



Analytical Data Package Prepared For

# Washington Closure Hanford



Radiochemical Analysis By

**STL Richland**

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

Assigned Laboratory Code: STLRL

Data Package Contains 23 Pages

Report No.: 31187

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
J00048	RC-048	J10M19	J6A170282-3	HVR4K1AA	9HVR4K10	6018039
		J10M61	J6A170282-1	HVR4G1AA	9HVR4G10	6018039
		J11165	J6A170282-2	HVR4J1AA	9HVR4J10	6018039

## Certificate of Analysis

Washington Closure Hanford  
3190 George Washington Way  
Richland, WA 99354

January 31, 2005

Attention: Joan Kessner

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SAF Number	:	RC-048
Date SDG Closed	:	January 17, 2006
Number of Samples	:	Three (3)
Sample Type	:	Water
SDG Number	:	J00048
Data Deliverable	:	45-Day / Summary

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### CASE NARRATIVE

#### I. Introduction

On January 17, 2006, three water samples were received at STL Richland (STLR) for chemistry analysis. Upon receipt, the samples were assigned the following laboratory ID number 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>
J10M61	HVR4G	WATER	01/17/06
J11165	HVR4J	WATER	01/17/06
J10M19	HVR4K	WATER	01/17/06

#### II. Sample Receipt

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

#### 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 LCS, batch blank, sample, sample matrix spike (J10M61), matrix spike duplicate (J10M61) and sample duplicate (J10M61) 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:



Hans Carman  
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

<b>Action Lev</b>	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.
<b>Batch</b>	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
<b>Blas</b>	Defined by the equation $(\text{Result}/\text{Expected})-1$ as defined by ANSI N13.30.
<b>COC No</b>	Chain of Custody Number assigned by the Client or STL Richland.
<b>Count Error (#s)</b>	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.
<b>Total Uncert (#s) <i>u<sub>c</sub> Combined Uncertainty.</i></b>	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<sub>c</sub> the combined uncertainty.</i> The uncertainty is absolute and in the same units as the result.
<b>(#s), Coverage Factor</b>	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
<b>CRDL (RL)</b>	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)
<b>Lc</b>	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.
<b>Lot-Sample No</b>	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.
<b>MDC MDA</b>	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.
<b>Primary Detector</b>	The instrument identifier associated with the analysis of the sample aliquot.
<b>Ratio U-234/U-238</b>	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.
<b>Rst/MDC</b>	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.
<b>Rst/TotUcert</b>	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.
<b>Report DB No</b>	Sample Identifier used by the report system. The number is based upon the first five digits of the Work Order Number.
<b>RER</b>	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.
<b>SDG</b>	Sample Delivery Group Number assigned by the Client or assigned by STL Richland upon sample receipt.
<b>Sum Rpt Alpha Spec Rst(s)</b>	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.
<b>Work Order</b>	The LIMS software assign test specific identifier.
<b>Yield</b>	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: 24-Jan-06

**STL Richland STLRL**

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

Report No. : 31187

SDG No: J00048

Batch	Client Id Work Order	Parameter	Result +- Uncertainty ( 2s)	Qual	Units	Yield	MDC or MDA	CRDL	RPD
6018039	7196_CR6								
	J10M19								
	HVR4K1AA	HEXCHROME	1.18E-01 +- 0.0E+00		mg/L	N/A	2.00E-03	2.00E-03	
	J10M61								
	HVR4G1AA	HEXCHROME	1.23E-01 +- 0.0E+00		mg/L	N/A	2.00E-03	2.00E-03	
	HVR4G1AE	HEXCHROME	1.24E-01 +- 0.0E+00		mg/L	N/A	2.00E-03	2.00E-03	0.8
	J11165								
	HVR4J1AA	HEXCHROME	2.00E-03 +- 0.0E+00	U	mg/L	N/A	2.00E-03	2.00E-03	
No. of Results: 4									

STL Richland  
rptSTLRchSaSum  
mary2 V4.14.4 A97

RPD - Relative Percent Difference.

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**  
**STL Richland STLR**  
 Ordered by Method, Batch No, QC Type,.

Date: 24-Jan-06

Report No. : 31187

SDG No.: J00048

Batch	Work Order	Parameter	Result +- Uncertainty ( 2s)	Qual	Units	Yield	Recovery	Bias	MDC MDA
7196_CR6									
6018039 MATRIX SPIKE									
	HVR4G1AC	HEXCHROME	5.55E-01 +- 0.0E+00		mg/L	N/A	106%	0.1	2.00E-03
	HVR4G1AD	HEXCHROME	5.56E-01 +- 0.0E+00		mg/L	N/A	106%	0.1	2.00E-03
6018039 LCS									
	HVTFQ1AC	HEXCHROME	5.17E-01 +- 0.0E+00		mg/L	N/A	103%	0.0	2.00E-03
6018039 BLANK QC									
	HVTFQ1AA	HEXCHROME	2.00E-03 +- 0.0E+00	U	mg/L	N/A			2.00E-03
No. of Results: 4									

STL Richland      Bias    - (Result/Expected)-1 as defined by ANSI N13.30.  
 rptSTLRchQcSummary V4.14.4 A97      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: 24-Jan-06

## SAMPLE RESULTS

Lab Name: STL Richland

SDG: J00048

Collection Date: 1/17/2006 9:40:00 AM

Lot-Sample No.: J6A170282-3

Report No.: 31187

Received Date: 1/17/2006 2:30:00 PM

Client Sample ID: J10M19

COC No.: RC-048-52

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: 6018039	7196_CR6				Work Order: HVR4K1AA		Report DB ID: 9HVR4K10					
HEXCHROME	<b>1.18E-01</b>			0.0E+00	2.00E-03	mg/L	N/A	(59.)	1/18/06		100.0	
							2.00E-03	N/A			ML	

No. of Results: 1

Comments:

STL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptSTLRchSample 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.  
 V4.14.4 A97

**FORM I**  
**SAMPLE RESULTS**

Date: 24-Jan-06

Lab Name: STL Richland

SDG: J00048

Collection Date: 1/17/2006 9:40:00 AM

Lot-Sample No.: J6A170282-1

Report No.: 31187

Received Date: 1/17/2006 2:30:00 PM

Client Sample ID: J10M61

COC No.: RC-048-70

Matrix: WATER

Ordered by Client Sample ID, Batch No.

Parameter	Result	Count 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: 6018039	7196_CR6				Work Order: HVR4G1AA		Report DB ID: 9HVR4G10					
HEXCHROME	<b>1.23E-01</b>			0.0E+00	2.00E-03	mg/L	N/A	(61.5)	1/18/06		100.0	
							2.00E-03	N/A			ML	

No. of Results: 1

Comments:

**FORM I**  
**SAMPLE RESULTS**

Date: 24-Jan-06

Lab Name: STL Richland  
Lot-Sample No.: J6A170282-2  
Client Sample ID: J11165

SDG: J00048  
Report No. : 31187  
COC No. : RC-048-122

Collection Date: 1/17/2006 11:50:00 AM  
Received Date: 1/17/2006 2:30:00 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: 6018039	7196_CR6				Work Order: HVR4J1AA		Report DB ID: 9HVR4J10					
HEXCHROME	2.00E-03	U		0.0E+00	2.00E-03	mg/L	N/A	1.	1/18/06		100.0	
							2.00E-03	N/A			ML	

No. of Results: 1

Comments:

STL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
rptSTLRchSample 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.  
V4.14.4 A97

## FORM II

Date: 24-Jan-06

## DUPLICATE RESULTS

Lab Name: STL Richland

SDG: J00048

Collection Date: 1/17/2006 9:40:00 AM

Lot-Sample No.: J6A170282-1

Report No.: 31187

Received Date: 1/17/2006 2:30:00 PM

Client Sample ID: J10M61

COC No.: RC-048-70

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	Aliquot Size	Primary Detector
Batch: 6018039	7196_CR6				Work Order: HVR4G1AE							
HEXCHROME	1.24E-01			0.0E+00	2.00E-03	mg/L	N/A	(62.)	1/18/06		100.0	
	1.23E-01			RPD 0.8			2.00E-03	N/A			ML	
									Report DB ID: HVR4G1ER			
									Orig Sa DB ID: 9HVR4G10			

No. of Results: 1    Comments:

STL Richland    RPD - Relative Percent Difference.

rptSTLRchDupV4.1    MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
4.4 A97

FORM II  
BLANK RESULTS

Date: 24-Jan-06

Lab Name: STL Richland  
Matrix: WATER

SDG: J00048  
Report No. : 31187

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	Allquot Size	Primary Detector
Batch: 6018039	7196_CR6				Work Order: HVTFQ1AA	Report DB ID: HVTFQ1AB						
HEXCHROME	2.00E-03	U		0.0E+00	2.00E-03	mg/L	N/A	1.	1/18/06		100.0	
						2.00E-03		N/A			ML	

No. of Results: 1      Comments:

**FORM II**  
**LCS RESULTS**

Date: 24-Jan-06

Lab Name: STL Richland

SDG: J00048

Matrix: WATER

Report No.: 31187

Parameter	Result	Count Qual Error ( 2 s)	Total Uncert( 2 s)	MDC MDA	Report Unit	Yield	Expected Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 6018039	7196_CR6				Work Order: HVTFQ1AC		Report DB ID: HVTFQ1AS					
HEXCHROME	5.17E-01		0.0E+00	2.00E-03	mg/L	N/A	5.00E-01		103%	1/18/06	100.0	
						Rec Limits:	85	115	0.0		ML	
No. of Results: 1	Comments:											

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.

rptSTLRchLcs  
V4.14.4 A97

FORM II  
MATRIX SPIKE RESULTS

Date: 24-Jan-06

Lab Name: STL Richland

SDG: J00048

Lot-Sample No.: J6A170282-1

Report No.: 31187

Matrix: WATER

Parameter	SpikeResult, Orig Rst	Count Qual 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: 6018039 HEXCHROME	Work Order: HVR4G1AC 5.55E-01 1.23E-01	Report DB ID: HVR4G1CW	Orig Sa DB ID: 9HVR4G10	0.0E+00	2.00E-03 mg/L	N/A	105.51%	5.26E-01	1/18/06	100.0 ML	7196_CR6	
Batch: 6018039 HEXCHROME	Work Order: HVR4G1AD 5.56E-01 6.78E-01	Report DB ID: HVR4G1DW	Orig Sa DB ID: HVR4G1CW	0.0E+00	2.00E-03 mg/L	N/A	105.70%	5.26E-01	1/18/06	100.0 ML	7196_CR6	

Number of Results: 2

Comments:

STL Richland RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.  
 rptSTLRchMs Bias - (Result/Expected)-1 as defined by ANSI N13.30.  
 V4.14.4 A97

## FORM II

Date: 24-Jan-06

## MATRIX SPIKE DUPLICATE RESULTS

Lab Name: STL Richland

SDG: J00048

Lot-Sample No.: J6A170282-1

Report No.: 31187

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	Primary Detector
Batch: 6018039	7196_CR6			Work Order: HVR4G1AC		Report DB ID: HVR4G1CW		Orig Sa DB ID: HVR4G1DW					
HEXCHROME	5.55E-01			0.0E+00	2.00E-03	mg/L	N/A	105.51%	5.26E-01		1/18/06	100.0	
	5.56E-01	RPD	0.2									ML	
Batch: 6018039	7196_CR6			Work Order: HVR4G1AD		Report DB ID: HVR4G1DW		Orig Sa DB ID: HVR4G1CW					
HEXCHROME	5.56E-01			0.0E+00	2.00E-03	mg/L	N/A	105.70%	5.26E-01		1/18/06	100.0	
	5.55E-01	RPD	0.2									ML	
No. of Results: 2	Comments:												

STL Richland RER - Replicate Error Ratio =  $(S-D)/[\sqrt{(sq(TPUs)+sq(TPUd))}]$  as defined by ICPT BOA.  
 rptSTLRchMsDup2 Bias - (Result/Expected)-1 as defined by ANSI N13.30.  
 V4.14.4 A97

<b>Work Order Number(s): HVR4G, HVR4J, HVR4K</b>				
<b>Lab Sample Numbers or SDG: J00048</b>				
<b>Method/Test/Parameter: Cr+6 in Water / RICH-WC-5003, Rev 7</b>				
<b>Review Item</b>	<b>Yes (✓)</b>	<b>No (✓)</b>	<b>N/A (✓)</b>	<b>2<sup>nd</sup> Level Review (✓)</b>
<b>A. Initial Calibration</b>	✓			✓
1. Performed at required frequency with required number of levels?	✓			✓
2. Correlation coefficient within QC limits?	✓			✓
3. Initial calibration verification (ICV) analyzed immediately after calibration and results within QC limits?	✓			✓
4. Initial calibration blank (ICB) analyzed immediately after ICV and concentrations of all parameters $\leq$ reporting limit?	✓			✓
<b>B. Continuing Calibration</b>	✓			✓
1. CCV analyzed at required frequency and all parameters within QC limits?	✓			✓
2. CCB analyzed at required frequency and all results $\leq$ reporting limit?	✓			✓
<b>C. Sample Analysis</b>	✓			✓
1. Were any samples with concentrations above the linear range for any parameter diluted and reanalyzed?	✓			✓
2. Were all sample holding times met?	✓			✓
<b>D. QC Samples</b>	✓			✓
1. All results for the preparation blank below limits?	✓			✓
2. MS or MS/MSD recoveries within QC limits and %RPD (for MSD) acceptable?	✓			✓
3. LCS percent recovery within QC limits and %RPD (for LCSD) acceptable?	✓			✓
4. Analytical spikes within QC limits where applicable?			✓	✓
5. ICP only: One serial dilution performed per SDG?			✓	✓
6. ICP only: CRDL standard (CRI or CRA) analyzed at required frequency?			✓	✓
7. ICP only: Interference check samples (ICSA, ICSAB) and HICAL analyzed at the required frequencies and within QC limits?			✓	✓

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

Comments on any "No" response:

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Analyst: D. Davis

Date: 1/18/06

Second-Level Review: [Signature]

Date: 1-31-06

BHI 27023

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-048-70		Page 1 of 1	
Collector <b>DURATEK</b> <b>R. BREWINGTON</b>		Company Contact <b>JOAN KESSNER</b>		Telephone No. 375-4688		Project Coordinator <b>KESSNER, JH</b>		Price Code <b>7N</b> Data Turnaround <b>45 Days</b>	
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa		Sampling Location 199-K-132		SAF No. RC-048		Air Quality <input type="checkbox"/>			
Ice Chest No. <b>ERL-04-003</b>		Field Logbook No. EL-1592		COA BESRAS6520		Method of Shipment GOV. VEHICLE			
Shipped To Severn Trent Incorporated, Richland		Offsite Property No. N/A		Bill of Lading/Air Bill No. N/A					
<b>POSSIBLE SAMPLE HAZARDS/REMARKS</b> POTENTIAL RADIOACTIVE J00048 Special Handling and/or Storage <b>J6A170282</b> COOL 4C Dec 03 03 06		Preservation Type of Container No. of Container(s) Volume		Cool 4C G/P 1 500mL					
SAMPLE ANALYSIS				Chromium Hex - 7196					
Sample No.	Matrix *	Sample Date	Sample Time						
J10M61 <b>HVR46</b>	WATER	<b>JAN 17 2006</b>	<b>0940</b>	<b>X</b>					
CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *	
Received By <b>DURATEK</b> <b>R. BREWINGTON</b>		Date/Time <b>1215</b> <b>1-17-06</b>		Received By/Store In <b>RZ Steffler R.Z. Steffler</b>		Date/Time <b>1215</b> <b>1-17-06</b>		9.50c  Matrix * S=Soil SE=Solomon SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Dryn Solids DL=Dryn Liquids T=Truse WI=Wipe L=Liquid V=Vegetation X=Other	
Relinquished By/Removed From <b>RZ Steffler R.Z. Steffler</b>		Date/Time <b>1430</b> <b>1-17-06</b>		Received By/Store In <b>Jeff Jensen</b>		Date/Time <b>11706 H30</b>			
Relinquished By/Removed From		Date/Time		Received By/Store In		Date/Time			
Relinquished By/Removed From		Date/Time		Received By/Store In		Date/Time			
Relinquished By/Removed From		Date/Time		Received By/Store In		Date/Time			
LABORATORY SECTION	Received By	Title		Date/Time					
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By		Date/Time					

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-048-122	Page 1 of 1
Collector <b>DUMATEX</b> <b>R. BREWINGTON</b>		Company Contact JOAN KESSNER		Telephone No. 375-4688		Project Coordinator KESSNER, JH	
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa		Sampling Location 199-N-73		SAF No. RC-048		Price Code <b>7N</b> Data Turnaround <b>45 Days</b>	
Ice Chest No. <b>AFS-04-021</b>		Field Logbook No. EL-1592		COA BESRAS6520		Method of Shipment GOV. VEHICLE	
Shipped To Severn Trent Incorporated, Richland		Offsite Property No. N/A		Bill of Lading/Air Bill No. N/A			
POSSIBLE SAMPLE HAZARDS/REMARKS <b>POTENTIAL RADIOACTIVE</b>		Preservation		Cool 4C			
Special Handling and/or Storage <b>COOL 4C</b>		Type of Container		G/P			
		No. of Container(s)		1			
		Volume		500mL			
SAMPLE ANALYSIS				Chromium Hex - 7196			
Sample No.	Matrix *	Sample Date	Sample Time				
J11165	HVR45	JAN 17 2006	1150	X			
CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS			Matrix *
Relinquished By/Removed From <b>R. Brewington</b>		Date/Time 1215 1-17-06	Received By/Stored In <b>RZ Steffler R.Z. Steffler</b>		Date/Time 1-17-06	11.0 °C	
Relinquished By/Removed From <b>RZ Steffler R.Z. Steffler</b>		Date/Time 1-17-06	Received By/Stored In <b>Jeff Jensen</b>		Date/Time 01700 1/30		
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time		
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	

<b>Washington Closure Hanford</b>		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>				RC-048-52	Page 1 of 1
Collector <b>DURATEK</b> 7 P BREWINGTON		Company Contact JOAN KESSNER		Telephone No. 375-4688		Project Coordinator KESSNER, JH	
Project Designation 100 Area and 300 Area Component of the RCBRA Water Sa		Sampling Location 199-K-132		SAF No. RC-048		Price Code <b>7N</b> Data Turnaround <b>45 Days</b>	
Ice Chest No. <b>AFS-04-006</b>		Field Logbook No. EL-1592		COA		Method of Shipment GOV. VEHICLE	
Shipped To Severn Trent Incorporated, Richland		Offsite Property No. N/A		Bill of Lading/Air Bill No. N/A			
<b>POSSIBLE SAMPLE HAZARDS/REMARKS</b> POTENTIAL RADIOACTIVE  <b>Special Handling and/or Storage</b> COOL 4C		Preservation Cool 4C  Type of Container G/P  No. of Container(s) 1  Volume 500mL					
<b>SAMPLE ANALYSIS</b>							
Sample No.	Matrix *	Sample Date	Sample Time				
J10M19 <i>HYKAK</i>	WATER	JAN 17 2006	0940	X			
<b>CHAIN OF POSSESSION</b>				<b>SPECIAL INSTRUCTIONS</b>			<b>Matrix *</b> S=Soil SE=Settlement SO=Solid SI=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/Removed From <i>R. J. Steffler</i>		Date/Time 1215 1-17-06	Received By/Stored In <i>R. J. Steffler</i>		Date/Time 1215 1-17-06		
Relinquished By/Removed From <i>R. J. Steffler</i>		Date/Time 1430 1-17-06	Received By/Stored In <i>Jeff Jensen</i>		Date/Time 011706 1430		
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time		
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time		
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time		
<b>LABORATORY SECTION</b>	Received By	Title			Date/Time		
<b>FINAL SAMPLE DISPOSITION</b>	Disposal Method	Disposed By			Date/Time		

**Sample Check-in List**

Date/Time Received: 01/17/06 1430

Client: BITE SDG #: J10098 NA  SAF #: AC-198 NA

Work Order Number: J6A170282 Chain of Custody # AC-198-70, 122, 52

Shipping Container ID: ERC 01 003 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: 9.5 - 11.0 NA  5. Vermiculite/packing materials is NA  Wet  Dry
6. Number of samples in shipping container: 3
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  adjusted pH
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: [Signature] Date: 01/17/06

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

01/18/2006 5:56:13 AM

### Sample Preparation/Analysis

Balance Id:

127642, Bechtel Hanford, Inc., Bechtel

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

Pipet #:

Report Due: 03/03/2006

Sep1 DT/Tm Tech:

Batch: 6018039 WATER mg/L  
SEQ Batch, Test: None

PM, Quote: HC , 27023

Sep2 DT/Tm Tech:

Prep Tech:

J00048

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 HVR4G-1-AA J6A170282-1-SAMP <del>XXXXXXXXXXXXXXXXXXXX</del> 01/17/2006 09:40								
		AmtRec: 500P	#Containers: 1			Scr:	Alpha:	Beta:
2 HVR4G-1-AC-S J6A170282-1-MS <del>XXXXXXXXXXXXXXXXXXXX</del> 01/17/2006 09:40								
		AmtRec: 500P	#Containers: 1			Scr:	Alpha:	Beta:
3 HVR4G-1-AD-D J6A170282-1-MSD <del>XXXXXXXXXXXXXXXXXXXX</del> 01/17/2006 09:40								
		AmtRec: 500P	#Containers: 1			Scr:	Alpha:	Beta:
4 HVR4G-1-AE-X J6A170282-1-DUP <del>XXXXXXXXXXXXXXXXXXXX</del> 01/17/2006 09:40								
		AmtRec: 500P	#Containers: 1			Scr:	Alpha:	Beta:
5 HVR4J-1-AA J6A170282-2-SAMP <del>XXXXXXXXXXXXXXXXXXXX</del> 01/17/2006 11:50								
		AmtRec: 500P	#Containers: 1			Scr:	Alpha:	Beta:
6 HVR4K-1-AA J6A170282-3-SAMP <del>XXXXXXXXXXXXXXXXXXXX</del> 01/17/2006 09:40								
		AmtRec: 500P	#Containers: 1			Scr:	Alpha:	Beta:
7 HVTFQ-1-AA-B J6A180000-39-BLK <del>XXXXXXXXXXXXXXXXXXXX</del> 01/17/2006 09:40								
		AmtRec:	#Containers: 1			Scr:	Alpha:	Beta:

22

STL RICHLAND

1/18/2006 5:56:14 AM

### Sample Preparation/Analysis

Balance Id: \_\_\_\_\_

88 NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION

Pipet #: \_\_\_\_\_

EA Chromium, Hexavalent (7196A)

5I CLIENT: HANFORD

Sep1 DT/Tm Tech: \_\_\_\_\_

Report Due: 03/03/2006

Sep2 DT/Tm Tech: \_\_\_\_\_

Batch: 6018039

mg/L

SEQ Batch, Test: None

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:
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8 HVTFQ-1-AC-C

J6A180000-39-LCS



01/17/2006 09:40

Amt/Rec

#Containers: 1

Scr.

Alpha:

Beta:

#### Comments:

#### All Clients for Batch:

127642, Bechtel Hanford, Inc.

Bechtel Hanford, Inc.

, EC , 27023

#### HVR4G1AA-SAMP Constituent List:

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

#### HVR4G1AC-MS Constituent List:

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

#### HVR4G1AD-MSD:

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

#### HVTFQ1AA-BLK:

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

#### HVTFQ1AC-LCS:

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

#### HVR4G1AA-SAMP Calc Info:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

#### HVR4G1AC-MS Calc Info:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

#### HVR4G1AD-MSD:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

#### HVTFQ1AA-BLK:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

#### HVTFQ1AC-LCS:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Approved By \_\_\_\_\_

Date: \_\_\_\_\_