

0073764

SAF-RC-092
100-BC Groundwater
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Jeanette Duncan H4-21

KW 8/9/07
Initials/Date

COMMENTS:

SDG J00123

SAF-RC-092

Rad only

Chem only

Rad & Chem

Complete

Partial

Waste Site: 100-C-7 boreholes (C5672)

RECEIVED
AUG 23 2007

EDMC

Analytical Data Package Prepared For
Washington Closure Hanford



Radiochemical Analysis By

TAL Richland

2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.

Assigned Laboratory Code: STLRL

Data Package Contains 25 Pages

Report No.: 36271

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
J00123	RC-092	J15F60	J7H070353-6	J4DMJ1AA	9J4DMJ10	7219552
		J15F61	J7H070353-1	J4DMN1AA	9J4DMN10	7219552
		J15F62	J7H070353-2	J4DMR1AA	9J4DMR10	7219552
		J15F63	J7H070353-3	J4DMT1AA	9J4DMT10	7219552
		J15F64	J7H070353-4	J4DMV1AA	9J4DMV10	7219552
		J15F65	J7H070353-5	J4DMW1AA	9J4DMW10	7219552

STL Richland
2800 George Washington Way
Richland, WA 99354

Tel: 509 375 3131 Fax: 509 375 5590
www.stl-inc.com

Certificate of Analysis

Washington Hanford Closure
2620 Fermi Avenue
Richland, WA 99354

August 8, 2007

Attention: Joan Kessner

SAF Number	:	RC-092
Date SDG Closed	:	August 7, 2007
Number of Samples	:	Six (6)
Sample Type	:	Water
SDG Number	:	J00123
Data Deliverable	:	24 -Hour / Summary

CASE NARRATIVE

I. Introduction

On August 7, 2007 six water samples were received at STL Richland (STLR) for chemistry analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Washington Closure Hanford (WCH) specific ID:

<u>WCH ID#</u>	<u>STLR ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
J15F61	J4DMN	WATER	8/7/07
J15F62	J4DMR	WATER	8/7/07
J15F63	J4DMT	WATER	8/7/07
J15F64	J4DMV	WATER	8/7/07
J15F65	J4DMW	WATER	8/7/07
J15F60	J4DMJ	WATER	8/7/07

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

Washington Closure Hanford
August 8, 2007

III. 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:

Chemical Analysis
Hexavalent Chromium by EPA method 7196A

IV. Quality Control

The analytical results for each analysis performed includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

V. Comments

Chemical Analysis

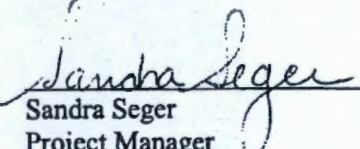
Hexavalent Chromium by EPA method 7196A:

The client instructed Test America Richland to filter samples J15F62, J15F64 and J15F60. Only the filtrate was analyzed for samples J15F62, J15F64 and J15F60.

The LCS, batch blank, sample, sample duplicate (J15F60), sample matrix spike (J15F60) and sample matrix spike duplicate (J15F60) 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:


Sandra Seger
Project Manager

Drinking Water Method Cross References

DRINKING WATER ASTM METHOD CROSS REFERENCES		
Referenced Method	Isotope(s)	STL Richland's SOP number
EPA 901.1	Cs-134, I-131	RICH-RC-5017
EPA 900.0	Alpha & Beta	RICH-RC-5014
EPA 903.1	Ra-226	RICH-RC-5005
EPA 904.0	Ra-228	RICH-RC-5005
EPA 905.0	Sr89/90	RICH-RC-5006
ASTM D2460	Total Radium	RICH-RC-5027
Standard Method 7500-U-C & ASTM D5174	Uranium	RICH-RC-5058
EPA 906.0	Tritium	RICH-RC-5007
NOTE:		
The Gross Alpha LCS is prepared with Am-241 (unless otherwise specified in the case narrative)		
The Gross Beta LCS is prepared with Sr/Y-90 (unless otherwise specified in the case narrative)		

Uncertainty Estimation

STL Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, $R = \text{constants} * f(x,y,z,\dots)$. The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/\sqrt{n}), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or STL Richland.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) <i>u_c - Combined Uncertainty.</i>	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, <i>u_c the combined uncertainty.</i> The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or STL Richland "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. $Lc = (1.645 * \text{Sqrt}(2 * (\text{BkgndCnt}/\text{BkgndCntMin})/\text{SCntMin})) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol}) * \text{IngrFct})$. For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. $MDC = (4.65 * \text{Sqrt}((\text{BkgndCnt}/\text{BkgndCntMin})/\text{SCntMin}) + 2.71/\text{SCntMin}) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol}) * \text{IngrFct})$. For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the Work Order Number.
RER	The equation Replicate Error Ratio = $(S-D)/[\text{sqrt}(\text{TPUs}^2 + \text{TPUd}^2)]$ as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by STL Richland upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

Sample Results Summary

Date: 08-Aug-07

TAL Richland STLRL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 36271

SDG No: J00123

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RPD
7219552 7196_CR6									
	J15F60								
	J4DMJ1AA	HEXCHROME	2.00E-03 +- 0.00E+00	U	mg/L	N/A	2.00E-03	2.00E-03	
	J15F60 DUP								
	J4DMJ1AE	HEXCHROME	2.00E-03 +- 0.00E+00	U	mg/L	N/A	2.00E-03	2.00E-03	0.0
	J15F61								
	J4DMN1AA	HEXCHROME	2.00E-03 +- 0.00E+00	U	mg/L	N/A	2.00E-03	2.00E-03	
	J15F62								
	J4DMR1AA	HEXCHROME	2.00E-03 +- 0.00E+00	U	mg/L	N/A	2.00E-03	2.00E-03	
	J15F63								
	J4DMT1AA	HEXCHROME	2.00E-03 +- 0.00E+00	U	mg/L	N/A	2.00E-03	2.00E-03	
	J15F64								
	J4DMV1AA	HEXCHROME	2.00E-03 +- 0.00E+00	U	mg/L	N/A	2.00E-03	2.00E-03	
	J15F65								
	J4DMW1AA	HEXCHROME	2.00E-03 +- 0.00E+00	U	mg/L	N/A	2.00E-03	2.00E-03	

No. of Results: 7

TAL Richland

RPD - Relative Percent Difference.

rptSTLRchSaSummary2 V5.1.3
A2002

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

QC Results Summary

Date: 08-Aug-07

TAL Richland STLRL

Ordered by Method, Batch No, QC Type,.

Report No. : 36271

SDG No.: J00123

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDC MDA
7196_CR6								
7219552	MATRIX SPIKE, J15F60 MS							
J4DMJ1AC	HEXCHROME	2.65E-01 +- 0.00E+00		mg/L	N/A	101%	0.0	2.00E-03
7219552	MATRIX SPIKE, J15F60 MSD							
J4DMJ1AD	HEXCHROME	2.66E-01 +- 0.00E+00		mg/L	N/A	101%	0.0	2.00E-03
7219552	LCS,							
J4DT01AA	HEXCHROME	5.07E-01 +- 0.00E+00		mg/L	N/A	101%	0.0	2.00E-03
7219552	BLANK QC,							
J4DT01AA	HEXCHROME	2.00E-03 +- 0.00E+00	U	mg/L	N/A			2.00E-03

No. of Results: 4

TAL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.
 rptSTLRchQcSummary V5.1.3 A2002 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

Date: 08-Aug-07

SAMPLE RESULTS

Lab Name: TA Richland
 Lot-Sample No.: J7H070353-6
 Client Sample ID: J15F60

SDG: J00123
 Report No.: 36271
 COC No.: RC-092-008

Collection Date: 8/7/2007 8:00:00 AM
 Received Date: 8/7/2007 2:25:00 PM
 Matrix: WATER

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Alliquot Size	Primary Detector
Batch: 7219552	7196_CR6				Work Order: J4DMJ1AA		Report DB ID: 9J4DMJ10					
HEXCHROME	2.00E-03	U		0.0E+00	2.00E-03	mg/L	N/A	1.	8/8/07		100.0	
							2.00E-03	N/A			ML	

No. of Results: 1 Comments:

FORM I

Date: 08-Aug-07

SAMPLE RESULTS

Lab Name: TA Richland
 Lot-Sample No.: J7H070353-1
 Client Sample ID: J15F61

SDG: J00123
 Report No.: 36271
 COC No.: RC-092-008

Collection Date: 8/7/2007 8:00:00 AM
 Received Date: 8/7/2007 2:25:00 PM
 Matrix: WATER

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Allquot Size	Primary Detector
Batch: 7219552	7196_CR6				Work Order: J4DMN1AA		Report DB ID: 9J4DMN10					
HEXCHROME	2.00E-03	U		0.0E+00	2.00E-03	mg/L	N/A	1.	8/8/07		100.0	
							2.00E-03	N/A			ML	

No. of Results: 1 Comments:

FORM I

Date: 08-Aug-07

SAMPLE RESULTS

Lab Name: TA Richland
 Lot-Sample No.: J7H070353-2
 Client Sample ID: J15F62

SDG: J00123
 Report No.: 36271
 COC No.: RC-092-008

Collection Date: 8/7/2007 8:20:00 AM
 Received Date: 8/7/2007 2:25:00 PM
 Matrix: WATER

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7219552	7196_CR6				Work Order: J4DMR1AA		Report DB ID: 9J4DMR10					
HEXCHROME	2.00E-03	U		0.0E+00	2.00E-03	mg/L	N/A	1.	8/8/07		100.0	
							2.00E-03	N/A			ML	

No. of Results: 1 Comments:

FORM I
SAMPLE RESULTS

Date: 08-Aug-07

Lab Name: TA Richland
Lot-Sample No.: J7H070353-3
Client Sample ID: J15F63

SDG: J00123
Report No.: 36271
COC No.: RC-092-008

Collection Date: 8/7/2007 8:20:00 AM
Received Date: 8/7/2007 2:25:00 PM
Matrix: WATER

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Alliquot Size	Primary Detector
Batch: 7219552	7196_CR6				Work Order: J4DMT1AA		Report DB ID: 9J4DMT10					
HEXCHROME	2.00E-03	U		0.0E+00	2.00E-03	mg/L	N/A	1.	8/8/07		100.0	
							2.00E-03	N/A			ML	

No. of Results: 1 Comments:

FORM I

Date: 08-Aug-07

SAMPLE RESULTS

Lab Name: TA Richland
 Lot-Sample No.: J7H070353-4
 Client Sample ID: J15F64

SDG: J00123
 Report No.: 36271
 COC No.: RC-092-008

Collection Date: 8/7/2007 10:15:00 AM
 Received Date: 8/7/2007 2:25:00 PM
 Matrix: WATER

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7219552	7196_CR6			Work Order: J4DMV1AA		Report DB ID: 9J4DMV10						
HEXCHROME	2.00E-03	U		0.0E+00	2.00E-03	mg/L	N/A	1.	8/8/07		100.0	
							2.00E-03	N/A			ML	

No. of Results: 1 Comments:

FORM I

Date: 08-Aug-07

SAMPLE RESULTS

Lab Name: TA Richland

SDG: J00123

Collection Date: 8/7/2007 10:15:00 AM

Lot-Sample No.: J7H070353-5

Report No.: 36271

Received Date: 8/7/2007 2:25:00 PM

Client Sample ID: J15F65

COC No.: RC-092-008

Matrix: WATER

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7219552	7196_CR6				Work Order: J4DMW1AA		Report DB ID: 9J4DMW10					
HEXCHROME	2.00E-03	U		0.0E+00	2.00E-03	mg/L	N/A	1.	8/8/07		100.0	
							2.00E-03	N/A			ML	

No. of Results: 1 Comments:

FORM II

Date: 08-Aug-07

DUPLICATE RESULTS

Lab Name: TA Richland
 Lot-Sample No.: J7H070353-6
 Client Sample ID: J15F60 DUP

SDG: J00123
 Report No.: 36271
 COC No.: RC-092-008

Collection Date: 8/7/2007 8:00:00 AM
 Received Date: 8/7/2007 2:25:00 PM
 Matrix: WATER

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Allquot Size	Primary Detector
Batch: 7219552	7196_CR6			Work Order: J4DMJ1AE		Report DB ID: J4DMJ1ER			Orig Sa DB ID: 9J4DMJ10			
HEXCHROME	2.00E-03	U		0.0E+00	2.00E-03	mg/L	N/A	1.	8/8/07		100.0	
	2.00E-03	U	RPD 0.0	-		2.00E-03		N/A			ML	

No. of Results: 1 Comments:

FORM II
BLANK RESULTS

Date: 08-Aug-07

Lab Name: TA Richland

SDG: J00123

Matrix: WATER

Report No.: 36271

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 7219552	7196_CR6				Work Order: J4DT01AA			Report DB ID: J4DT01AB				
HEXCHROME	2.00E-03	U		0.0E+00	2.00E-03	mg/L	N/A	1.	8/8/07		100.0	
						2.00E-03		N/A			ML	

No. of Results: 1 Comments:

FORM II
LCS RESULTS

Date: 08-Aug-07

Lab Name: TA Richland

SDG: J00123

Matrix: WATER

Report No.: 36271

Parameter	Result	Count Qual Error (2 s)	Total Uncert(2 s)	MDC MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Alliquot Size	Primary Detector
Batch: 7219552	7196_CR6				Work Order: J4DT01AA		Report DB ID: J4DT01AS					
HEXCHROME	5.07E-01		0.0E+00	2.00E-03	mg/L	N/A	5.00E-01		101%	8/8/07	100.0	
						Rec Limits:	85 - 115		0.0		ML	
No. of Results:	1	Comments:										

FORM II

Date: 08-Aug-07

MATRIX SPIKE RESULTS

Lab Name: TA Richland

SDG: J00123

Lot-Sample No.: J7H070353-6, J15F60 MS

Report No.: 36271

Matrix: WATER

Parameter	SpikeResult, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA	Rpt Unit, CRDL	Yield	Rec- overy	Exp- ected	Exp Uncert	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 7219552	Work Order: J4DMJ1AC			Report DB ID: J4DMJ1CW		Orig Sa DB ID: 9J4DMJ10							
HEXCHROME	2.65E-01			0.0E+00	2.00E-03	mg/L	N/A	100.76%	2.63E-01		8/8/07	100.0 ML	7196_CR6
	2.00E-03												
Batch: 7219552	Work Order: J4DMJ1AD			Report DB ID: J4DMJ1DW		Orig Sa DB ID: 9J4DMJ10							
HEXCHROME	2.66E-01			0.0E+00	2.00E-03	mg/L	N/A	101.14%	2.63E-01		8/8/07	100.0 ML	7196_CR6
	2.00E-03												

Number of Results: 2

Comments:

Batch Number(s): 7219552				
Lab Sample Numbers or J00123				
Method/Test/Parameter: Cr+6 in Water / RICH-WC-5003				
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 ≤ 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?			✓	-

Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd 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: *Steven E. Mulgund*

Date: 8/8/2007

Second-Level Review: *[Signature]*

Date: 8/8/07

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-092-008	Page 2 of 2
Collector C. Martinez <i>Pole 8-8-07</i>	Company Contact C. Martinez	Telephone No. 509-551-2816	Project Coordinator KESSNER, JII	Price Code	Data Turnaround 24 hrs		
Project Designation 100-13C Groundwater	Sampling Location 100-C-7 boreholes (C5672)	SAF No. RC-092					
Ice Chest No. <i>Van 96-006</i>	Field Logbook No. EI-1585-9	COA 0100C7M000	Method of Shipment Gov Vehicle				
Shipped To Severn Trent Incorporated, Richland	Offsite Property No. N/A	Bill of Lading/Air Bill No. NA					
POSSIBLE SAMPLE HAZARDS/REMARKS <i>None</i>	Preservation Cool 4C						
Special Handling and/or Storage <i>Cool. 4 degrees centigrade</i>	Type of Container G/P						
	No. of Container(s) 1						
	Volume 500mL						
SAMPLE ANALYSIS		Chromium Hex - 7106					
Sample No.	Matrix *	Sample Date	Sample Time				
J15F61 <i>J4DMN</i>	WATER	<i>8-7-07</i>	<i>0800</i>	<i>X</i>			
J15F62 <i>J4DMR</i>	WATER	<i>8-7-07</i>	<i>0820</i>	<i>X</i>	<i>Please filter before running analysis.</i>		
J15F63 <i>J4DMT</i>	WATER	<i>8-7-07</i>	<i>0820</i>	<i>X</i>			
J15F64 <i>J4DMV</i>	WATER	<i>8-7-07</i>	<i>1615</i>	<i>X</i>	<i>Please filter before running analysis.</i>		
J15F65 <i>J4DMW</i>	WATER	<i>8-7-07</i>	<i>1015</i>	<i>X</i>			
CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS			
Relinquished By <i>J.S. Pole</i>	Removed From <i>AS/HP</i>	Date Time <i>8-7-07 1115</i>	Received By <i>C. Martinez</i>	Stored In <i>C. Martinez</i>	Date Time <i>08/07/07 1115</i>		
Relinquished By <i>C. Martinez</i>	Removed From <i>C. Martinez</i>	Date Time <i>08/07/07 1330</i>	Received By <i>H.M. Singleton</i>	Stored In <i>H.M. Singleton</i>	Date Time <i>8-7-07 1530</i>		
Relinquished By <i>H.M. Singleton</i>	Removed From <i>H.M. Singleton</i>	Date Time <i>8-7-7 1425</i>	Received By <i>J. J. Slane</i>	Stored In <i>J. J. Slane</i>	Date Time <i>8-7-07 1425</i>		
Relinquished By	Removed From	Date Time	Received By	Stored In	Date Time		
Relinquished By	Removed From	Date Time	Received By	Stored In	Date Time		
LABORATORY SECTION	Received By	Title				Date Time	
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By				Date Time	

- Matrix *
- 8 Soil
 - 9 Sediment
 - 10 Solid
 - 11 Sludge
 - 12 Water
 - 13 Air
 - 14 Air
 - 15 Drums Solids
 - 16 Drums Liquid
 - 17 Sludge
 - 18 Wipe
 - 19 Spill
 - 20 Leachate
 - 21 Other

V 17010353

J00123

Due 08-08-07

STL RICHLAND

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-092-008	Page 1 of 2
Collector C. Martinez J. Pope	Company Contact C. Martinez	Telephone No. 509-551-2816	Project Coordinator KESSNER, JH		Price Code	Data Turnaround	
Project Designation 100-BC Groundwater	Sampling Location 100-C-7 boreholes (C5672)		SAF No. RC-092		24 hrs		
Ice Chest No. Van 96-006	Field Logbook No. EI-1585-9	COA 0100C7M000	Method of Shipment Gov Vehicle				
Shipped To Severn Trent Incorporated, Richland		Offsite Property No. N/A		Bill of Lading/Air Bill No. NA			
POSSIBLE SAMPLE HAZARDS/REMARKS None		Preservation	Cool 4C				
Special Handling and/or Storage Cool 4 degrees centigrade		Type of Container	G/P				
		No. of Container(s)	1				
		Volume	500mL				
SAMPLE ANALYSIS		Chromium Hex - 7196					
Sample No.	Matrix *	Sample Date	Sample Time				
J15F56 0810710	WATER	8-6-07	0950	✓	Please filter before running analysis		
J15F57	WATER	8-6-07	0950	✓	0810710		
J15F58	WATER	8-6-07	1215	✓	Please filter before running analysis		
J15F59	WATER	8-6-07	1215	X			
J15F60	WATER	8-7-07	0900	X	Please filter before running analysis		
CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS			
Relinquished By/Removed From J.S. Pope / 8/6/07	Date/Time 8-6-07 1300	Received By/Stored In J.R. Hamilton	Date/Time 8-6-07 1300	0810710			
Relinquished By/Removed From J.S. Pope / 8/7/07	Date/Time 8-7-07 1115	Received By/Stored In C. Martinez / C. Martinez	Date/Time 08107107				
Relinquished By/Removed From C. Martinez / C. Martinez	Date/Time 08107107	Received By/Stored In M. Singleton	Date/Time 8-7-07				
Relinquished By/Removed From M. Singleton	Date/Time 8-7-7 1425	Received By/Stored In L. Lane	Date/Time 8-7-07 1425				
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time				
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time				
LABORATORY SECTION	Received By	Title		Date/Time			
FINAL SAMPLE DISPOSITION	Disposed Method	Disposed By		Date/Time			

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Sample Check-in List

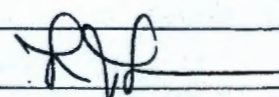
Date/Time Received: 8-7-07 1425

Client: WCH SDG# J00123 NA SAF# RC-092 NA

Work Order Number: J7H070353 Chain of Custody # RC-092-008

Shipping Container ID: _____ Air Bill # _____

1. Custody Seals on shipping container intact? NA Yes No
2. Custody Seals dated and signed? NA Yes No
3. Chain of Custody record present? Yes No
4. Cooler temperature: _____ NA 5. Vermiculite/packing materials is NA Wet Dry
6. Number of samples in shipping container: 6 (1-500ML EA)
7. Sample holding times exceeded? NA Yes No
8. Samples have:
 _____ tape _____ hazard labels
 _____ custody seals _____ appropriate samples labels
9. Samples are:
 _____ in good condition _____ leaking
 _____ broken _____ have air bubbles
 (Only for samples requiring head space)
10. Sample pH taken? NA pH<2 pH>2 pH>9
11. Sample Location, Sample Collector Listed? * Yes No
 *For documentation only, No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes No
13. Description of anomalies (include sample numbers): _____

Sample Custodian:  Date: 8-7-07

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on _____ by _____ Person contacted _____

No action necessary; process as is.

Project Manager _____ Date _____

STL RICHLAND

8/7/2007 4:42:24 PM

127642, Washington Closure Hanford
Bechtel Hanford, Inc.

AnalyDueDate: 08/08/2007 **J00123**

Batch: 7219552 WATER mg/L
SEQ Batch, Test: None All Tests: 7219552 88EA,

Sample Preparation/Analysis **JHR TAT**

88 NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION
EA Chromium, Hexavalent (7196A)
SI CLIENT: HANFORD

PRIORITY

PM, Quote: SS , 27023

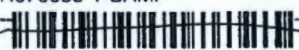

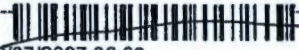
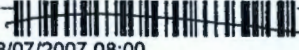

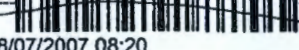
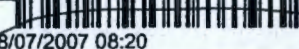
Balance Id:

Pipet #:

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

Prep Tech:

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 J4DMJ-1-AA J7H070353-1-SAMP  08/07/2007 08:00								
		AmtRec: 500G	#Containers: 1			Scr:	Alpha:	Beta:
2 J4DMJ-1-AC-S J7H070353-1-MS  08/07/2007 08:00								
		AmtRec: 500G	#Containers: 1			Scr:	Alpha:	Beta:
3 J4DMJ-1-AD-D J7H070353-1-MSD  08/07/2007 08:00								
		AmtRec: 500G	#Containers: 1			Scr:	Alpha:	Beta:
4 J4DMJ-1-AE-X J7H070353-1-DUP  08/07/2007 08:00								
		AmtRec: 500G	#Containers: 1			Scr:	Alpha:	Beta:
5 J4DMN-1-AA J7H070353-2-SAMP  08/07/2007 08:00								
		AmtRec: 500G	#Containers: 1			Scr:	Alpha:	Beta:
6 J4DMR-1-AA J7H070353-3-SAMP  08/07/2007 08:20								
		AmtRec: 500G	#Containers: 1			Scr:	Alpha:	Beta:
7 J4DMT-1-AA J7H070353-4-SAMP  08/07/2007 08:20								
		AmtRec: 500G	#Containers: 1			Scr:	Alpha:	Beta:

STL RICHLAND

8/7/2007 4:42:25 PM

127642, Washington Closure Hanford
Bechtel Hanford, Inc.

Sample Preparation/Analysis
88 NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION
EA Chromium, Hexavalent (7196A)
5I CLIENT: HANFORD

PRIORITY

Balance Id:

Pipet #:

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:


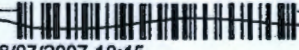


Prep Tech:

AnalyDueDate: 08/08/2007

Batch: 7219552 WATER mg/L

PM, Quote: SS , 27023

SEQ Batch, Test: None

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date	Comments:
8 J4DMV-1-AA J7H070353-5-SAMP  08/07/2007 10:15		AmtRec: 500G	#Containers: 1			Scr:	Alpha:	Beta:
9 J4DMW-1-AA J7H070353-6-SAMP  08/07/2007 10:15		AmtRec: 500G	#Containers: 1			Scr:	Alpha:	Beta:
10 J4DT0-1-AA-B J7H070000-552-BLK  08/07/2007 08:00		AmtRec:	#Containers: 1			Scr:	Alpha:	Beta:
11 J4DT0-1-AC-C J7H070000-552-LCS  08/07/2007 08:00		AmtRec:	#Containers: 1			Scr:	Alpha:	Beta:

Comments:

All Clients for Batch:

127642, Washington Closure Hanford

Bechtel Hanford, Inc.

SS , 27023

J4DMJ1AA-SAMP Constituent List:

HEXCHROME RDL:0.002 mg/L LCL:85 UCL:115 RPD:20

J4DMJ1AC-MS Constituent List:

HEXCHROME RDL:0.002 mg/L LCL:85 UCL:115 RPD:20

J4DMJ1AD-MSD:

HEXCHROME RDL:0.002 mg/L LCL:85 UCL:115 RPD:20

J4DT01AA-BLK:

HEXCHROME RDL:0.002 mg/L LCL: UCL: RPD:

Sample Preparation/Analysis

Balance Id: _____

88 NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION

Pipet #: _____

EA Chromium, Hexavalent (7196A)

PRIORITY

SI CLIENT: HANFORD

Sep1 DT/Tm Tech: _____

AnalyDueDate: 08/08/2007

Sep2 DT/Tm Tech: _____

Batch: 7219552

mg/L

Prep Tech: _____

SEQ Batch, Test: None



Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date	Comments:
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J4DT01AC-LCS:									
HEXCHROME	RDL:0.002	mg/L	LCL:85	UCL:115	RPD:20				
J4DMJ1AA-SAMP Calc Info:									
Uncert Level (#s):	2	Decay to SaDt:	Y	Blk Subt.:	N	Sci.Not.:	Y	ODRs:	B
J4DMJ1AC-MS Calc Info:									
Uncert Level (#s):	2	Decay to SaDt:	Y	Blk Subt.:	N	Sci.Not.:	Y	ODRs:	B
J4DMJ1AD-MSD:									
Uncert Level (#s):	2	Decay to SaDt:	Y	Blk Subt.:	N	Sci.Not.:	Y	ODRs:	B
J4DT01AA-BLK:									
Uncert Level (#s):	2	Decay to SaDt:	Y	Blk Subt.:	N	Sci.Not.:	Y	ODRs:	B
J4DT01AC-LCS:									
Uncert Level (#s):	2	Decay to SaDt:	Y	Blk Subt.:	N	Sci.Not.:	Y	ODRs:	B

Approved By _____

Date: _____

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