution Factor: 1				
Zinc	**171**	**2.0**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71NP10L**
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

BECHTEL HANFORD, INC.

Client Sample ID: B0XB02

TOTAL Metals

Lot-Sample #...: F0A030118-007 **Matrix.....:** SOLID
Date Sampled...: 12/27/99 **Date Received..:** 12/31/99
% Moisture.....: 1.7

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0020288						
Aluminum	**5230**	**20.3**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71NT102**
		Dilution Factor: 1				
Antimony	ND	6.1	mg/kg	SW846 6010B	01/20/00	D71NT103
		Dilution Factor: 1				
Barium	**209**	**20.3**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71NT104**
		Dilution Factor: 1				
Beryllium	**0.12 B**	**0.51**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71NT105**
		Dilution Factor: 1				
Lead	**12.0**	**0.31**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71NT10M**
		Dilution Factor: 1				
Cadmium	ND	0.51	mg/kg	SW846 6010B	01/20/00	D71NT106
		Dilution Factor: 1				
Calcium	**70700**	**508**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71NT107**
		Dilution Factor: 1				
Chromium	**20.7**	**1.0**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71NT108**
		Dilution Factor: 1				
Cobalt	**7.0**	**5.1**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71NT109**
		Dilution Factor: 1				
Copper	**16.4**	**2.5**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71NT10A**
		Dilution Factor: 1				
Iron	**16700**	**10.2**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71NT10C**
		Dilution Factor: 1				
Magnesium	**9170**	**508**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71NT10D**
		Dilution Factor: 1				
Manganese	**226**	**1.5**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71NT10E**
		Dilution Factor: 1				
Nickel	**15.9**	**4.1**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71NT10F**
		Dilution Factor: 1				

(Continued on next page)

BECHTEL HANFORD, INC.

Client Sample ID: B0XB02

TOTAL Metals

Lot-Sample #...: F0A030118-007 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Potassium	**862**	**508**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71NT10G**
		Dilution Factor: 1				
Silver	ND	1.0	mg/kg	SW846 6010B	01/20/00	D71NT10H
		Dilution Factor: 1				
Sodium	**703**	**508**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71NT10J**
		Dilution Factor: 1				
Vanadium	**48.3**	**5.1**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71NT10K**
		Dilution Factor: 1				
Zinc	**151**	**2.0**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71NT10L**
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

BECHTEL HANFORD, INC.

Client Sample ID: B0XB03

TOTAL Metals

Lot-Sample #...: F0A030118-008 Matrix.....: SOLID
Date Sampled...: 12/27/99 Date Received..: 12/31/99
% Moisture.....: 2.7

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0020288						
Aluminum	7230	20.6	mg/kg	SW846 6010B	01/20-01/21/00	D71NX102
		Dilution Factor: 1				
Antimony	27.8	6.2	mg/kg	SW846 6010B	01/20/00	D71NX103
		Dilution Factor: 1				
Barium	230	20.6	mg/kg	SW846 6010B	01/20/00	D71NX104
		Dilution Factor: 1				
Beryllium	0.16 B	0.51	mg/kg	SW846 6010B	01/20/00	D71NX105
		Dilution Factor: 1				
Lead	27900	6.2	mg/kg	SW846 6010B	01/20/00	D71NX10M
		Dilution Factor: 20				
Cadmium	68.9	0.51	mg/kg	SW846 6010B	01/20/00	D71NX106
		Dilution Factor: 1				
Calcium	124000	2570	mg/kg	SW846 6010B	01/20-01/21/00	D71NX107
		Dilution Factor: 5				
Chromium	741	1.0	mg/kg	SW846 6010B	01/20/00	D71NX108
		Dilution Factor: 1				
Cobalt	5.3	5.1	mg/kg	SW846 6010B	01/20/00	D71NX109
		Dilution Factor: 1				
Copper	42.8	2.6	mg/kg	SW846 6010B	01/20/00	D71NX10A
		Dilution Factor: 1				
Iron	10400	10.3	mg/kg	SW846 6010B	01/20/00	D71NX10C
		Dilution Factor: 1				
Magnesium	4340	514	mg/kg	SW846 6010B	01/20-01/21/00	D71NX10D
		Dilution Factor: 1				
Manganese	169	1.5	mg/kg	SW846 6010B	01/20/00	D71NX10E
		Dilution Factor: 1				
Nickel	9.8	4.1	mg/kg	SW846 6010B	01/20/00	D71NX10F
		Dilution Factor: 1				

(Continued on next page)

BECHTEL HANFORD, INC.

Client Sample ID: B0XB03

TOTAL Metals

Lot-Sample #...: F0A030118-008 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Potassium	**795**	**514**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71NX10G**
		Dilution Factor: 1				
Silver	ND	1.0	mg/kg	SW846 6010B	01/20/00	D71NX10H
		Dilution Factor: 1				
Sodium	**1870**	**514**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D71NX10J**
		Dilution Factor: 1				
Vanadium	**31.7**	**5.1**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71NX10K**
		Dilution Factor: 1				
Zinc	**313**	**2.1**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D71NX10L**
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

BECHTEL HANFORD, INC.

Client Sample ID: B0XB04

TOTAL Metals

Lot-Sample #...: F0A030118-009 Matrix.....: SOLID
Date Sampled...: 12/27/99 Date Received..: 12/31/99
% Moisture.....: 1.4

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0020288						
Aluminum	8480	20.3	mg/kg	SW846 6010B	01/20-01/21/00	D71P1102
		Dilution Factor: 1				
Antimony	ND	6.1	mg/kg	SW846 6010B	01/20/00	D71P1103
		Dilution Factor: 1				
Barium	102	20.3	mg/kg	SW846 6010B	01/20/00	D71P1104
		Dilution Factor: 1				
Beryllium	0.23 B	0.51	mg/kg	SW846 6010B	01/20/00	D71P1105
		Dilution Factor: 1				
Lead	1030	0.30	mg/kg	SW846 6010B	01/20/00	D71P110M
		Dilution Factor: 1				
Cadmium	ND	0.51	mg/kg	SW846 6010B	01/20/00	D71P1106
		Dilution Factor: 1				
Calcium	70000	507	mg/kg	SW846 6010B	01/20-01/21/00	D71P1107
		Dilution Factor: 1				
Chromium	84.6	1.0	mg/kg	SW846 6010B	01/20/00	D71P1108
		Dilution Factor: 1				
Cobalt	35.5	5.1	mg/kg	SW846 6010B	01/20/00	D71P1109
		Dilution Factor: 1				
Copper	12.8	2.5	mg/kg	SW846 6010B	01/20/00	D71P110A
		Dilution Factor: 1				
Iron	16300	10.1	mg/kg	SW846 6010B	01/20/00	D71P110C
		Dilution Factor: 1				
Magnesium	5650	507	mg/kg	SW846 6010B	01/20-01/21/00	D71P110D
		Dilution Factor: 1				
Manganese	225	1.5	mg/kg	SW846 6010B	01/20/00	D71P110E
		Dilution Factor: 1				
Nickel	7.1	4.1	mg/kg	SW846 6010B	01/20/00	D71P110F
		Dilution Factor: 1				

(Continued on next page)

BECHTEL HANFORD, INC.

Client Sample ID: B0XB04

TOTAL Metals

Lot-Sample #...: F0A030118-009 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Potassium	2490	507	mg/kg	SW846 6010B	01/20-01/21/00	D71P110G
		Dilution Factor: 1				
Silver	ND	1.0	mg/kg	SW846 6010B	01/20/00	D71P110H
		Dilution Factor: 1				
Sodium	1400	507	mg/kg	SW846 6010B	01/20-01/21/00	D71P110J
		Dilution Factor: 1				
Vanadium	43.9	5.1	mg/kg	SW846 6010B	01/20/00	D71P110K
		Dilution Factor: 1				
Zinc	149	2.0	mg/kg	SW846 6010B	01/20/00	D71P110L
		Dilution Factor: 1				

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F0A030118 **Matrix.....:** SOLID

MB Lot-Sample #: F0A200000-288 **Prep Batch #...:** 0020288

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Aluminum	**16.7 B**	**20.0**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D7LW3108**
		Dilution Factor: 1				
Antimony	ND	6.0	mg/kg	SW846 6010B	01/20/00	D7LW3109
		Dilution Factor: 1				
Barium	**0.13 B**	**20.0**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D7LW310A**
		Dilution Factor: 1				
Beryllium	ND	0.50	mg/kg	SW846 6010B	01/20/00	D7LW3101
		Dilution Factor: 1				
Lead	ND	0.30	mg/kg	SW846 6010B	01/20/00	D7LW311G
		Dilution Factor: 1				
Cadmium	ND	0.50	mg/kg	SW846 6010B	01/20/00	D7LW3102
		Dilution Factor: 1				
Calcium	**31.7 B**	**500**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D7LW3103**
		Dilution Factor: 1				
Chromium	ND	1.0	mg/kg	SW846 6010B	01/20/00	D7LW3104
		Dilution Factor: 1				
Cobalt	ND	5.0	mg/kg	SW846 6010B	01/20/00	D7LW3105
		Dilution Factor: 1				
Copper	ND	2.5	mg/kg	SW846 6010B	01/20/00	D7LW3106
		Dilution Factor: 1				
Iron	**5.0 B**	**10.0**	**mg/kg**	**SW846 6010B**	**01/20/00**	**D7LW3107**
		Dilution Factor: 1				
Magnesium	**14.0 B**	**500**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D7LW310K**
		Dilution Factor: 1				
Manganese	ND	1.5	mg/kg	SW846 6010B	01/20/00	D7LW310L
		Dilution Factor: 1				
Nickel	ND	4.0	mg/kg	SW846 6010B	01/20/00	D7LW310M
		Dilution Factor: 1				
Potassium	ND	500	mg/kg	SW846 6010B	01/20-01/21/00	D7LW310C
		Dilution Factor: 1				

(Continued on next page)

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F0A030118 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Silver	ND	1.0	mg/kg	SW846 6010B	01/20/00	D7LW310D
		Dilution Factor: 1				
Sodium	**33.9 B**	**500**	**mg/kg**	**SW846 6010B**	**01/20-01/21/00**	**D7LW310F**
		Dilution Factor: 1				
Vanadium	ND	5.0	mg/kg	SW846 6010B	01/20/00	D7LW310G
		Dilution Factor: 1				
Zinc	ND	2.0	mg/kg	SW846 6010B	01/20/00	D7LW310H
		Dilution Factor: 1				

NOTE(S):

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

B Estimated result. Result is less than RL.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: F0A030118 **Matrix.....:** SOLID

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: F0A200000-288 **Prep Batch #...:** 0020288					
Aluminum	88	(60 - 140)	SW846 6010B Dilution Factor: 1	01/20-01/21/00	D7LW3111
Antimony	119	(18 - 182)	SW846 6010B Dilution Factor: 1	01/20/00	D7LW3112
Barium	113	(77 - 123)	SW846 6010B Dilution Factor: 1	01/20/00	D7LW310Q
Beryllium	113	(78 - 122)	SW846 6010B Dilution Factor: 1	01/20/00	D7LW310R
Lead	108	(76 - 124)	SW846 6010B Dilution Factor: 1	01/20/00	D7LW311H
Cadmium	108	(77 - 123)	SW846 6010B Dilution Factor: 1	01/20/00	D7LW310T
Calcium	102	(75 - 125)	SW846 6010B Dilution Factor: 1	01/20-01/21/00	D7LW310U
Chromium	101	(77 - 123)	SW846 6010B Dilution Factor: 1	01/20/00	D7LW310V
Cobalt	104	(80 - 121)	SW846 6010B Dilution Factor: 1	01/20/00	D7LW310W
Copper	112	(82 - 118)	SW846 6010B Dilution Factor: 1	01/20/00	D7LW310X
Iron	120	(58 - 142)	SW846 6010B Dilution Factor: 1	01/20/00	D7LW3110
Magnesium	98	(81 - 119)	SW846 6010B Dilution Factor: 1	01/20-01/21/00	D7LW311C
Manganese	111	(77 - 123)	SW846 6010B Dilution Factor: 1	01/20/00	D7LW311D
Nickel	104	(78 - 122)	SW846 6010B Dilution Factor: 1	01/20/00	D7LW3113

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: F0A030118 **Matrix.....:** SOLID

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Potassium	98	(74 - 132)	SW846 6010B	01/20-01/21/00	D7LW3114
		Dilution Factor: 1			
Silver	114	(75 - 126)	SW846 6010B	01/20/00	D7LW3115
		Dilution Factor: 1			
Sodium	102	(63 - 137)	SW846 6010B	01/20-01/21/00	D7LW3117
		Dilution Factor: 1			
Vanadium	114	(68 - 132)	SW846 6010B	01/20/00	D7LW3118
		Dilution Factor: 1			
Zinc	105	(77 - 123)	SW846 6010B	01/20/00	D7LW3119
		Dilution Factor: 1			

NOTE(S):

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

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: F0A030118 **Matrix.....:** SOLID
Date Sampled...: 12/28/99 **Date Received..:** 12/31/99

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: F0A030118-001 **Prep Batch #...:** 0020288							
Aluminum	218 N	(75 - 125)			SW846 6010B	01/20-01/21/00	D71MQ103
	221 N	(75 - 125)	0.06	(0-20)	SW846 6010B	01/20-01/21/00	D71MQ104
		Dilution Factor: 1					
Antimony	60 N	(75 - 125)			SW846 6010B	01/20/00	D71MQ106
	63 N	(75 - 125)	5.0	(0-20)	SW846 6010B	01/20/00	D71MQ107
		Dilution Factor: 1					
Barium	124	(75 - 125)			SW846 6010B	01/20/00	D71MQ109
	131 N	(75 - 125)	4.1	(0-20)	SW846 6010B	01/20/00	D71MQ10A
		Dilution Factor: 1					
Beryllium	124	(75 - 125)			SW846 6010B	01/20/00	D71MQ10D
	130 N	(75 - 125)	4.1	(0-20)	SW846 6010B	01/20/00	D71MQ10E
		Dilution Factor: 1					
Lead	342 N	(75 - 125)			SW846 6010B	01/20/00	D71MQ11V
	288 N	(75 - 125)	3.7	(0-20)	SW846 6010B	01/20/00	D71MQ11W
		Dilution Factor: 1					
Cadmium	107	(75 - 125)			SW846 6010B	01/20/00	D71MQ10G
	115	(75 - 125)	6.6	(0-20)	SW846 6010B	01/20/00	D71MQ10H
		Dilution Factor: 1					
Calcium	72 N	(75 - 125)			SW846 6010B	01/20-01/21/00	D71MQ10K
	95	(75 - 125)	1.6	(0-20)	SW846 6010B	01/20-01/21/00	D71MQ10L
		Dilution Factor: 1					
Chromium	114	(75 - 125)			SW846 6010B	01/20/00	D71MQ10N
	117	(75 - 125)	1.2	(0-20)	SW846 6010B	01/20/00	D71MQ10P
		Dilution Factor: 1					
Cobalt	136 N	(75 - 125)			SW846 6010B	01/20/00	D71MQ10R
	132 N	(75 - 125)	1.6	(0-20)	SW846 6010B	01/20/00	D71MQ10T
		Dilution Factor: 1					
Copper	0.0 N	(75 - 125)			SW846 6010B	01/20/00	D71MQ10V
	0.0 N	(75 - 125)	0.0	(0-20)	SW846 6010B	01/20/00	D71MQ10W
		Dilution Factor: 1					
Iron	0.0 N	(75 - 125)			SW846 6010B	01/20/00	D71MQ110
	0.0 N	(75 - 125)	0.0	(0-20)	SW846 6010B	01/20/00	D71MQ111
		Dilution Factor: 1					

(Continued on next page)

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: F0A030118 **Matrix.....:** SOLID
Date Sampled...: 12/28/99 **Date Received..:** 12/31/99

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Magnesium	126 N	(75 - 125)			SW846 6010B	01/20-01/21/00	D71MQ113
	125	(75 - 125)	0.77	(0-20)	SW846 6010B	01/20-01/21/00	D71MQ114
		Dilution Factor: 1					
Manganese	85	(75 - 125)			SW846 6010B	01/20/00	D71MQ116
	113	(75 - 125)	5.0	(0-20)	SW846 6010B	01/20/00	D71MQ117
		Dilution Factor: 1					
Nickel	104	(75 - 125)			SW846 6010B	01/20/00	D71MQ119
	109	(75 - 125)	4.0	(0-20)	SW846 6010B	01/20/00	D71MQ11A
		Dilution Factor: 1					
Potassium	123	(75 - 125)			SW846 6010B	01/20-01/21/00	D71MQ11D
	124	(75 - 125)	0.56	(0-20)	SW846 6010B	01/20-01/21/00	D71MQ11E
		Dilution Factor: 1					
Silver	116	(75 - 125)			SW846 6010B	01/20/00	D71MQ11G
	122	(75 - 125)	4.4	(0-20)	SW846 6010B	01/20/00	D71MQ11H
		Dilution Factor: 1					
Sodium	123	(75 - 125)			SW846 6010B	01/20-01/21/00	D71MQ11K
	124	(75 - 125)	0.63	(0-20)	SW846 6010B	01/20-01/21/00	D71MQ11L
		Dilution Factor: 1					
Vanadium	111	(75 - 125)			SW846 6010B	01/20/00	D71MQ11N
	116	(75 - 125)	2.5	(0-20)	SW846 6010B	01/20/00	D71MQ11P
		Dilution Factor: 1					
Zinc	700 N	(75 - 125)			SW846 6010B	01/20/00	D71MQ11R
	555 N	(75 - 125)	5.9	(0-20)	SW846 6010B	01/20/00	D71MQ11T
		Dilution Factor: 1					

NOTE(S):

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

Results and reporting limits have been adjusted for dry weight.

N Spiked analyte recovery is outside stated control limits.

Quanterra
2800 George Washington Way
Richland, Washington 99352-1613

509 375-3131 Telephone
509 375-5590 Fax

CERTIFICATE OF ANALYSIS

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

January 23, 2000

Attention: Joan Kessner

FEB 2000
RECEIVED
Data
Log In

SAF Number	:	B00-003
Date SDG Closed	:	December 30, 1999
Number of Samples	:	Six (6)
Sample Type	:	Other (Solid)
SDG Number	:	W02996
Data Deliverable	:	Summary

I. Introduction

On December 30, 1999, six other (solid matrix) samples were received at the Quanterra Richland Laboratory (QRL) for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Bechtel Hanford, Inc. (BHI) specific IDs:

QESRL ID#	BHI ID#	MATRIX	DATE OF RECEIPT
9D710J10	B0WY50	OTHER	12/30/99
9D710Q10	B0X9Y8	OTHER	12/30/99
9D710T10	B0X9Y9	OTHER	12/30/99
9D710V10	B0X9Y6	OTHER	12/30/99
9D710W10	B0X9Y7	OTHER	12/30/99
9D710X10	B09Y5	OTHER	12/30/99

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
Americium-241 by method RICH-RC-5080

Uranium-234, -235, -238 by method RICH-RC-5079
Gamma Spectroscopy
Gamma Scan by method RICH-RC-5017
Gas Proportional Counting
Total Strontium by method RICH-RC-5006

III. Quality Control

The analytical results for each analysis performed under SDG W02996 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

IV. Comments

Alpha Spectroscopy
Plutonium-238, -239/40 by method RICH-RC-5079:
Results are not included in this report for samples B0WY50 and B0WY50 duplicate analysis. Tracer was not recovered due to matrix interferences, therefore results cannot be calculated. The samples exhibited matrix difficulties throughout separation processes. This analytical batch will not include a duplicate analysis result. Except as noted, the LCS, batch blank and sample results are within contractual requirements.

Americium-241 by method RICH-RC-5080:
Results are not included in this report for samples B0WY50 and B0WY50 duplicate analysis. Tracer was not recovered due to matrix interferences, therefore results cannot be calculated. The samples exhibited matrix difficulties throughout separation processes. This analytical batch will not include a duplicate analysis result. Except as noted, the LCS, batch blank and sample results are within contractual requirements.

Uranium-234, -235, -238 by method RICH-RC-5079:
Results are not included in this report for sample B0WY50. Tracer was not recovered due to matrix interferences, therefore results cannot be calculated. The sample exhibited matrix difficulties throughout separation processes. The MDA achieved for sample B0X9Y6 does not meet the CRDL due to a reduced volume analyzed based on the sample matrix (metal coupon). The data are reported with the MDAs achieved. Except as noted, the LCS, batch blank, samples and sample duplicate (B0X9Y8) results are within contractual requirements.

Gamma Spectroscopy

Gamma Scan by method RICH-RC-5017:

The MDAs achieved for samples B0WY50, B0X9Y8 and B0X9Y7 do not meet the CRDL due to insufficient volumes and/or inadequate density for the counting geometry used (matrix effects). The results are reported with the MDAs achieved. Excpet as noted, the LCS, batch blank, sample and sample duplicate (B0X9Y9) results are within contractual requirements.

Gas Proportional Counting

Total Strontium by method RICH-RC-5006:

Results are not included in this report for sample B0WY50. Tracer was not recovered due to matrix interferences, therefore results cannot be calculated. The sample exhibited matrix difficulties throughout separation processes. The MDA achieved for sample B0X9Y6 duplicate analysis does not meet the CRDL due to a reduced volume analyzed based on the sample matrix (metal coupon). The sample was analyzed using standard volume and both the MDA and duplicate results RPD are within requirements, therefore the duplicate result is reported with the MDA achieved. Except as noted, the LCS, batch blank, sample and sample duplicate (B0X9Y6) 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

Jackie Waddell
Project Manager

Quanterra

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02996 / 9592
LAB SAMPLE ID:	9D710J10	MATRIX:	OTHER
CLIENT ID:	B0WY50	DATE RECEIVED:	12/30/99 12:40:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
CO-60	2.87E-02	U	5.4E-02	5.4E-02	9.70E-02	pCi/g		RICHRC5017
CS-137	8.43E-03	U	4.4E-02	4.4E-02	7.59E-02	pCi/g		RICHRC5017
EU-152	3.68E-02	U	1.0E-01	1.0E-01	1.74E-01	pCi/g		RICHRC5017
EU-154	4.62E-02	U	1.6E-01	1.6E-01	2.83E-01	pCi/g		RICHRC5017
EU-155	-2.69E-02	U	7.3E-02	7.3E-02	1.22E-01	pCi/g		RICHRC5017

Number of Results: 5

Quanterra

SAMPLE RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02996 / 9592
LAB SAMPLE ID:	9D710Q10	**MATRIX:**	OTHER
CLIENT ID:	B0X9Y8	**DATE RECEIVED:**	12/30/99 12:40:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	-3.31E-04	U	6.6E-04	6.6E-04	1.67E-02	pCi/g	91.03%	RICHRC5080
PU-238	-6.51E-04	U	9.2E-04	9.3E-04	1.86E-02	pCi/g	73.46%	RICHRC5010
PU239/40	0.00E+00	U	0.0E+00	1.0E-02	1.10E-02	pCi/g	73.46%	RICHRC5010
U-234	7.91E-03	U	1.5E-02	1.5E-02	3.09E-02	pCi/g	80.60%	RICHRC5079
U-235	3.54E-03	U	1.1E-02	1.1E-02	2.78E-02	pCi/g	80.60%	RICHRC5079
U-238	3.11E-03	U	1.9E-02	1.9E-02	5.16E-02	pCi/g	80.60%	RICHRC5079
CO-60	5.22E-02	U	4.3E-02	4.3E-02	8.01E-02	pCi/g		RICHRC5017
CS-137	5.50E-02	U	4.2E-02	4.2E-02	7.36E-02	pCi/g		RICHRC5017
EU-152	5.43E-02	U	9.8E-02	9.8E-02	1.67E-01	pCi/g		RICHRC5017
EU-154	-5.14E-02	U	1.2E-01	1.2E-01	1.98E-01	pCi/g		RICHRC5017
EU-155	3.64E-03	U	6.5E-02	6.5E-02	1.10E-01	pCi/g		RICHRC5017
STRONTIUM	7.98E-02	U	5.6E-02	6.0E-02	1.06E-01	pCi/g	90.50%	RICHRC5006

Number of Results: 12

Result = IDL When Not Detected

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

Quanterra

SAMPLE RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02996 / 9592
LAB SAMPLE ID:	9D710T10	**MATRIX:**	OTHER
CLIENT ID:	B0X9Y9	**DATE RECEIVED:**	12/30/99 12:40:00 PM

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	1.1E-02	1.26E-02	pCi/g	88.43%	RICHRC5080
PU-238	0.00E+00	U	0.0E+00	9.9E-03	1.10E-02	pCi/g	77.97%	RICHRC5010
PU239/40	-6.50E-04	U	9.2E-04	9.3E-04	1.85E-02	pCi/g	77.97%	RICHRC5010
U-234	6.94E-02	J	3.8E-02	3.9E-02	3.11E-02	pCi/g	91.92%	RICHRC5079
U-235	-7.74E-04	U	1.1E-03	1.1E-03	2.21E-02	pCi/g	91.92%	RICHRC5079
U-238	1.05E-01	J	4.5E-02	4.9E-02	2.41E-02	pCi/g	91.92%	RICHRC5079
CO-60	-1.41E-02	U	2.2E-02	2.2E-02	3.60E-02	pCi/g		RICHRC5017
CS-137	9.72E-02	J	3.4E-02	3.4E-02	3.35E-02	pCi/g		RICHRC5017
EU-152	-1.21E-02	U	4.5E-02	4.5E-02	7.62E-02	pCi/g		RICHRC5017
EU-154	-1.05E-02	U	6.7E-02	6.7E-02	1.14E-01	pCi/g		RICHRC5017
EU-155	2.30E-02	U	3.9E-02	3.9E-02	6.61E-02	pCi/g		RICHRC5017
STRONTIUM	1.38E+01		4.8E-01	3.7E+00	1.20E-01	pCi/g	96.40%	RICHRC5006

Number of Results: 12

Quanterra

SAMPLE RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02996 / 9592
LAB SAMPLE ID:	9D710V10	**MATRIX:**	OTHER
CLIENT ID:	B0X9Y6	**DATE RECEIVED:**	12/30/99 12:40:00 PM

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	2.2E-01	2.48E-01	pCi/g	72.19%	RICHRC5080
PU-238	0.00E+00	U	0.0E+00	1.8E-01	2.01E-01	pCi/g	78.02%	RICHRC5010
PU239/40	0.00E+00	U	0.0E+00	1.8E-01	2.01E-01	pCi/g	78.02%	RICHRC5010
U-234	-1.10E-01	U	6.4E-01	6.4E-01	2.47E+00	pCi/g	27.57%	RICHRC5079
U-235	-1.46E-01	U	1.2E-01	1.2E-01	1.80E+00	pCi/g	27.57%	RICHRC5079
U-238	-1.10E-01	U	6.4E-01	6.4E-01	2.47E+00	pCi/g	27.57%	RICHRC5079
CO-60	-6.57E-04	U	2.5E-02	2.5E-02	4.39E-02	pCi/g		RICHRC5017
CS-137	6.68E-04	U	2.5E-02	2.5E-02	4.30E-02	pCi/g		RICHRC5017
EU-152	-4.93E-03	U	6.0E-02	6.0E-02	1.00E-01	pCi/g		RICHRC5017
EU-154	-3.75E-02	U	7.7E-02	7.7E-02	1.29E-01	pCi/g		RICHRC5017
EU-155	4.58E-02	U	6.1E-02	6.1E-02	1.01E-01	pCi/g		RICHRC5017
STRONTIUM	6.32E+01		1.2E+00	1.7E+01	1.44E-01	pCi/g	63.80%	RICHRC5006

Number of Results: 12

Quanterra

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02996 / 9592
LAB SAMPLE ID:	9D710W10	MATRIX:	OTHER
CLIENT ID:	B0X9Y7	DATE RECEIVED:	12/30/99 12:40:00 PM

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	1.0E-02	1.15E-02	pCi/g	98.82%	RICHRC5080
PU-238	6.95E-03	U	1.5E-02	1.5E-02	3.04E-02	pCi/g	55.47%	RICHRC5010
PU239/40	0.00E+00	U	0.0E+00	1.8E-02	2.05E-02	pCi/g	55.47%	RICHRC5010
U-234	2.68E-01	J	7.9E-02	9.2E-02	3.26E-02	pCi/g	71.59%	RICHRC5079
U-235	4.38E-03	U	1.2E-02	1.2E-02	2.87E-02	pCi/g	71.59%	RICHRC5079
U-238	2.99E-01	J	8.3E-02	9.8E-02	2.63E-02	pCi/g	71.59%	RICHRC5079
CO-60	2.26E-02	U	3.4E-02	3.4E-02	6.27E-02	pCi/g		RICHRC5017
CS-137	-4.40E-03	U	3.4E-02	3.4E-02	5.72E-02	pCi/g		RICHRC5017
EU-152	-1.69E-02	U	1.1E-01	1.1E-01	1.42E-01	pCi/g		RICHRC5017
EU-154	-7.36E-02	U	1.1E-01	1.1E-01	1.77E-01	pCi/g		RICHRC5017
EU-155	1.01E-01	U	1.5E-01	1.5E-01	2.42E-01	pCi/g		RICHRC5017
STRONTIUM	2.22E+02		2.0E+00	5.9E+01	1.27E-01	pCi/g	75.30%	RICHRC5006

Number of Results: 12

Quanterra

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02996 / 9592
LAB SAMPLE ID:	9D710X10	MATRIX:	OTHER
CLIENT ID:	B0X9Y5	DATE RECEIVED:	12/30/99 12:40:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	-3.55E-04	U	7.1E-04	7.1E-04	1.79E-02	pCi/g	98.20%	RICHRC5080
PU-238	4.63E-03	U	1.2E-02	1.2E-02	3.04E-02	pCi/g	70.52%	RICHRC5010
PU239/40	-4.89E-04	U	9.8E-04	9.8E-04	2.46E-02	pCi/g	70.52%	RICHRC5010
U-234	2.21E-01	J	7.0E-02	8.0E-02	3.23E-02	pCi/g	78.05%	RICHRC5079
U-235	-4.36E-04	U	8.7E-04	8.8E-04	2.19E-02	pCi/g	78.05%	RICHRC5079
U-238	2.05E-01	J	6.7E-02	7.6E-02	2.91E-02	pCi/g	78.05%	RICHRC5079
CO-60	5.84E-03	U	2.2E-02	2.2E-02	3.77E-02	pCi/g		RICHRC5017
CS-137	-8.33E-03	U	2.1E-02	2.1E-02	3.52E-02	pCi/g		RICHRC5017
EU-152	-1.08E-02	U	5.0E-02	5.0E-02	8.32E-02	pCi/g		RICHRC5017
EU-154	-9.37E-03	U	6.5E-02	6.5E-02	1.10E-01	pCi/g		RICHRC5017
EU-155	4.82E-02	U	3.6E-02	3.6E-02	6.22E-02	pCi/g		RICHRC5017
STRONTIUM	1.24E-01	U	8.8E-02	9.3E-02	1.68E-01	pCi/g	59.10%	RICHRC5006

Number of Results: 12

Quanterra

DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG: /RPT GRP:**	W02996 / 9592
LAB SAMPLE ID:	D710Q17R	**MATRIX:**	OTHER
CLIENT ID:	B0X9Y8 DUP	**DATE RECEIVED:**	12/30/99 12:40:00 P
ORIG LAB SAMPLE ID:	9D710Q10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
U-234	3.89E-02	J	3.1E-02	3.2E-02	3.11E-02	pCi/g	73.19%	RICHRC5079	7.91E-03	132.40%
U-235	3.49E-03	U	1.2E-02	1.2E-02	3.29E-02	pCi/g	73.19%	RICHRC5079	3.54E-03	1.33%
U-238	4.91E-02	J	3.5E-02	3.6E-02	3.60E-02	pCi/g	73.19%	RICHRC5079	3.11E-03	176.19%

Number of Results: 3

Result = IDL When Not Detecte

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

Quanterra Analyticall Services, Inc
rptChemRadDup; v3.41

Quanterra

DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG: /RPT GRP:**	W02996 / 9592
LAB SAMPLE ID:	D710T17R	**MATRIX:**	OTHER
CLIENT ID:	B0X9Y9 DUP	**DATE RECEIVED:**	12/30/99 12:40:00 P
ORIG LAB SAMPLE ID:	9D710T10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
CO-60	-5.99E-03	U	2.5E-02	2.5E-02	4.22E-02	pCi/g		RICHRC5017	-1.41E-02	80.84%
CS-137	9.52E-02	J	3.2E-02	3.2E-02	3.95E-02	pCi/g		RICHRC5017	9.72E-02	2.03%
EU-152	2.56E-03	U	7.3E-02	7.3E-02	9.45E-02	pCi/g		RICHRC5017	-1.21E-02	306.65%
EU-154	-7.29E-02	U	7.5E-02	7.5E-02	1.21E-01	pCi/g		RICHRC5017	-1.05E-02	149.57%
EU-155	1.26E-02	U	5.2E-02	5.2E-02	8.77E-02	pCi/g		RICHRC5017	2.30E-02	58.65%

Number of Results: 5

Quanterra

DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02996 / 9592
LAB SAMPLE ID:	D710V17R	MATRIX:	OTHER
CLIENT ID:	B0X9Y6 DUP	DATE RECEIVED:	12/30/99 12:40:00 P
ORIG LAB SAMPLE ID:	9D710V10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
STRONTIUM	7.68E+01		5.7E+00	2.1E+01	2.81E+00	pCi/g	98.30%	RICHRC5006	6.32E+01	19.39%

Number of Results: 1

Result = IDL When Not Detecte

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

Quanterra Analyticall Services, Inc
rptChemRadDup; v3.41

Quanterra

BLANK RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG /RPT GRP:**	W02996 / 9592
LAB SAMPLE ID:	D72FA11B	**MATRIX:**	OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	4.79E-03	U	1.3E-02	1.3E-02	3.14E-02	pCi/g	67.03%	RICHRC5010
PU239/40	-5.04E-04	U	1.0E-03	1.0E-03	2.53E-02	pCi/g	67.03%	RICHRC5010

Number of Results: 2

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

Quanterra

BLANK RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG /RPT GRP:**	W02996 / 9592
LAB SAMPLE ID:	D72FD11B	**MATRIX:**	OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	8.21E-03	U	1.2E-02	1.2E-02	1.11E-02	pCi/g	100.15%	RICHRC5080

Number of Results: 1

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

Quanterra

BLANK RESULTS

LAB NAME:	QUANTERRA, Richland	SDG /RPT GRP:	W02996 / 9592
LAB SAMPLE ID:	D72FF11B	MATRIX:	OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
U-234	-2.52E-03	U	2.1E-03	2.1E-03	3.12E-02	pCi/g	78.33%	RICHRC5079
U-235	3.99E-03	U	1.1E-02	1.1E-02	2.62E-02	pCi/g	78.33%	RICHRC5079
U-238	-5.68E-03	U	1.1E-02	1.1E-02	4.95E-02	pCi/g	78.33%	RICHRC5079

Number of Results: 3

Quanterra

BLANK RESULTS

LAB NAME:	QUANTERRA, Richland	SDG /RPT GRP:	W02996 / 9592
LAB SAMPLE ID:	D72FL11B	MATRIX:	OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
CO-60	2.06E-02	U	2.1E-02	2.1E-02	3.83E-02	pCi/g		RICHRC5017
CS-137	-7.78E-03	U	2.0E-02	2.0E-02	3.38E-02	pCi/g		RICHRC5017
EU-152	2.61E-02	U	4.7E-02	4.7E-02	7.99E-02	pCi/g		RICHRC5017
EU-154	-2.65E-02	U	6.0E-02	6.0E-02	1.01E-01	pCi/g		RICHRC5017
EU-155	1.43E-02	U	3.3E-02	3.3E-02	5.77E-02	pCi/g		RICHRC5017

Number of Results: 5

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

Quanterra

BLANK RESULTS

LAB NAME:	QUANTERRA, Richland	SDG /RPT GRP:	W02996 / 9592
LAB SAMPLE ID:	D72FN11B	MATRIX:	OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
STRONTIUM	1.02E-01	U	6.9E-02	7.4E-02	1.29E-01	pCi/g	72.80%	RICHRC5006

Number of Results: 1

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

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02996 / 9592
LAB SAMPLE ID:	D72FA12S	MATRIX:	OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
PU239/40	2.54E+00		3.2E-01	6.0E-01	4.74E-02	pCi/g	39.94%	2.29E+00	110.87%

Number of Results: 1

Result = IDL When Not Detecte

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

Quanterra Analytical Services, Inc

rptChemRadLcs; v3.41

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02996 / 9592
LAB SAMPLE ID:	D72FD12S	**MATRIX:**	OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
AM-241	2.28E+00		2.0E-01	4.4E-01	1.73E-02	pCi/g	97.54%	2.29E+00	99.57%

Number of Results: 1

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02996 / 9592
LAB SAMPLE ID:	D72FF12S	MATRIX:	OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
U-234	6.87E-01	J	1.2E-01	1.7E-01	2.60E-02	pCi/g	82.99%	8.66E-01	79.33%
U-235	2.40E-02	U	2.3E-02	2.4E-02	2.95E-02	pCi/g	82.99%	3.95E-02	60.70%
U-238	8.11E-01	J	1.3E-01	1.9E-01	3.23E-02	pCi/g	82.99%	9.07E-01	89.36%

Number of Results: 3

Result = IDL When Not Detecte

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

Quanterra Analytical Services, Inc

rptChemRadLcs; v3.41

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	**SDG: /RPT GRP:**	W02996 / 9592
LAB SAMPLE ID:	D72FL12S	**MATRIX:**	OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
CS-137	1.19E+00		1.5E-01	1.5E-01	8.29E-02	pCi/g		9.83E-01	121.05%

Number of Results: 1

Result = IDL When Not Detecte

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

Quanterra Analytical Services, Inc

rptChemRadLcs; v3.41

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	**SDG: /RPT GRP:**	W02996 / 9592
LAB SAMPLE ID:	D72FN12S	**MATRIX:**	OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
STRONTIUM	1.37E+00		1.5E-01	3.9E-01	1.08E-01	pCi/g	96.00%	1.14E+00	120.81%

Number of Results: 1

Result = IDL When Not Detecte

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

Quanterra Analytical Services, Inc

rptChemRadLcs; v3.41

Quanterra

Data Review Checklist
RADIOCHEMISTRY

Lot Number: J9C300199				
Client ID: BHI				
Due Date: 1/14/00				
QC Batch Number: 0004215		SDG Number: 2996		
Method Test Parameter: SX-AM				
Matrix: Other				
Review Item	Yes (√)	No (√)	N/A (√)	2nd Level Review (√)
A. Calibration 1. Is the calibration documentation included where applicable?			✓	
B. Sample Analysis 1. Are the sample yields within acceptance criteria?	✓	✓		✓
2. Were all sample holding times met?			✓	✓
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			✓
C. QC Samples 1. Is the blank yield within acceptance criteria?	✓			✓
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			✓
3. 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: D710J10A & D710J103 failed analyses due to matrix.

First Level Review: Jackie Waddell Date: 1/23/00

Second Level Review: Fred Scott Date: 1/28/00

LS-038, Rev.5, 4/99

Quanterra

Data Review Checklist
RADIOCHEMISTRY

Lot Number: J9L300199				
Client ID: BHI				
Due Date: 1/14/00				
QC Batch Number: 0004213		SDG Number: 3996		
Method Test Parameter: SO-Ph ISO				
Matrix: Other				
Review Item	Yes (√)	No (√)	N/A (√)	2nd Level Review (√)
A. Calibration 1. Is the calibration documentation included where applicable?			✓	
B. Sample Analysis 1. Are the sample yields within acceptance criteria?	✓	✓		✓
2. Were all sample holding times met?			✓	✓
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			✓
C. QC Samples 1. Is the blank yield within acceptance criteria?	✓			✓
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			✓
3. 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: D710J106 & D710J107 failed analyses due to matrix

First Level Review: Jackie Waddell Date: 1/23/00

Second Level Review: Fred Scott Date: 1/26/00

LS-038, Rev.5, 4/99

Quanterra

Data Review Checklist
RADIOCHEMISTRY

Lot Number: J9C300199				
Client ID: BHI				
Due Date: 1/14/00				
QC Batch Number: 0004216		SDG Number: 2996		
Method Test Parameter: SR-UISO				
Matrix: Other				
Review Item	Yes (√)	No (√)	N/A (√)	2nd Level Review (√)
A. Calibration 1. Is the calibration documentation included where applicable?			✓	
B. Sample Analysis 1. Are the sample yields within acceptance criteria?	✓	✓		✓
2. Were all sample holding times met?			✓	
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			✓
C. QC Samples 1. Is the blank yield within acceptance criteria?	✓			✓
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			✓
3. 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: D710J104 failed analysis due to matrix

First Level Review: Jackie Wadgell Date: 1/23/00

Second Level Review: Ken Scott Date: 1/28/00

LS-038, Rev.5, 4/99

Quanterra

Data Review Checklist
RADIOCHEMISTRY

Lot Number: J9L 300199				
Client ID: BHI				
Due Date: 1-14-00				
QC Batch Number: 0004220		SDG Number: 2996		
Method Test Parameter: gamma				
Matrix: soil				
Review Item	Yes (√)	No (√)	N/A (√)	2nd Level Review (√)
A. Calibration 1. Is the calibration documentation included where applicable?			✓	
B. Sample Analysis 1. Are the sample yields within acceptance criteria?			✓	
2. Were all sample holding times met?	✓			
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			
C. QC Samples 1. Is the blank yield within acceptance criteria?			✓	
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			
3. 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: MDAs not met D7105101 Co, Eu(all) D7109101 Eu 152, 154, D7110W101 Eu 154, 155 NCM J01051

First Level Review: Pam Kreitzer Date: 1-19-00

Second Level Review: Jackie Waddell Date: 1/23/00

LS-038, Rev.5, 4/99

0027

Quanterra

Nonconformance Memo

Clouseau

NCM #:	J01051	Classification:	**Anomaly**
NCM Initiated By:	Pam Kenitzer	Status:	**CLOSED**
Date Opened:	01/19/00	Production Area:	Environmental - Prep
Date Closed:	01/20/00	Tests:	Gamma by GER
		Lot #'s (Sample #'s):	J9L300199 (1,2,5)
		QC Batch:	0004220
Nonconformance:	MDA not met		
Subcategory:	Insufficient Volume		

Problem Description / Root Cause

Name	Date	Description
Pam Kenitzer	01/19/00	Sample D710J101 did not meet CRDL for isotopes Co60, and all Eu isotopes. Sample D710Q101 for Eu 152 and 154. Sample D710W101 for Eu 154 and 155.

Corrective Action

Name	Date	Corrective Action
Dale OConnell	01/20/00	Report data with MDAs achieved.

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	01/20/00	01/20/00	by narrative
	Response	**Response Details**		
	No response saved			

Approval History

Name	Date Approved:	Position
Pam Kenitzer	01/19/00	Group Leader
Dale OConnell	01/20/00	Group Leader
Jackie Waddell	01/20/00	Project Manager
Jodie Carnes	01/20/00	Quality Assurance

Date Printed: 01/27/00

0028

Quanterra

Data Review Checklist
RADIOCHEMISTRY

Lot Number: J9L300199				
Client ID: BHI				
Due Date: 1/14/00				
QC Batch Number: 0004221		SDG Number: 39946		
Method Test Parameter: TH-TSR				
Matrix: Other				
Review Item	Yes (√)	No (√)	N/A (√)	2nd Level Review (√)
A. Calibration 1. Is the calibration documentation included where applicable?			✓	
B. Sample Analysis 1. Are the sample yields within acceptance criteria?	✓	✓		✓
2. Were all sample holding times met?			✓	✓
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			✓
C. QC Samples 1. Is the blank yield within acceptance criteria?	✓			✓
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			✓
3. 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: D710J105 failed analyses due to matrix

First Level Review: Jackie Waldrep Date: 1/23/00

Second Level Review: Ken Scott Date: 1/28/00

LS-038, Rev.5, 4/99

CHAIN OF CUSTODY

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-003-09	Page 1 of 1

Collector: Doug Bowers	Company Contact: J Adler	Telephone No.: 373-4316	Project Coordinator: TRENT, SJ
Project Designation: 331-A Virology Laboratory Building	Sampling Location: 300 Area		SAF No.: B00-003
Ice Chest No.: ~~ERC 99.033~~ ERC 96-087 12-30-99 DJB	Field Logbook No.: EFL 1133-7	COA: X28314PNNL	Method of Shipment: Hand Delivered
Shipped To: ~~Radiological Counting Facility~~ Quanterra DJB 12-30-99	Offsite Property No.: N/A		Bill of Lading/Air Bill No.: N/A

Price Code: 9K

Air Quality ☐

Data Turnaround: 24 Hours

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None									
Type of Container	G/P	GB									
No. of Container(s)	1	1									
Volume	20mL only	250 ml AG									
	Rad Screen										

SAMPLE ANALYSIS

SDGW02996 J9L300199

Sample No.	Matrix *	Sample Date	Sample Time			RCF#						
~~BOX B16~~	~~Other Solid~~	~~12-29-99~~	~~0950~~	~~X~~	X	6953	✓	DJB 12-30-99				
~~BOX B17~~ Bowy50	other solid	12-28-99	1000	~~X~~	X	6954						
DJB 12-30-99								D710J				

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 12-28-99/1049	Received By: R. Thoren	Date/Time: 12.28.99/1049
Relinquished By: R. Thoren	Date/Time: 12.28.99/1230	Received By: CW Landes	Date/Time: 12-28-99/1230
Relinquished By: CW Landes	Date/Time: 12-30-99/1155	Received By: Doug Bowers / Doug Bowers	Date/Time: 12-30-99/1155
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 12-30-99/1240	Received By: K. Whitehall / Kate Whitehall	Date/Time: 12/30/99 12:40
Relinquished By	Date/Time	Received By: DJB 12-30-99	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

C.O.C. split this is a copy of origonal. DJB 12-30-99 BOX B17 is changed to Bowy50 to go to Quanterra

Matrix *: S=Soil, SE=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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-003-08	Page 1 of 1

Collector: Doug Bowers	Company Contact: J Adler — Telephone No.: 373-4316	Project Coordinator: TRENT, SJ	Price Code: 9K — Data Turnaround: 15 Days
Project Designation: 331-A Virology Laboratory Building	Sampling Location: 300 Area 331 A bldg	SAF No.: B00-003	Air Quality: ☐
Ice Chest No.: ERC96-082	Field Logbook No.: EFL 1133-7 — COA: X28314PNNL	Method of Shipment: Fed Ex	
Shipped To: ~~TMA/RECRA~~ Quantera DJB 12-21-99	Offsite Property No.	Bill of Lading/Air Bill No.	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SDG W02996

SAMPLE ANALYSIS J9L300199

Preservation				None	None								
Type of Container				aG	aG								
No. of Container(s)				1 DJB 12-27-99	1								
Volume				~~60~~mL 120	120mL								
				ICP Metals - 6010A (TAL)	See item (1) in Special Instructions.								
Sample No.	Matrix *	Sample Date	Sample Time										
BOX9Y8	Other Solid	12-27-99	1215		X			BOXB12	—		D7106		
BOX9Y9	other Solid	12-27-99	1229		X			BOXB13	—		D7107		
BOXB02	other Solid	12-27-99	1332	X				BOXB15					
BOXB03	other Solid	12-27-99	1347	X				BOXB17					
BOXB04	other Solid	12-27-99	1411	X				BOXB20					

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	12-27-99/1600	RCF 1A	12-27-99/1600
RCF 1A	12-30-99/1000	Doug Bowers	12-30-99/1000
Doug Bowers	12-30-99/1240	Keith Schendel	12/30/99 12:40

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Isotopic Plutonium; Isotopic Uranium; Americium-241; Strontium-89,90 -- Total Sr

Matrix *
S=Soil
SE=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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-003-08	Page 1 of 1

Collector Doug Bowers	Company Contact J Adler	Telephone No. 373-4316	Project Coordinator TRENT, SJ	Price Code 9K Air Quality ☐	Data Turnaround 15 Days
Project Designation 331-A Virology Laboratory Building	Sampling Location 300 Area 331 A bldg		SAF No. B00-003		
Ice Chest No. ERC 96-082	Field Logbook No. EFL 1133-7	COA X28314PNNL	Method of Shipment Fed Ex		
Shipped To ~~TMA/RECRA~~ Quanterra DJB 12-21-99	Offsite Property No.		Bill of Lading/Air Bill No.		

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None									
Type of Container	aG	aG									
No. of Container(s)	1	1									
Volume	~~60mL~~ 120mL DJB 12-27-99	120mL									
SAMPLE ANALYSIS	ICP Metals - 6010A (TAL)	See item (1) in Special Instructions.									

SO6
W02996 J92300199

Sample No.	Matrix *	Sample Date	Sample Time											
BOXB05	Other Solid	12-27-99	1428	X			BOXB21							
BOXB06	other Solid	12-27-99	1435	X			BOXB22							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Doug Bowers	Date/Time 12-27-99/1600	Received By R of IA	Date/Time 12-27-99/1600
Relinquished By R of IA	Date/Time 12-30-99/1000	Received By Doug Bowers Doug Bowers	Date/Time 12-30-99/1000
Relinquished By Doug Bowers Doug Bowers	Date/Time 12-30-99/1200	Received By K. Lehrschall Kirk Lehrschall	Date/Time 12/30/99 12:40
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Isotopic Plutonium; Isotopic Uranium; Americium-241; Strontium-89,90 -- Total Sr

Matrix *
S=Soil
SE=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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-003-08	Page 1 of 1

Collector Doug Bowers	Company Contact J Adler	Telephone No. 373-4316	Project Coordinator TRENT, SJ	Price Code 9K Air Quality ☐	Data Turnaround 15 Days
Project Designation 331-A Virology Laboratory Building	Sampling Location 300 Area		SAF No. B00-003		
Ice Chest No. ERC 96-082	Field Logbook No. EFL 1133-~~78~~ DJB 12-28-99	COA X28314PNNL	Method of Shipment Fed Ex		
Shipped To ~~TMA/RECRA~~ Quantera DJB 12-21-99	Offsite Property No.		Bill of Lading/Air Bill No.		

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None									
Type of Container	aG	aG									
No. of Container(s)	1	1									
Volume	60mL	~~120mL~~ 250 DJB 12-28-99									
SAMPLE ANALYSIS	ICP Metals - 6010A (TAL)	See item (1) in Special Instructions.									

SDG WO2996 J9L300199

Sample No.	Matrix *	Sample Date	Sample Time										
BOX946	Other Solid	12-28-99	0922		X	BOXB14	—	—	DJBV				
BOX947	other solid	12-28-99	0950		X	BOXB16	—	—	DJBV				

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By Doug Bowers Doug Bowers 12-28-99/1130	Received By RCF/A 12-28-99/1130	Date/Time
Relinquished By RCF/A 12-30-99/1000	Received By Doug Bowers Doug Bowers 12-30-99/1000	Date/Time
Relinquished By Doug Bowers Doug Bowers 12-30-99/1240	Received By K. Lehrschall Kurt Lehrschall 12/30/99 12:40	Date/Time
Relinquished By	Received By	Date/Time
Relinquished By	Received By	Date/Time
Relinquished By	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Isotopic Plutonium; Isotopic Uranium; Americium-241; Strontium-89,90 – Total Sr

Matrix *

S=Soil
SE=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

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

BHEEE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B00-003-08	Page 1 of 1
Collector Doug Bowers	Company Contact J Adler	Telephone No. 373-4316	Project Coordinator TRENT, SJ	Price Code 9K Air Quality ☐
Project Designation 331-A Virology Laboratory Building	Sampling Location 300 Area		SAF No. B00-003	Data Turnaround 15 Days
Ice Chest No. ERC 96-082	Field Logbook No. EFL 1133-78 KB 12-28-99	COA X28314PNNL	Method of Shipment Fed Ex	
Shipped To ~~TMA/RECRA~~ Quanterra DJB 12-21-99	Offsite Property No.		Bill of Lading/Air Bill No.	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None									
Type of Container	aG	aG									
No. of Container(s)	1 DJB 12-28-99	1									
Volume	~~60mL~~ 120 ml	~~120mL~~ 250 DJB 12-28-99									
	ICP Metals - 6010A (TAL)	See item (1) in Special Instructions									

SAMPLE ANALYSIS

SDGW02996 J9L300199

Sample No.	Matrix *	Sample Date	Sample Time										
BOXB07	Other Solid	12-28-99	0655	X				BOXB23					
BOXB08	other Solid	12-28-99	0718	X				BOXB24					
BOWY49	other Solid	12-28-99	0718	X				BOXB24					
BOXB09	other Solid	12-28-99	0725	X				BOXB25					
BOX9Y5	other Solid	12-28-99	0850		X — DNOX			BOXB15					

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By Doug Bowers Doug Bowers	Date/Time 12-28-99/1130	Received By Ref 1A	Date/Time 12-28-99/1130
Relinquished By Ref 1A	Date/Time 12-30-99/1000	Received By Doug Bowers Doug Bowers	Date/Time 12-30-99/1000
Relinquished By Doug Bowers Doug Bowers	Date/Time 12-30-99/1240	Received By K. Lehrschall [signature]	Date/Time 12/30/99 12:40
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Isotopic Plutonium; Isotopic Uranium; Americium-241; Strontium-89,90 -- Total Sr

Matrix *
S=Soil
SE=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

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

BHI-EE-011 (10/99)

035

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received: 12/30/99 12/40 SG#: W02996

Work Order Number: J9L300199 SAF #: B00-003

Shipping Container ID: ERC96-082 Chain of Custody # B00-003-08-09

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 4°
5. Vermiculite/packing materials is Wet [✓] Dry [ ]
6. Number of samples in shipping container: 15
7. Sample holding times exceeded? Yes [ ] No [✓]

8. Samples have:
   - ✓ tape
   - ✓ custody seals
   - ✓ hazard labels
   - ✓ appropriate sample labels

9. Samples are:
   - ✓ in good condition
   - ___ broken
   - ___ leaking
   - ___ have air bubbles

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

Sample Custodian/Laboratory: Keith [signature] Date: 12/30/99 12:40

Telephoned To: _____ On _____ By _____

Client Sample Screening Results

03-Jan-00

(B) 1/3/00

CLIENT CODE	ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
BHI	B0X9V6D6XWA		1/3/2000 9:54:00 AM	QUAD21B	1/3/2000 2:23:02 PM	B0X9V6D6XWA	30	11	0.276666667	235	6.97333333
	D6XWA	SOLID		Bkg:	1/3/2000 1:39:02 PM	BKG	100	9	0.09	86	0.86

Anl Date: 1/3/00 Tot Sa, Alq: 9.26E+01 , 1.23E+02 Alp; (Dpm/ 1.69E+00 (uCi/ 5.74E-04 (pCi/ 6.19E+00 ± 4.9E+00 CAT I 8.1E+00 Lab
Ppt mg: 123 Units: g , mg Bet; Alq): 1.60E+01 Sa): 5.42E-03 L|g): 5.85E+01 ± 4.4E+00 1.7E+00 Alq L|g

BHI	B0X9V7D6XWD		1/3/2000 9:54:00 AM	QUAD21D	1/3/2000 2:23:02 PM	B0X9V7D6XWD	30	8	0.116666667	116	3.05666667
	D6XWD	SOLID		Bkg:	1/3/2000 1:39:02 PM	BKG	100	15	0.15	81	0.81

Anl Date: 1/3/00 Tot Sa, Alq: 1.09E+02 , 8.77E+01 Alp; (Dpm/ 5.58E-01 (uCi/ 3.13E-04 (pCi/ 2.87E+00 ± 5.7E+00 CAT I 1.7E+01 Lab
Ppt mg: 87.7 Units: g , mg Bet; Alq): 6.75E+00 Sa): 3.79E-03 L|g): 3.47E+01 ± 4.3E+00 2.9E+00 Alq L|g

BHI	B0X9Y5D710X		1/3/2000 9:54:00 AM	QUAD22B	1/3/2000 2:23:04 PM	B0X9Y5D710X	30	9	0.22	106	2.22333333
	D710X	SOLID		Bkg:	1/3/2000 1:39:05 PM	BKG	100	8	0.08	131	1.31

Anl Date: 1/3/00 Tot Sa, Alq: 1.81E+02 , 1.06E+02 Alp; (Dpm/ 1.39E+00 (uCi/ 1.07E-03 (pCi/ 5.90E+00 ± 5.9E+00 CAT I 8.5E+00 Lab
Ppt mg: 106.1 Units: g , mg Bet; Alq): 4.80E+00 Sa): 3.68E-03 L|g): 2.04E+01 ± 3.4E+00 4.9E+00 Alq L|g

BHI	B0X9Y6D710W		1/3/2000 9:54:00 AM	QUAD22C	1/3/2000 2:23:04 PM	B0X9Y6D710W	30	11	0.216666667	519	16.25
	D710W	SOLID		Bkg:	1/3/2000 1:39:05 PM	BKG	100	15	0.15	105	1.05

Anl Date: 1/3/00 Tot Sa, Alq: 1.88E+02 , 9.01E+01 Alp; (Dpm/ 2.02E-01 (uCi/ 1.90E-04 (pCi/ 1.01E+00 ± 5.7E+00 CAT I 4.9E+01 Lab
Ppt mg: 90.1 Units: g , mg Bet; Alq): 3.52E+01 Sa): 3.30E-02 L|g): 1.76E+02 ± 8.3E+00 5.7E-01 Alq L|g

BHI	B0X9Y7D710V		1/3/2000 9:54:00 AM	QUAD22D	1/3/2000 2:23:04 PM	B0X9Y7D710V	30	16	0.393333333	1083	34.88
	D710V	SOLID		Bkg:	1/3/2000 1:39:05 PM	BKG	100	14	0.14	122	1.22

Anl Date: 1/3/00 Tot Sa, Alq: 1.01E+02 , 7.00E+01 Alp; (Dpm/ -3.39E-02 (uCi/ -2.21E-05 (pCi/ -2.18E-01 ± 7.1E+00 CAT I 1.0E+02 Lab
Ppt mg: 70 Units: g , mg Bet; Alq): 7.43E+01 Sa): 4.85E-02 L|g): 4.78E+02 ± 1.5E+01 2.1E-01 Alq L|g

BHI	B0X9Y8D710Q		1/3/2000 9:54:00 AM	QUAD23B	1/3/2000 2:48:36 PM	B0X9Y8D710Q	30	5	0.066666667	40	0.48333333
	D710Q	SOLID		Bkg:	1/3/2000 1:39:08 PM	BKG	100	10	0.1	85	0.85

Anl Date: 1/3/00 Tot Sa, Alq: 9.08E+01 , 3.47E+01 Alp; (Dpm/ 2.80E-01 (uCi/ 3.30E-04 (pCi/ 3.63E+00 ± 9.5E+00 CAT I 1.4E+01 Lab
Ppt mg: 34.7 Units: g , mg Bet; Alq): 9.52E-01 Sa): 1.12E-03 L|g): 1.24E+01 ± 6.3E+00 8.1E+00 Alq L|g

0037

1/3/00

CLIENT CODE	ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
BHI	B0X9Y9D710T		1/3/2000 9:54:00 AM	QUAD23C	1/3/2000 2:48:36 PM	B0X9Y9D710T	30	10	0.223333333	185	5.02666667
	D710T	SOLID		Bkg:	1/3/2000 1:39:08 PM	BKG	100	11	0.11	114	1.14

Anl Date: 1/3/00 **Tot Sa, Alq:** 1.59E+02 , 1.19E+02 **Alp; (Dpm/** 1.32E+00 **(uCi/** 7.95E-04 **(pCi/** 4.99E+00 ± 5.3E+00 **CAT** 1.0E+01 **Lab**

Ppt mg: 118.7 **Units:** g , mg **Bet; Alq):** 1.10E+01 **Sa):** 6.68E-03 **L|g):** 4.19E+01 ± 3.9E+00 **I** 2.4E+00 **Alq L|g**

Quanterra

COC Signature Page

WO2996

Lot or Batch #: 0004215	Initials/Date	Procedure #
Released By	1-10-00	Richrc0009
Received	1-10-00	RC 5016
Released By	1-12-00	n/a
Received	1-12-00	RICHRC5016-2
Released By	1-19-00	n/a
Received	QB 1-20-00	RC5080
Released By	RB 1-21-00	n/a
Received	SD 1/21/00	RC5003-2
Released By	SD 1/22/00	n/a
Received	1/22/00	RICHRC0009R1
Released By	1/22/00	n/a
Received	1/23/00	RICHRC0002/2
Released By	1/23/00	n/a
Received		

RC-131, Rev.1, 6/99

RQC053

Parent Batch:
Associated Batches:
:
:
:
:

Quanterra Incorporated
Information Sheet Rad Prep

****
* *
* QC BATCH: 0004215 *
* *
****

W02996

SX: Americium-241 by Alpha Spec
6L: PuAm PrpRC5016, SepRC5080(5003)/RC5010(5
5I: CLIENT: HANFORD

Run Date: 1/04/00
Time: 11:49:27

Page: 1

Analytical Due Date: 1/14/00
Project Manager: JW2

Lot# Work Order	Client	Analyt Due Matrix	Aliquot	Client Name Geometry	Count Time	Mid/Ave Date/Time	Tracer ID Spike ID	CRDL	Units	Screen Info - (Ci) Alpha	Beta	PM Bin
J9L300199-001 X D710J-1-0A	OTHER	1/14/00 SOLID	.0000	Bechtel Hanford,	.000	12/28/99 10:00		1.00E+00	pCi/g	**NYS 99 12/99	**NYS	JW2
Comments:												
J9L300199-001 D710J-1-03	OTHER	1/14/00 SOLID	.0000	Bechtel Hanford,	.000	12/28/99 10:00		1.00E+00	pCi/g	**NYS 99 12/99	**NYS	JW2
Comments:												
J9L300199-001 S D710J-1-09	OTHER	1/14/00 SOLID	.0000	Bechtel Hanford,	.000	12/28/99 10:00			pCi/g	**NYS 99 12/99	**NYS	JW2
Comments:												
J9L300199-002 D710Q-1-03	OTHER	1/14/00 SOLID	.0000	Bechtel Hanford,	.000	12/27/99 12:15		1.00E+00	pCi/g	3.63E-12 99 12/99	1.24E-11	JW2
Comments:												
J9L300199-003 D710T-1-03	OTHER	1/14/00 SOLID	.0000	Bechtel Hanford,	.000	12/27/99 12:29		1.00E+00	pCi/g	4.99E-12 99 12/99	4.19E-11	JW2
Comments:												
J9L300199-004 D710V-1-03	OTHER	1/14/00 SOLID	.0000	Bechtel Hanford,	.000	12/28/99 9:22		1.00E+00	pCi/g	0.0E+00 99 12/99	4.78E-10	JW2
Comments:			0.1g									
J9L300199-005 D710W-1-03	OTHER	1/14/00 SOLID	.0000	Bechtel Hanford,	.000	12/28/99 9:50		1.00E+00	pCi/g	1.01E-12 99 12/99	1.76E-10	JW2
Comments:												
J9L300199-006 D710X-1-03	OTHER	1/14/00 SOLID	.0000	Bechtel Hanford,	.000	12/28/99 8:50		1.00E+00	pCi/g	5.90E-12 99 12/99	2.04E-11	JW2
Comments:												
J0A040000-215 B D72FD-1-01	BIOLOGICAL	1/14/00		Bechtel Hanford,		12/28/99 10:00		1.00E+00	pCi/g	**NA	**NA	JW2
Comments:												

Seq. Analysis Pu

QC Batch # 0004213

0040

```
************************
*                      *
*  QC BATCH: 0004215   *
*                      *
************************
```

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		Tracer Yield	Type	QC Control Limits
Americium 241	1.00E+00		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.

Quanterra

COC Signature Page

WO2996

Lot or Batch #: 0004213

	Initials/Date	Procedure #
Released By	1-10-00	RichRC0009
Received	1-10-00	RC 5016
Released By	1-12-00	n/a
Received	1-12-00	RichRC5016-2
Released By	1-19-00	n/a
Received	1-20-00	RC5080/5010
Released By	1-21-00	n/a
Received	1/21/00 for SP	RC5039-2
Released By	1/21/2000	1/21/2000 n/a
Received	1/21/2000	RICHRD0008Rev1
Released By	1/22/00	n/a
Received	1/23/00	RICHRC0002
Released By	1/23/00	n/a
Received		

RC-131, Rev.1, 6/99

RQC053

Parent Batch:
Associated Batches:
:
:
:
:

PRIORITY

Quanterra Incorporated
Information Sheet Rad Prep

****
* *
* QC BATCH: 0004213 *
* *
****

W02996

PRIORITY

Run Date: 1/04/00
Time: 11:48:15

Page: 1

SO: Plutonium-238,239/40 by Alpha Spec
6L: PuAm PrpRC5016, SepRC5080(5003)/RC5010(5
5I: CLIENT: HANFORD

Analytical Due Date: 1/14/00

Project Manager: JW2

Lot# / Work Order	Client	Matrix	Analyt Due / Aliquot	Client Name / Geometry	Count Time	Mid/Ave Date/Time	Tracer ID / Spike ID	CRDL	Units	Screen Info - (Ci) Alpha	Beta	PM Bin
J9L300199-001 D710J-1-06	OTHER	SOLID	1/14/00 .0000	Bechtel Hanford,	.000	12/28/99 10:00		1.00E+00	pCi/g	**NYS 99 12/99	**NYS	JW2
Comments:												
J9L300199-001 X D710J-1-07	OTHER	SOLID	1/14/00 .0000	Bechtel Hanford,	.000	12/28/99 10:00		1.00E+00	pCi/g	**NYS 99 12/99	**NYS	JW2
Comments:												
J9L300199-001 S D710J-1-08	OTHER	SOLID	1/14/00 .0000	Bechtel Hanford,	.000	12/28/99 10:00			pCi/g	**NYS 99 12/99	**NYS	JW2
Comments:												
J9L300199-002 D710Q-1-06	OTHER	SOLID	1/14/00 .0000	Bechtel Hanford,	.000	12/27/99 12:15		1.00E+00	pCi/g	3.63E-12 99 12/99	1.24E-11	JW2
Comments:												
J9L300199-003 D710T-1-06	OTHER	SOLID	1/14/00 .0000	Bechtel Hanford,	.000	12/27/99 12:29		1.00E+00	pCi/g	4.99E-12 99 12/99	4.19E-11	JW2
Comments:												
J9L300199-004 D710V-1-06	OTHER	SOLID	1/14/00 .0000	Bechtel Hanford,	.000	12/28/99 9:22		1.00E+00	pCi/g	0.0E+00 99 12/99	4.78E-10	JW2
Comments:												
J9L300199-005 D710W-1-06	OTHER	SOLID	1/14/00 .0000	Bechtel Hanford,	.000	12/28/99 9:50		1.00E+00	pCi/g	1.01E-12 99 12/99	1.76E-10	JW2
Comments:												
J9L300199-006 D710X-1-06	OTHER	SOLID	1/14/00 .0000	Bechtel Hanford,	.000	12/28/99 8:50		1.00E+00	pCi/g	5.90E-12 99 12/99	2.04E-11	JW2
Comments:												
J0A040000-213 B D72FA-1-01	BIOLOGICAL		1/14/00	Bechtel Hanford,		12/28/99 10:00		1.00E+00	pCi/g	**NA	**NA	JW2
Comments:												

0.1g

Seq. Analysis AM

QC Batch # 0004215

0043

```
************************
*                      *
*  QC BATCH: 0004213   *
*                      *
************************
```

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		Tracer Yield	Type	QC Control Limits
Plutonium 238	1.00E+00		RPD	
Plutonium 239/4	1.00E+00		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.

Quanterra

COC Signature Page

W02996

Lot or Batch #: 0004216	Initials/Date	Procedure #
Released By	1-10-00	Richrc0009
Received	1-10-00	RC 5016
Released By	1-12-00	n/a
Received	1-12-00	RICHRC ~~0002~~ 5016-2 on 1-19-00
Released By	1-19-00	n/a
Received	01-19-00	RC 5079
Released By	01-20-00	n/a
Received	1/20/00	RC5039/2
Released By	1/21/00	~~RC5~~ n/a
Received	1/21/2000	RICHRD0008 Rev1
Released By	1/22/00	n/a
Received	1/23/00	RICHRC0002/2
Released By	1/23/00	n/a
Received		

RC-131, Rev. 1, 6/99

1st ext 5039/2 1/20/99

RQC053

Parent Batch:
Associated Batches:
:
:
:
:

Quanterra Incorporated
Information Sheet Rad Prep

****
* *
* QC BATCH: 0004216 *
* *
****

WX2996

SR: Uranium-234,235,238 by Alpha Spec
7W: UIso PrpRC5016, SepRC5079(5039)
5I: CLIENT: HANFORD

Run Date: 1/04/00
Time: 11:53:07

Page: 1

Analytical Due Date: 1/14/00

Project Manager: JW2

Lot# Work Order	Client	Analyt Matrix	Due Aliquot	Client Name Geometry	Count Time	Mid/Ave Date/Time	Tracer ID Spike ID	CRDL	Units	Screen Info - (Ci) Alpha	Beta	PM Bin
J9L300199-001 D710J-1-04 Comments:	OTHER	1/14/00 SOLID		Bechtel Hanford, .0000	.000	12/28/99 10:00		1.00E+00	pCi/g	**NYS 99 12/99	**NYS	JW2
J9L300199-002 D710Q-1-04 Comments:	OTHER	1/14/00 SOLID		Bechtel Hanford, .0000	.000	12/27/99 12:15		1.00E+00	pCi/g	3.63E-12 99 12/99	1.24E-11	JW2
J9L300199-002 X D710Q-1-07 Comments:	OTHER	1/14/00 SOLID		Bechtel Hanford, .0000	.000	12/27/99 12:15		1.00E+00	pCi/g	3.63E-12 99 12/99	1.24E-11	JW2
J9L300199-003 D710T-1-04 Comments:	OTHER	1/14/00 SOLID		Bechtel Hanford, .0000	.000	12/27/99 12:29		1.00E+00	pCi/g	4.99E-12 99 12/99	4.19E-11	JW2
J9L300199-004 D710V-1-04 Comments:	OTHER	1/14/00 SOLID	0.1g	Bechtel Hanford, .0000	.000	12/28/99 9:22		1.00E+00	pCi/g	0.0E+00 99 12/99	4.78E-10	JW2
J9L300199-005 D710W-1-04 Comments:	OTHER	1/14/00 SOLID		Bechtel Hanford, .0000	.000	12/28/99 9:50		1.00E+00	pCi/g	1.01E-12 99 12/99	1.76E-10	JW2
J9L300199-006 D710X-1-04 Comments:	OTHER	1/14/00 SOLID		Bechtel Hanford, .0000	.000	12/28/99 8:50		1.00E+00	pCi/g	5.90E-12 99 12/99	2.04E-11	JW2
J0A040000-216 B D72FF-1-01 Comments:	BIOLOGICAL	1/14/00		Bechtel Hanford,		12/27/99 12:15		1.00E+00	pCi/g	**NA	**NA	JW2
J0A040000-216 C D72FF-1-02 Comments:	BIOLOGICAL	1/14/00		Bechtel Hanford,		12/27/99 12:15			pCi/g	**NA	**NA	JW2

0046

```
************************
*                      *
*  QC BATCH: 0004216   *
*                      *
************************
```

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		Tracer Yield	Type	QC Control Limits
Uranium 234	1.00E+00		RPD	
Uranium 238	1.00E+00		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.

Quantera

COC Signature Page

W02996

Lot or Batch #: 0004220

	Initials/Date	Procedure #
Released By	1-10-00	RichR0009
Received	1-10-00	RC 5017
Released By	1-12-00	n/a
Received	1-12-2000	RICHRD0007 Rev 2
Released By	1-17-00	n/a
Received	PK 1-17-00	RICHRC0002
Released By	PK 1-18-00 PK 1-19-00	n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		

RC-131, Rev.1, 6/99

RQC053

Parent Batch:
Associated Batches:
:
:
:
:

Quanterra Incorporated
Information Sheet Rad Prep

****
* *
* QC BATCH: 0004220 *
* *
****

Run Date: 1/04/00
Time: 11:55:07

TA: Gamma by HPGE
AW: Gamma PrpRC5017
5I: CLIENT: HANFORD
W029916

Analytical Due Date: 1/14/00
Project Manager: JW2

Lot# Work Order	Client	Analyt Due Matrix	Aliquot	Client Name Geometry	Count Time	Mid/Ave Date/Time	Tracer ID Spike ID	CRDL	Units	Screen Info - (Ci) Alpha	Beta	PM Bin
J9L300199-001 D710J-1-01	OTHER	1/14/00 SOLID	.0000	Bechtel Hanford,	.000	12/28/99 10:00		5.00E-02	pCi/g	**NYS 99	**NYS 12/99	JW2
Comments:												
J9L300199-002 D710Q-1-01	OTHER	1/14/00 SOLID	.0000	Bechtel Hanford,	.000	12/27/99 12:15		5.00E-02	pCi/g	3.63E-12 99	1.24E-11 12/99	JW2
Comments:												
J9L300199-003 D710T-1-01	OTHER	1/14/00 SOLID	.0000	Bechtel Hanford,	.000	12/27/99 12:29		5.00E-02	pCi/g	4.99E-12 99	4.19E-11 12/99	JW2
Comments:												
J9L300199-003 X D710T-1-07	OTHER	1/14/00 SOLID	.0000	Bechtel Hanford,	.000	12/27/99 12:29		5.00E-02	pCi/g	4.99E-12 99	4.19E-11 12/99	JW2
Comments:												
J9L300199-004 D710V-1-01	OTHER	1/14/00 SOLID	.0000	Bechtel Hanford,	.000	12/28/99 9:22		5.00E-02	pCi/g	0.0E+00 99	4.78E-10 12/99	JW2
Comments:												
J9L300199-005 D710W-1-01	OTHER	1/14/00 SOLID	.0000	Bechtel Hanford,	.000	12/28/99 9:50		5.00E-02	pCi/g	1.01E-12 99	1.76E-10 12/99	JW2
Comments:												
J9L300199-006 D710X-1-01	OTHER	1/14/00 SOLID	.0000	Bechtel Hanford,	.000	12/28/99 8:50		5.00E-02	pCi/g	5.90E-12 99	2.04E-11 12/99	JW2
Comments:												
J0A040000-220 B D72FL-1-01	BIOLOGICAL	1/14/00		Bechtel Hanford,		12/27/99 12:29		5.00E-02	pCi/g	**NA	**NA	JW2
Comments:												
J0A040000-220 C D72FL-1-02	BIOLOGICAL	1/14/00		Bechtel Hanford,		12/27/99 12:29			pCi/g	**NA	**NA	JW2
Comments:												

0049

```
************************
*                      *
*  QC BATCH: 0004220   *
*                      *
************************
```

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		Tracer Yield	Type	QC Control Limits
Cobalt 60	5.00E-02		RPD	
Cesium 137	1.00E-01		RPD	
Europium 152	1.00E-01		RPD	
Europium 154	1.00E-01		RPD	
Europium 155	1.00E-01		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.

Quanterra

COC Signature Page

W02996

Lot or Batch #: 0004221

	Initials/Date	Procedure #
Released By	1-10-00	RichRC019
Received	1-10-00	RC 5016
Released By	1-12-00	n/a
Received	1-12-00	RichRC 5016-2
Released By	1-17-00	n/a
Received	1-20-00	RichRC5006.2
Released By	1-21-00	n/a
Received	1/21/2000	RichRD0003 Rev2
Released By	1/22/00	n/a
Received	1/23/00	RichRC0002.2
Released By	1/23/00	n/a
Received		
Released By		n/a
Received		

RC-131, Rev.1, 6/99

RQC053

Parent Batch:
Associated Batches:
:
:
:
:

Quanterra Incorporated
Information Sheet Rad Prep

****
* QC BATCH: 0004221 *
****

L002996

TH: Total Strontium by GPC
CI: Sr-Total PrpRc5016, SepRC5006
5I: CLIENT: HANFORD

Run Date: 1/04/00
Time: 11:57:24

Page: 1

Analytical Due Date: 1/14/00

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
J9L300199-001 D710J-1-05	OTHER	1/14/00 SOLID	Bechtel .0000	Hanford,	.000	12/28/99 10:00		1.00E+00	pCi/g	**NYS 99 12/99	**NYS	JW2
Comments:												
J9L300199-002 D710Q-1-05	OTHER	1/14/00 SOLID	Bechtel .0000	Hanford,	.000	12/27/99 12:15		1.00E+00	pCi/g	3.63E-12 99 12/99	1.24E-11	JW2
Comments:												
J9L300199-003 D710T-1-05	OTHER	1/14/00 SOLID	Bechtel .0000	Hanford,	.000	12/27/99 12:29		1.00E+00	pCi/g	4.99E-12 99 12/99	4.19E-11	JW2
Comments:												
J9L300199-004 D710V-1-05	OTHER	1/14/00 SOLID	Bechtel .0000	Hanford,	.000	12/28/99 9:22		1.00E+00	pCi/g	0.0E+00 99 12/99	4.78E-10	JW2
Comments:												
J9L300199-004 X D710V-1-07	OTHER	1/14/00 SOLID	Bechtel .0000	Hanford,	.000	12/28/99 9:22		1.00E+00	pCi/g	0.0E+00 99 12/99	4.78E-10	JW2
Comments:			0.2g									
J9L300199-005 D710W-1-05	OTHER	1/14/00 SOLID	Bechtel .0000	Hanford,	.000	12/28/99 9:50		1.00E+00	pCi/g	1.01E-12 99 12/99	1.76E-10	JW2
Comments:												
J9L300199-006 D710X-1-05	OTHER	1/14/00 SOLID	Bechtel .0000	Hanford,	.000	12/28/99 8:50		1.00E+00	pCi/g	5.90E-12 99 12/99	2.04E-11	JW2
Comments:												
J0A040000-221 B D72FN-1-01	BIOLOGICAL	1/14/00	Bechtel	Hanford,		12/28/99 9:22		1.00E+00	pCi/g	**NA	**NA	JW2
Comments:												
J0A040000-221 C D72FN-1-02	BIOLOGICAL	1/14/00	Bechtel	Hanford,		12/28/99 9:22			pCi/g	**NA	**NA	JW2
Comments:												

0052

```
************************
*                      *
*  QC BATCH: 0004221   *
*                      *
************************
```

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		Tracer Yield	Type	QC Control Limits
Strontium	1.00E+00		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.

0053