

Bechtel Hanford, Inc.
March 22, 2000
Page 2

III. Quality Control

The analytical results for each analysis performed under SDG W03083 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.

Quality control sample results are reported in mg/L.

IV. Comments

Chemical Analyses

Chromium Hex by EPA method 7196:

The LCS, batch blank, sample, sample duplicate (B0XCF7) and sample matrix spike/matrix spike duplicate (B0XCF7) results are within contractual requirements.

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

Reviewed and approved:



Jackie Waddell
Project Manager

SAMPLE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03083 / 10135
LAB SAMPLE ID: 9D8MHP10 MATRIX: WATER
CLIENT ID: B0XCF7 DATE RECEIVED: 2/16/2000 3:00:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
HEXCHROME	6.80E-02		N/A	N/A	2.00E-03	mg/L	N/A	EPA7196

Number of Results:

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03083 / 10135
LAB SAMPLE ID: D8MHP14R MATRIX: WATER
CLIENT ID: BOXCF7 DATE RECEIVED: 2/16/2000 3:00:00 P
ORIG LAB SAMPLE ID: 9D8MHP10

ANALYTE	DUP RESULT	COUNTING Q ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
HEXCHROME	6.90E-02	N/A	N/A	2.00E-03	mg/L	N/A	EPA7196	6.80E-02	1.46%

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W03083 / 10135
LAB SAMPLE ID: D8N9W11B 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:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richiand SDG: /RPT GRP: W03083 / 10135
LAB SAMPLE ID: D8N9W12S MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
HEXCHROME	4.99E-01		N/A	N/A	2.00E-03	mg/L	N/A	5.00E-01	99.80%

Number of Results:

MATRIX SPIKE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03083 / 10135
LAB SAMPLE ID: D8MHP12W MATRIX: WATER

ANALYTE	SPIKE RESULT* Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
HEXCHROME	5.23E-01	N/A	N/A	2.00E-03	mg/L	6.80E-02	5.26E-01	99.43%

Number of Results:

*Spike Result Corrected For Sample Result

Result = IDL When Not Detects

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

Quanterra Analytical Services, Inc
rptChemRadMatrixSpike; v3.41

0008

MATRIX SPIKE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03083 / 10135
LAB SAMPLE ID: D8MHP13W MATRIX: WATER

ANALYTE	SPIKE RESULT* Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
HEXCHROME	5.21E-01	N/A	N/A	2.00E-03	mg/L	6.80E-02	5.26E-01	99.05%

Number of Results:

*Spike Result Corrected For Sample Result

Result = IDL When Not Detects

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



Richland Laboratory
Data Review Check List
METALS

<u>Work Order Number(s):</u> <i>DBMHP</i>		<u>Batch:</u> <i>0048195</i> <u>Lot:</u> <i>JOB160254</i>		
<u>Lab Sample Numbers or SDG:</u> <i>W03083</i>				
<u>Method/Test/Parameter:</u> <i>CR+6 in water</i>		<i>RICHWC5003 R.4</i>		
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
A. Initial Calibration				
1. Performed at required frequency with required number of levels?	✓			
2. Correlation coefficient within QC limits?	✓			
3. Initial calibration verification (ICV) analyzed immediately after calibration and results within QC limits?	✓			
4. Initial calibration blank (ICB) analyzed immediately after ICV and concentrations of all parameters \leq reporting limit?	✓			
B. Continuing Calibration				
1. CCV analyzed at required frequency and all parameters within QC limits?	✓			
2. CCB analyzed at required frequency and all results \leq 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?			✓	

CHAIN OF CUSTODY

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received: 2-16-00 1500 SG#: W03083
Work Order Number: JOB160254 SAF #: C00-014/400-001
Shipping Container ID: ER-40 Chain of Custody #: C00-014

- 1. Custody Seals on shipping container intact? Yes [X] No []
2. Custody Seals dated and signed? Yes [X] No []
3. Chain-of-Custody record present? Yes [X] No []
4. Cooler temperature n/a
5. Vermiculite/packing materials is Wet [] Dry [X]
6. Number of samples in shipping container: 10
7. Sample holding times exceeded? Yes [] No [X]

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

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

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

Sample Custodian/Laboratory: K. deBenedictis Date: 2-16-00

Telephoned To: On By

Client Sample Screening Results

17-Feb-00

Ⓟ 2/17/00

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
PGW BOX743D8MGQ		2/17/2000 9:36:00 AM	QUAD21A	2/17/2000 2:01:20 PM	BOX743D8MGQ	30	5	0.02	48	0.66666667
	D8MGQ LIQUID		Bkg:	2/17/2000 2:17:06 AM	BKG	600	88	0.146666667	560	0.93333333
Anl Date: 2/17/00	Tot Sa, Alq: 1.70E+01		1.00E+01	Alp; (Dpm/ 3.83E-02	(uCV/ 2.93E-05	(pCV/ 1.72E+00	± 2.2E+01	CAT	1.5E+01	Lab
Ppt mg: 3.6	Units: L		ml	Bet; Alq: 1.33E+00	Sa: 1.02E-03	Ljg: 5.98E+01	± 2.2E+01	I	8.4E-01	Alq Ljg
PGW BOXCF3D8MGR		2/17/2000 9:36:00 AM	QUAD21B	2/17/2000 2:01:20 PM	BOXCF3D8MGR	30	22	0.61	76	1.58333333
	D8MGR LIQUID		Bkg:	2/17/2000 2:17:06 AM	BKG	600	74	0.123333333	570	0.95
Anl Date: 2/17/00	Tot Sa, Alq: 1.00E+00		1.00E+01	Alp; (Dpm/ 1.89E+00	(uCV/ 8.53E-05	(pCV/ 8.53E+01	± 2.8E+01	CAT	2.9E-01	Lab
Ppt mg: 1.7	Units: L		ml	Bet; Alq: 2.70E+00	Sa: 1.22E-04	Ljg: 1.22E+02	± 2.5E+01	I	4.1E-01	Alq Ljg
PGW BOXCF7D8MIIP		2/17/2000 9:36:00 AM	QUAD21C	2/17/2000 2:01:20 PM	BOXCF7D8MHP	30	3	0.005	74	1.495
	D8MIIP LIQUID		Bkg:	2/17/2000 2:17:06 AM	BKG	600	57	0.095	583	0.97166667
Anl Date: 2/17/00	Tot Sa, Alq: 5.00E-01		1.00E+01	Alp; (Dpm/ -3.04E-02	(uCV/ -6.85E-07	(pCV/ -1.37E+00	± 2.1E+01	CAT	5.0E-01	Lab
Ppt mg: 2.8	Units: L		ml	Bet; Alq: 2.94E+00	Sa: 6.63E-05	Ljg: 1.33E+02	± 2.6E+01	I	3.8E-01	Alq Ljg
PGW BOXD49D8MIHI		2/17/2000 9:36:00 AM	QUAD21D	2/17/2000 2:01:20 PM	BOXD49D8MHHI	30	17	0.463333333	342	10.425
	D8MIHI LIQUID		Bkg:	2/17/2000 2:17:06 AM	BKG	600	62	0.103333333	585	0.975
Anl Date: 2/17/00	Tot Sa, Alq: 1.50E+00		1.00E+01	Alp; (Dpm/ 1.21E+00	(uCV/ 8.21E-05	(pCV/ 5.47E+01	± 2.7E+01	CAT	4.6E-01	Lab
Ppt mg: 6.7	Units: L		ml	Bet; Alq: 2.05E+01	Sa: 1.38E-03	Ljg: 9.21E+02	± 5.5E+01	I	5.4E-02	Alq Ljg
PGW BOXF06D8MIH9		2/17/2000 9:36:00 AM	QUAD22A	2/17/2000 2:01:22 PM	BOXF06D8MH9	30	26	0.768333333	1084	35.09
	D8MIH9 LIQUID		Bkg:	2/17/2000 2:17:11 AM	BKG	600	59	0.098333333	626	1.04333333
Anl Date: 2/17/00	Tot Sa, Alq: 7.00E+00		1.00E+01	Alp; (Dpm/ 1.30E+00	(uCV/ 4.11E-04	(pCV/ 5.87E+01	± 2.5E+01	CAT	4.3E-01	Lab
Ppt mg: 4.6	Units: L		ml	Bet; Alq: 6.54E+01	Sa: 2.06E-02	Ljg: 2.95E+03	± 9.2E+01	I	1.7E-02	Alq Ljg
PGW BOXF54D8MIH6		2/17/2000 9:36:00 AM	QUAD22B	2/17/2000 2:01:22 PM	BOXF54D8MH6	30	14	0.338333333	331	9.53
	D8MIH6 LIQUID		Bkg:	2/17/2000 2:17:11 AM	BKG	600	77	0.128333333	902	1.50333333
Anl Date: 2/17/00	Tot Sa, Alq: 1.10E+01		1.00E+01	Alp; (Dpm/ 8.16E-01	(uCV/ 4.05E-04	(pCV/ 3.68E+01	± 2.9E+01	CAT	6.8E-01	Lab
Ppt mg: 6.2	Units: L		ml	Bet; Alq: 1.81E+01	Sa: 8.96E-03	Ljg: 8.15E+02	± 5.2E+01	I	6.1E-02	Alq Ljg

0015

17-Feb-00

RQC050

Quanterra Incorporated
WET CHEM BATCHSHEET
Richland

Run Date: 2/17/00
Time: 11:01:40

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 #:	0048195			INITIALS:			DATA ENTRY:
PREP DATE:	2/17/00			PREP			INITIALS
USER:	ROSSR			ANAL			DATE

Work Order	Lab Number	Structured Analysis	Exp. Del.	Analysis Date	Sample ID:
D8MHP-1-01	J-0B160254-001	XX I 88 EA 5I			BOXCF7
D8MHP-1-03	J-0B160254-001-D	XX I 88 EA 5I			BOXCF7
D8MHP-1-02	J-0B160254-001-S	XX I 88 EA 5I			BOXCF7
D8MHP-1-04	J-0B160254-001-X	XX I 88 EA 5I			BOXCF7 DUP
D8N9W-1-01	J-0B170000-195-B	XX I 88 EA 5I			INTRA-LAB BLANK
D8N9W-1-02	J-0B170000-195-C	XX I 88 EA 5I			INTRA-LAB CHECK

Control Limits

(85-115)
(85-115)
(85-115)

0016

COC Signature Page

Lot or Batch #: 0648195	Initials/Date	Procedure #
Released By	JA 2/17/00	RC0009
Received	(B) 2/17/00	RICHW05003 R.4
Released By	(B) 2/17/00	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		