W02998-QES

Quanterra

0052620

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 20, 2000

Attention: Joan Kessner

JAN 2000
RECEIVED
Data
Log In

SAF Number	:	C00-007
Date SDG Closed	:	January 13, 2000
Number of Samples	:	One (1)
Sample Type	:	Water
SDG Number	:	W02998
Data Deliverable	:	Summary

RECEIVED
FEB 28 2000
EDMC

I. Introduction

On December 30, 1999, one water sample was received at the Quanterra Richland Laboratory (QRL) for chemical analysis. Upon receipt, the sample was assigned the following laboratory ID number to correspond with the Bechtel Hanford, Inc. (BHI) specific ID:

QESRL ID#	BHI ID#	MATRIX	DATE OF RECEIPT
9D715L10	B0X0J1	WATER	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 analysis was: **Chemical Analyses**
Chromium Hex by EPA method 7196

III. Quality Control

The analytical results for each analysis performed under SDG W02998 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC results are reported in mg/L.

IV. Comments

Chemical Analyses

Chromium Hex by EPA method 7196

The LCS, batch blank, sample, sample duplicate (B0X0J1) and sample matrix spike/matrix spike duplicate (B0X0J1) 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:**	W02998 / 9455
LAB SAMPLE ID:	9D715L10	**MATRIX:**	WATER
CLIENT ID:	B0X0J1	**DATE RECEIVED:**	12/30/99 3:00:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
HEXCHROME	1.16E-01		N/A	N/A	2.00E-03	mg/L	N/A	EPA7196

Number of Results: 1

Result = IDL When Not Detected

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

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rptChemRadSample; v3.41

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DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W02998 / 9455
LAB SAMPLE ID:	D715L14R	MATRIX:	WATER
CLIENT ID:	B0X0J1	DATE RECEIVED:	12/30/99 3:00:00 P
ORIG LAB SAMPLE ID:	9D715L10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
HEXCHROME	1.17E-01		N/A	N/A	2.00E-03	mg/L	N/A	EPA7196	1.16E-01	0.86%

Number of Results: 1

Result = IDL When Not Detecte

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

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rptChemRadDup; v3.41

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BLANK RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG /RPT GRP:**	W02998 / 9455
LAB SAMPLE ID:	D71PH11B	**MATRIX:**	WATER

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

Number of Results: 1

Result = IDL When Not Detected

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

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rptChemRadBlank; v3.41

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LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	**SDG: /RPT GRP:**	W02998 / 9455
LAB SAMPLE ID:	D71PH12S	**MATRIX:**	WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
HEXCHROME	5.01E-01		N/A	N/A	2.00E-03	mg/L	N/A	5.00E-01	100.20%

Number of Results: 1

Result = IDL When Not Detecte

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

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rptChemRadLcs; v3.41

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MATRIX SPIKE RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02998	/ 9455	
LAB SAMPLE ID:	D715L12W	**MATRIX:**	WATER		

ANALYTE	SPIKE RESULT*	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
HEXCHROME	5.24E-01		N/A	N/A	2.00E-03	mg/L	1.16E-01	5.26E-01	99.62%

Number of Results: 1

*Spike Result Corrected For Sample Result

Result = IDL When Not Detecte

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

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rptChemRadMatrixSpike; v3.41

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MATRIX SPIKE RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG: /RPT GRP:**	W02998	/ 9455
LAB SAMPLE ID:	D715L13W	**MATRIX:**	WATER	

ANALYTE	SPIKE RESULT*	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
HEXCHROME	5.28E-01		N/A	N/A	2.00E-03	mg/L	1.16E-01	5.26E-01	100.38%

Number of Results: 1

*Spike Result Corrected For Sample Result

Result = IDL When Not Detecte

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

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rptChemRadMatrixSpike; v3.41

Quanterra

Richland Laboratory
Data Review Check List
METALS

Work Order Number(s): D715L Batch - 0003287 Lot. J9L300219				
Lab Sample Numbers or SDG: W02998				
Method/Test/Parameter: CR+6 in water RICHWC5003 R3				
Review Item	**Yes (✓)**	**No (✓)**	**N/A (✓)**	**2nd Level Review (✓)**
A. Initial Calibration				
1. Performed at required frequency wih required number of levels?	✓			
2. Correlation coefficient within QC limits?	✓			
3. Initial calibration verification (ICV) analyzed immediately after calibration and results within QC limits?	✓			
4. Initial calibration blank(ICB) analyzed immediately after ICV and concentrations of all parameters ≤ reporting limit?	✓			
B. Continuing Calibration				
1. CCV analyzed at required frequency and all parameters within QC limits?	✓			
2. CCB analyzed at required frequency and all results ≤ reporting limit?	✓			
C. Sample Analysis				
1. Were any samples with concentrations above the linear range for any parameter diluted and reanalyzed?			✓	
2. Were all sample holding times met?	✓			
D. QC Samples				
1. All results for the preparation blank below limits?	✓			
2. MS or MS/MSD recoveries within QC limits and %RPD (for MSD) acceptable?	✓			
3. LCS percent recovery within QC limits and %RPD (for LCSD) acceptable?	✓			
4. Analytical spikes within QC limits where applicable?			✓	
5. ICP only: One serial dilution performed per SDG?			✓	
6. ICP only: CRDL standard (CRI or CRA) analyzed at required frequency?			✓	
7. ICP only: Interference check samples (ICSA, ICSAB) and HICAL analyzed at the required frequencies and within QC limits?			✓	

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

Comments on any "No" response:

Analyst: Rosie Ross Date: 1-5-00

Second-Level Review: Jackie Waldell Date: 1/20/00

Form No. CG-191, Rev. 2, 1/97

0010

CHAIN OF CUSTODY

PNNL	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # C00-007-4
		Page 1 of 1

Collector K.J. YOUNG	Contact/Requester JH KESSNER	Telephone No. (509) 375-4688 MSIN FAX
SAF No. C00-007	Sampling Origin HANFORD SITE	Purchase Order/Charge Code
Project Title 100-HR3-IAM (1) GW MONITORING, DECEMBER 1999	Logbook No. WM-SML H 30, PAGE 40	Ice Chest No. SML 455 Temp.
Shipped To (Lab) Quanterra Incorporated	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No.
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **
W02998
SDG ~~W02998~~ 01/03/99 J92300219

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
FAX copies of QES log-in to DL Stewart (372-1704) & JH Kessner (372-9487)

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0X0J1 (F)		W	12-30-99	1238	1x500-mL G/P	7196_CR6: Hexavalent Chromium (1) D715L	Cool 4C
B0X0J1 (F)		W	↓	↓	1x20-mL P	Activity Scan	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
K.J. YOUNG		[signature]	DEC 30 1999 1405	M.A. Baechler	M.G. Baechler		DEC 30 1999 1405
M.A. Baechler	M.G. Baechler		12/30/99 1405	[signature]			12/30/99 1405
[signature]	[signature]	JA 12-30-99	12/30/99 1430	JG HOGAN	[signature]		12/30/99 1430
JG HOGAN	[signature]		12-30-99 1500	K. Schlenberg			12/30/99 1500

Matrix *

S	= Soil	DS	= Drum Solid
SE	= Sediment	DL	= Drum Liqui
SO	= Solid	T	= Tissue
SL	= Sludge	WI	= Wipe
W	= Water	L	= Liquid
O	= Oil	V	= Vegetation
A	= Air	X	= Other

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

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Figure 1

SAMPLE CHECK-IN LIST W02998

Date/Time Received: 12/30/99 1500 SG#: ~~W02997~~ 01/03/99

Work Order Number: J9L300219 SAF #: C00-007

Shipping Container ID: SML-455 Chain of Custody # S00-012-59, W00-012-229, W00-012-223, C00-007-4, W00-012-233

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 n/a
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 12
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: K. Achtenberg Date: 12/30/99

Telephoned To: _____ On _____ By _____

Client Sample Screening Results

03-Jan-00

(B) 1/4/99

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
PGW B0WWX4D6W6L		1/3/99 9:54:00 AM	QUAD21B	1/3/2000 4:38:14 PM	B0WWX4D6W6L	30	10	0.243333333	59	1.10666667
D6W6L	LIQUID		Bkg:	1/3/2000 1:39:02 PM	BKG	100	9	0.09	86	0.86

Anl Date: 1/3/00 Tot Sa, Alq: 9.00E+00 , 1.00E+01 Alp; (Dpm/ 7.37E-01 (uCi/ 2.99E-04 (pCi/ 3.32E+01 ± 2.5E+01 CAT I 7.5E-01 Lab Alq
Ppt mg: 1.4 Units: L , ml Bet; Alq): 2.00E+00 Sa): 8.10E-04 L|g): 8.99E+01 ± 2.4E+01 5.6E-01 L|g

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
PGW B0X0J1D715L		1/3/99 9:54:00 AM	QUAD21D	1/3/2000 4:38:14 PM	B0X0J1D715L	30	3	-0.05	45	0.69
D715L	LIQUID		Bkg:	1/3/2000 1:39:02 PM	BKG	100	15	0.15	81	0.81

Anl Date: 1/3/00 Tot Sa, Alq: 5.00E-01 , 1.00E+01 Alp; (Dpm/ -1.79E-01 (uCi/ -4.04E-06 (pCi/ -8.07E+00 ± 2.3E+01 CAT I 5.0E-01 Lab Alq
Ppt mg: 2.6 Units: L , ml Bet; Alq): 1.39E+00 Sa): 3.13E-05 L|g): 6.26E+01 ± 2.2E+01 8.0E-01 L|g

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
PGW B0X0J9D708D		1/3/99 9:54:00 AM	QUAD22B	1/3/2000 4:38:17 PM	B0X0J9D708D	30	16	0.453333333	100	2.02333333
D708D	LIQUID		Bkg:	1/3/2000 1:39:05 PM	BKG	100	8	0.08	131	1.31

Anl Date: 1/3/00 Tot Sa, Alq: 5.00E-01 , 1.00E+01 Alp; (Dpm/ 1.39E+00 (uCi/ 3.12E-05 (pCi/ 6.24E+01 ± 3.1E+01 CAT I 4.0E-01 Lab Alq
Ppt mg: 4.2 Units: L , ml Bet; Alq): 3.60E+00 Sa): 8.11E-05 L|g): 1.62E+02 ± 3.0E+01 3.1E-01 L|g

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
PGW B0X0L1D6W6G		1/3/99 9:54:00 AM	QUAD22C	1/3/2000 4:38:17 PM	B0X0L1D6W6G	30	5	0.016666667	31	-0.0166667
D6W6G	LIQUID		Bkg:	1/3/2000 1:39:05 PM	BKG	100	15	0.15	105	1.05

Anl Date: 1/3/00 Tot Sa, Alq: 1.00E+00 , 1.00E+01 Alp; (Dpm/ 5.18E-02 (uCi/ 2.33E-06 (pCi/ 2.33E+00 ± 2.4E+01 CAT I 1.1E+01 Lab Alq
Ppt mg: 3.1 Units: L , ml Bet; Alq): -4.16E-02 Sa): -1.87E-06 L|g): -1.87E+00 ± 1.9E+01 1.0E+00 L|g

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
PGW B0X0M2D70AH		1/3/99 9:54:00 AM	QUAD22D	1/3/2000 4:38:17 PM	B0X0M2D70AH	30	25	0.693333333	99	2.08
D70AH	LIQUID		Bkg:	1/3/2000 1:39:05 PM	BKG	100	14	0.14	122	1.22

Anl Date: 1/3/00 Tot Sa, Alq: 3.00E+00 , 1.00E+01 Alp; (Dpm/ 2.05E+00 (uCi/ 2.76E-04 (pCi/ 9.21E+01 ± 3.1E+01 CAT I 2.7E-01 Lab Alq
Ppt mg: 1.8 Units: L , ml Bet; Alq): 3.51E+00 Sa): 4.74E-04 L|g): 1.58E+02 ± 2.9E+01 3.2E-01 L|g

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
PGW B0X0M4D7165		1/3/99 9:54:00 AM	QUAD23B	1/3/2000 4:38:15 PM	B0X0M4D7165	30	17	0.466666667	51	0.85
D7165	LIQUID		Bkg:	1/3/2000 1:39:08 PM	BKG	100	10	0.1	85	0.85

Anl Date: 1/3/00 Tot Sa, Alq: 6.00E+00 , 1.00E+01 Alp; (Dpm/ 1.43E+00 (uCi/ 3.88E-04 (pCi/ 6.46E+01 ± 2.6E+01 CAT I 3.9E-01 Lab Alq
Ppt mg: 2.9 Units: L , ml Bet; Alq): 1.33E+00 Sa): 3.60E-04 L|g): 6.00E+01 ± 2.2E+01 8.3E-01 L|g

0014

Quanterra

COC Signature Page

Lot or Batch #: 0003287	Initials/Date	Procedure #
Released By	12-30-99	RichCC0009
Received	R3 12-30-99	RICHWC5003 R.3
Released By	R3 1-5-00	n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		

RC-131, Rev.1, 6/99

RQC050

Quanterra Incorporated
WET CHEM BATCHSHEET
Richland

Run Date: 1/03/00
Time: 13:08:54

PRODUCTION FIGURES - WET CHEM

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

METHOD: EA Hexavalent Chromium 6A)
QC BATCH #: 0003287
PREP DATE: 12/30/99
USER: ROSSR

INITIALS:
PREP _____
ANAL _____

DATA ENTRY:
INITIALS _____
DATE _____

Work Order	Lab Number	Structured Analysis	Exp. Del.	Analysis Date	Sample ID:
D71PH-1-01	J-0A030000-287-B	XX I 88 EA 5I		_____	INTRA-LAB BLANK
D71PH-1-02	J-0A030000-287-C	XX I 88 EA 5I		_____	INTRA-LAB CHECK
D715L-1-01	J-9L300219-001	XX I 88 EA 5I		_____	B0X0J1
D715L-1-03	J-9L300219-001-D	XX I 88 EA 5I		_____	B0X0J1
D715L-1-02	J-9L300219-001-S	XX I 88 EA 5I		_____	B0X0J1
D715L-1-04	J-9L300219-001-X	XX I 88 EA 5I		_____	B0X0J1 DUP

Control Limits

(85-115)

(85-115)

(85-115)