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RECEIVED AUGUST 14, 2008

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FLUOR

Memorandum

M4W41-SLF-08-823

To:	H. Hampt	E6-35	Date:	August 14, 2008
From:	S. L. Fitzgerald, Manager WSCF Analytical Lab			

cc: w/Attachments

T. F. Dale	S3-30	P. D. Mix	S3-30
D. Felmy (PNNL)	K6-75	J. E. Trechter	S3-30
A. J. Kopriva	S3-30	S. J. Trent	E6-35
H. K. Meznarich	S3-30	File/LB	

Subject: FINAL RESULTS FOR SAMPLE DELIVERY GROUP WSCF20081422

Reference:
1) Letter of Instruction for Analytical Services for the Groundwater Performance Assessment Project and Analytical Laboratory Transition Plan, FH-0602422, September 19, 2006
2) HNF-SD-CD-QAPP-017, Rev. 9, Waste Sampling & Characterization Facility Quality Assurance Plan

This transmittal contains the following information for sample delivery group WSCF20081422:

- Cover Sheet (Attachment 1)
- Narrative (Attachment 2)
- Analytical Results (Attachment 3)
- Sample Receipt Information (Attachment 4)

SLF/grf

Attachments 4

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ATTACHMENT 1

COVER SHEET

Consisting of 2 pages
Including cover page

WSCF SAF NUMBER CROSS REFERENCE

Group#: WSCF20081422
Data Deliverable Date: 13-aug-2008
Data Deliverable: Cover Sheet

SAF#	Sample ID	WSCF#	Matrix
S08-007	B1W236	W08P003468	WATER
W08-007	B1W314	W08P003469	WATER

M4W41-SLF-08-823

ATTACHMENT 2

NARRATIVE

Consisting of 3 pages
Including cover page

Introduction

Two groundwater samples were received at the WSCF Laboratory on July 14, 2008. Samples were analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Groundwater Remediation Program – Letter of Instruction*, referenced in the cover letter.

The narrative (Attachment 2) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 3) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information as applicable. Copies of the chain of custody and sample receipt documentation are included as Attachment 4.

It should be noted that the attached chain of custody was stamped "ICED" by the WSCF Laboratory Sample Custodian during sample receiving, indicating the presence of ice in the sample container.

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report,* pages 11 through 12, for a complete listing of approved analytical methods.

Inorganic Comments

Anions – Hold time requirements for this analysis were met. A Duplicate, Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group per GRP Letter of Instruction. See pages 15 through 17 for QC details. Analytical Note(s):

- Sample results were D flagged if dilution(s) were required.
- Sample results that were less than the reportable limit, however greater than the method detection limit were B flagged.

All QC controls are within the established limits.

ICP-MS Metals – The hold time requirements for this analysis were met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group per the GRP Letter of Instruction. See page 18 for QC details. Analytical Note(s):

- Matrix Spikes and Matrix Spike Duplicates were analyzed on samples B1V9X7 (SDG# 20081363) and B1V7P9 (SDG# 20081455).

All QC controls are within the established limits.

Total Alkalinity – The hold time requirement for this analysis was met. A Duplicate and Laboratory Control Sample were analyzed with this delivery group per GRP Letter of Instruction. See page 19 for QC details. Analytical Note(s):

- Duplicates were analyzed on samples B1W347 (SDG# 20081373) and B1VMH3 (SDG# 20081423).

All QC controls are within the established limits.

Organic Comments

VOA – The hold time requirement for this analysis was met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample, were analyzed with this delivery group per the GRP Letter of Instruction. See pages 22 through 24 for QC details.

All QC controls are within the established limits.

I certify that this data package is in compliance with the LOI, 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 Analytical Manager and Client Services as verified by the following signatures.

Scot L. Fitzgerald
WSCF Analytical Laboratory Manager

Pauline D. Mix
WSCF Client Services

M4W41-SLF-08-823

ATTACHMENT 3

ANALYTICAL RESULTS

Consisting of 18 pages
Including cover page

WSCF
ANALYTICAL RESULTS REPORT

for

GPAP
Richland, WA 99352

Attention: Steve Trent E6-35

Analytical: S. Fitzgerald 8/14/08

Client Services: P.D. Mix 8/14/2008

All results are reported on an "as received" basis unless otherwise noted in the comment section.

This information is intended for the use of the addressee only. If the reader of this report is not the intended recipient or is not authorized by the recipient to receive the report, you are hereby notified that any dissemination, distribution or copying of this report is strictly prohibited. If you have received this report in error, please notify WSCF Laboratory immediately by telephone at (509) 373-7020 or (509) 531-8004. Information designation of this report is the responsibility of the customer.

Report#: WSCF20081422
Report Date: 13-aug-2008
Report WGPP/ver. 5.2
GPAP

w13qlog v4.2 13-aug-2008 11:42:46

Department: Inorganic

W13q Worklist/Batch/QC Report for Group# WSCF20081422

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
37068	2	37493	41860	BLANK		Anions by Ion Chromatography
37068	15	37493	41860	BLANK		Anions by Ion Chromatography
37068	23	37493	41860	BLANK		Anions by Ion Chromatography
37068	3	37493	41860	LCS		Anions by Ion Chromatography
37068	16	37493	41860	LCS		Anions by Ion Chromatography
37068	5	37493	41860	DUP	W08P003468	Anions by Ion Chromatography
37068	6	37493	41860	MS	W08P003468	Anions by Ion Chromatography
37068	7	37493	41860	MSD	W08P003468	Anions by Ion Chromatography
37068	4	37493	41860	SAMPLE	W08P003468	Anions by Ion Chromatography
37068	7	37493	41860	SPK-RPD	W08P003468	Anions by Ion Chromatography
37068	18	37493	41860	DUP	W08P003486	Anions by Ion Chromatography
37068	19	37493	41860	MS	W08P003486	Anions by Ion Chromatography
37068	21	37493	41860	MSD	W08P003486	Anions by Ion Chromatography
37068	21	37493	41860	SPK-RPD	W08P003486	Anions by Ion Chromatography
37135	1	37562	41899	LCS		Total Alkalinity as mg/L CaCO3
37135	13	37562	41899	LCS		Total Alkalinity as mg/L CaCO3
37135	24	37562	41899	LCS		Total Alkalinity as mg/L CaCO3
37135	36	37562	41899	LCS		Total Alkalinity as mg/L CaCO3
37135	44	37562	41899	LCS		Total Alkalinity as mg/L CaCO3
37135	4	37562	41899	DUP	W08P003351	Total Alkalinity as mg/L CaCO3
37135	21	37562	41899	SAMPLE	W08P003468	Total Alkalinity as mg/L CaCO3
37135	26	37562	41899	DUP	W08P003485	Total Alkalinity as mg/L CaCO3
37445	1	37876	42191	BLANK		ICP-200.8 MS All possible meta
37445	2	37876	42191	LCS		ICP-200.8 MS All possible meta
37445	4	37876	42191	MS	W08P003344	ICP-200.8 MS All possible meta
37445	5	37876	42191	MSD	W08P003344	ICP-200.8 MS All possible meta
37445	5	37876	42191	SPK-RPD	W08P003344	ICP-200.8 MS All possible meta
37445	21	37876	42191	SAMPLE	W08P003468	ICP-200.8 MS All possible meta
37445	22	37876	42191	SAMPLE	W08P003469	ICP-200.8 MS All possible meta
37445	10	37876	42191	MS	W08P003521	ICP-200.8 MS All possible meta
37445	11	37876	42191	MSD	W08P003521	ICP-200.8 MS All possible meta
37445	11	37876	42191	SPK-RPD	W08P003521	ICP-200.8 MS All possible meta

w13qlog v4.2 13-aug-2008 11:42:46

Department: Organic

W13q Worklist/Batch/QC Report for Group# WSCF20081422

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
			42319	BLANK		VOA Ground Water Protection
			42319	LCS		VOA Ground Water Protection
			42319	MS	W08P003469	VOA Ground Water Protection
			42319	MSD	W08P003469	VOA Ground Water Protection
			42319	SAMPLE	W08P003469	VOA Ground Water Protection
			42319	SPK-RPD	W08P003469	VOA Ground Water Protection
			42319	SURR	W08P003469	VOA Ground Water Protection

WSCF
METHOD REFERENCES REPORT

Department: Inorganic

The results provided in this report were generated using the following WSCF Laboratory procedures. For your convenience, this table provides a listing of the regulatory or industry methods that are referenced by each of these WSCF procedures. Please note that the most recent version of the regulatory or industry method is listed here even though the WSCF procedure may reference an older version of the method. Also, a reference to a regulatory or industry method here does not necessarily indicate a verbatim implementation of that method.

LA-505-412 LA-505-412: DETERMINATION OF TRACE ELEMENTS IN WATERS AND WASTES BY INDUCTIVELY

EPA-600/R-94-111 200.8	DETERMINATION OF TRACE ELEMENTS IN WATERS AND WASTES BY INDUCTIVELY COUPLED PLAS
HEIS 200.8_METALS_ICPMS	Inductively Coupled Plasma - Mass Spectrometry
HEIS RADISOTOPES_ICPMS	Radioisotopes by ICP/MS

LA-531-411 LA-531-411: ALKALINITY (TITRIMETRIC)

HEIS 2320B	Alkalinity
Standard Methods 2320B	Alkalinity

LA-533-410 LA-533-410: ANION ANALYSIS BY ION CHROMATOGRAPHY

EPA-600/R-94-111 300.0	DETERMINATION OF INORGANIC ANIONS BY ION CHROMATOGRAPHY
HEIS 300.0_ANIONS_IC	Determination of Inorganic Anions by Ion Chromatography

Note: A complete list of WSCF analytical procedures and referenced regulatory or industry methods is available online at http://www2.rl.gov/phmc/as-dol.

WSCF
METHOD REFERENCES REPORT

Department: Organic

The results provided in this report were generated using the following WSCF Laboratory procedures. For your convenience, this table provides a listing of the regulatory or industry methods that are referenced by each of these WSCF procedures. Please note that the most recent version of the regulatory or industry method is listed here even though the WSCF procedure may reference an older version of the method. Also, a reference to a regulatory or industry method here does not necessarily indicate a verbatim implementation of that method.

LA-523-455	LA-523-455: VOLATILE SAMPLE ANALYSIS BY SW-846	
	EPA SW-846 8000B	DETERMINATIVE CHROMATOGRAPHIC SEPARATIONS
	EPA SW-846 8260B	VOLATILE ORGANIC COMPOUNDS BY GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)
	HEIS 8260_VOA_GCMS	Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Note: A complete list of WSCF analytical procedures and referenced regulatory or industry methods is available online at http://www2.rl.gov/phmc/as-dol.

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: S08-007
Sample # W08P003468
Client ID: B1W236 TRENT WSCF
Matrix: WATER

Group #: WSCF20081422
Department: Inorganic
Sampled: 07/13/08
Received: 07/14/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Anions by Ion Chromatography											
Fluoride	16984-48-8	LA-533-410	D	0.271	mg/L			2.00	0.042		07/14/08
Chloride	16887-00-6	LA-533-410	D	5.24	mg/L			2.00	0.22		07/14/08
Nitrogen in Nitrite	NO2-N	LA-533-410	BD	0.0778	mg/L			2.00	0.020		07/14/08
Nitrogen in Nitrate	NO3-N	LA-533-410	D	2.43	mg/L			2.00	0.072		07/14/08
Sulfate	14808-79-8	LA-533-410	D	22.7	mg/L			2.00	0.15		07/14/08
ICP-200.8 MS All possible meta Prep											**08/04/08**
ICP-200.8 MS All possible meta											
Uranium	7440-61-1	LA-505-412		53.1	ug/L			1.00	0.0500		08/05/08
Total Alkalinity as mg/L CaCO3											
Total Alkalinity as mg/L CaCO3	ALKALINITY	LA-531-411		84.0	mg/L			1.00	1.0		07/16/08

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
DF = Dilution Factor

B - The analyte < the RDL but > = the IDL/MDL (inorg)
U - Analyzed for but not detected above limiting criteria.(org)
D - Analyte was identified at a secondary dilution factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: W08-007
Sample # W08P003469
Client ID: B1W314 TRENT **Matrix:** WATER

Group #: WSCF20081422
Department: Inorganic
Sampled: 07/13/08
Received: 07/14/08

Test Performed	CAS #	WSCF Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
ICP-200.8 MS All possible meta Prep											**08/04/08**
ICP-200.8 MS All possible meta											
Uranium	7440-61-1	LA-505-412		0.0900	ug/L			1.00	0.0500		08/05/08

MDL=Minimum Detection Limit
RQ=Result Qualifier
TP Err=Total Propagated Error
DF=Dilution Factor

B - The analyte < the RDL but > = the IDL/MDL (inorg)
U - Analyzed for but not detected above limiting criteria.(org)
D - Analyte was identified at a secondary dilution factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081422
Matrix: WATER
Test: Anions by Ion Chromatography

Sample Date: 07/13/08
Receive Date:07/14/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08P003468											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Chloride	16887-00-6	5.2564		RPD			0.345	20.000		07/14/08
DUP	Fluoride	16984-48-8	0.2815		RPD			3.653	20.000		07/14/08
DUP	Nitrogen in Nitrite	NO2-N	8.67e-2		RPD			10.821	20.000		07/14/08
DUP	Nitrogen in Nitrate	NO3-N	2.4292		RPD			0.144	20.000		07/14/08
DUP	Sulfate	14808-79-8	22.6432		RPD			0.104	20.000		07/14/08
MS	Chloride	16887-00-6	0.9014	90.593	% Recov	80.000	120.000				07/14/08
MS	Fluoride	16984-48-8	0.56995	115.609	% Recov	80.000	120.000				07/14/08
MS	Nitrogen in Nitrite	NO2-N	0.44465	90.376	% Recov	80.000	120.000				07/14/08
MS	Nitrogen in Nitrate	NO3-N	0.4083	91.547	% Recov	80.000	120.000				07/14/08
MS	Sulfate	14808-79-8	1.83865	93.809	% Recov	80.000	120.000				07/14/08
MSD	Chloride	16887-00-6	0.9087	91.327	% Recov	80.000	120.000				07/14/08
MSD	Fluoride	16984-48-8	0.53785	109.097	% Recov	80.000	120.000				07/14/08
MSD	Nitrogen in Nitrite	NO2-N	0.4416	89.756	% Recov	80.000	120.000				07/14/08
MSD	Nitrogen in Nitrate	NO3-N	0.4208	94.350	% Recov	80.000	120.000				07/14/08
MSD	Sulfate	14808-79-8	1.9327	98.607	% Recov	80.000	120.000				07/14/08
SPK-RPD	Chloride	16887-00-6	91.327		RPD			0.807	20.000		07/15/08
SPK-RPD	Fluoride	16984-48-8	109.097		RPD			5.796	20.000		07/15/08
SPK-RPD	Nitrogen in Nitrite	NO2-N	89.756		RPD			0.688	20.000		07/15/08
SPK-RPD	Nitrogen in Nitrate	NO3-N	94.350		RPD			3.016	20.000		07/15/08
SPK-RPD	Sulfate	14808-79-8	98.607		RPD			4.987	20.000		07/15/08
Lab ID: W08P003486											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Chloride	16887-00-6	9.4042		RPD			0.329	20.000		07/15/08
DUP	Fluoride	16984-48-8	0.2608		RPD			0.115	20.000		07/15/08
DUP	Nitrogen in Nitrite	NO2-N	0.1151		RPD			14.430	20.000		07/15/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081422
Matrix: WATER
Test: Anions by Ion Chromatography

Sample Date: 07/13/08
Receive Date:07/14/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
DUP	Nitrogen in Nitrate	NO3-N	3.4551		RPD			2.509	20.000		07/15/08
DUP	Sulfate	14808-79-8	32.086		RPD			0.089	20.000		07/15/08
MS	Chloride	16887-00-6	0.885	88.945	% Recov	80.000	120.000				07/15/08
MS	Fluoride	16984-48-8	0.54185	109.909	% Recov	80.000	120.000				07/15/08
MS	Nitrogen in Nitrite	NO2-N	0.38435	78.120	% Recov	80.000	120.000				07/15/08
MS	Nitrogen in Nitrate	NO3-N	0.4725	105.942	% Recov	80.000	120.000				07/15/08
MS	Sulfate	14808-79-8	1.8705	95.434	% Recov	80.000	120.000				07/15/08
MSD	Chloride	16887-00-6	0.88365	88.809	% Recov	80.000	120.000				07/15/08
MSD	Fluoride	16984-48-8	0.559	113.387	% Recov	80.000	120.000				07/15/08
MSD	Nitrogen in Nitrite	NO2-N	0.38265	77.774	% Recov	80.000	120.000				07/15/08
MSD	Nitrogen in Nitrate	NO3-N	0.4709	105.583	% Recov	80.000	120.000				07/15/08
MSD	Sulfate	14808-79-8	1.76965	90.288	% Recov	80.000	120.000				07/15/08
SPK-RPD	Chloride	16887-00-6	88.809		RPD			0.153	20.000		07/15/08
SPK-RPD	Fluoride	16984-48-8	113.387		RPD			3.115	20.000		07/15/08
SPK-RPD	Nitrogen in Nitrite	NO2-N	77.774		RPD			0.444	20.000		07/15/08
SPK-RPD	Nitrogen in Nitrate	NO3-N	105.583		RPD			0.339	20.000		07/15/08
SPK-RPD	Sulfate	14808-79-8	90.288		RPD			5.542	20.000		07/15/08

BATCH QC

BLANK	Chloride	16887-00-6	<0.11	n/a	mg/L	0.000	0.030			U	07/15/08
BLANK	Chloride	16887-00-6	<0.11	n/a	mg/L	0.000	0.030			U	07/14/08
BLANK	Chloride	16887-00-6	<0.11	n/a	mg/L	0.000	0.030			U	07/15/08
BLANK	Fluoride	16984-48-8	<2.1e-2	n/a	mg/L	0.000	0.030			U	07/15/08
BLANK	Fluoride	16984-48-8	<2.1e-2	n/a	mg/L	0.000	0.030			U	07/14/08
BLANK	Fluoride	16984-48-8	<2.1e-2	n/a	mg/L	0.000	0.030			U	07/15/08
BLANK	Nitrogen in Nitrite	NO2-N	<9.9e-3	n/a	mg/L	0.000	0.020			U	07/15/08
BLANK	Nitrogen in Nitrite	NO2-N	<9.9e-3	n/a	mg/L	0.000	0.020			U	07/14/08
BLANK	Nitrogen in Nitrite	NO2-N	<9.9e-3	n/a	mg/L	0.000	0.020			U	07/15/08
BLANK	Nitrogen in Nitrate	NO3-N	<3.6e-2	n/a	mg/L	0.000	0.040			U	07/14/08
BLANK	Nitrogen in Nitrate	NO3-N	<3.6e-2	n/a	mg/L	0.000	0.040			U	07/15/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Inorganic**

SDG Number: WSCF20081422
Matrix: WATER
Test: Anions by Ion Chromatography

Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
BLANK	Nitrogen in Nitrate	NO3-N	<3.6e-2	n/a	mg/L	0.000	0.040			U	07/15/08
BLANK	Sulfate	14808-79-8	<7.7e-2	n/a	mg/L	0.000	0.200			U	07/14/08
BLANK	Sulfate	14808-79-8	<7.7e-2	n/a	mg/L	0.000	0.200			U	07/15/08
BLANK	Sulfate	14808-79-8	<7.7e-2	n/a	mg/L	0.000	0.200			U	07/15/08
LCS	Chloride	16887-00-6	198.9274	98.969	% Recov	80.000	120.000				07/14/08
LCS	Chloride	16887-00-6	197.1085	98.064	% Recov	80.000	120.000				07/15/08
LCS	Fluoride	16984-48-8	109.8549	110.296	% Recov	80.000	120.000				07/14/08
LCS	Fluoride	16984-48-8	106.0025	106.428	% Recov	80.000	120.000				07/15/08
LCS	Nitrogen in Nitrite	NO2-N	98.9374	99.535	% Recov	80.000	120.000				07/15/08
LCS	Nitrogen in Nitrite	NO2-N	99.6353	100.237	% Recov	80.000	120.000				07/14/08
LCS	Nitrogen in Nitrate	NO3-N	92.5302	102.697	% Recov	80.000	120.000				07/15/08
LCS	Nitrogen in Nitrate	NO3-N	92.3467	102.494	% Recov	80.000	120.000				07/14/08
LCS	Sulfate	14808-79-8	397.3028	100.329	% Recov	80.000	120.000				07/15/08
LCS	Sulfate	14808-79-8	396.2638	100.067	% Recov	80.000	120.000				07/14/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081422
Matrix: WATER
Test: ICP-200.8 MS All possible meta

Sample Date: 07/07/08
Receive Date:07/07/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08P003344											
BATCH QC ASSOCIATED WITH SAMPLE											
MS	Uranium	7440-61-1	34.82	87.050	% Recov	70.000	130.000				08/05/08
MSD	Uranium	7440-61-1	35.92	89.800	% Recov	70.000	130.000				08/05/08
SPK-RPD	Uranium	7440-61-1	89.800		RPD			3.110	20.000		08/05/08
Lab ID: W08P003521											
BATCH QC ASSOCIATED WITH SAMPLE											
MS	Uranium	7440-61-1	30.1	75.250	% Recov	70.000	130.000				08/05/08
MSD	Uranium	7440-61-1	32.8	82.000	% Recov	70.000	130.000				08/05/08
SPK-RPD	Uranium	7440-61-1	82.000		RPD			8.585	20.000		08/05/08
BATCH QC											
BLANK	Uranium	7440-61-1	<5e-2	n/a	ug/L					U	08/05/08
LCS	Uranium	7440-61-1	37.87	94.675	% Recov	85.000	115.000				08/05/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Inorganic**

SDG Number: WSCF20081422
Matrix: WATER
Test: Total Alkalinity as mg/L CaCO3

Sample Date: 07/08/08
Receive Date:07/08/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08P003351											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Total Alkalinity as mg/L CaCO3	ALKALINITY	125.3		RPD			0.000	20.000		07/16/08
Lab ID: W08P003485											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Total Alkalinity as mg/L CaCO3	ALKALINITY	141.8		RPD			0.071	20.000		07/16/08
BATCH QC											
LCS	Total Alkalinity as mg/L CaCO3	ALKALINITY	32.39	108.691	%Recove	80.000	120.000				07/16/08
LCS	Total Alkalinity as mg/L CaCO3	ALKALINITY	32.66	109.597	%Recove	80.000	120.000				07/16/08
LCS	Total Alkalinity as mg/L CaCO3	ALKALINITY	30.32	101.745	%Recove	80.000	120.000				07/16/08
LCS	Total Alkalinity as mg/L CaCO3	ALKALINITY	115.3	100.261	%Recove	80.000	120.000				07/16/08
LCS	Total Alkalinity as mg/L CaCO3	ALKALINITY	115.9	100.783	%Recove	80.000	120.000				07/16/08

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: W08-007
Sample # W08P003469
Client ID: B1W314 TRENT

Matrix: WATER

Group #: WSCF20081422
Department: Organic
Sampled: 07/13/08
Received: 07/14/08

Test Performed	CAS #	WSCF Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
VOA Ground Water Protection											
1,1-Dichloroethene	75-35-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/24/08
Trichloroethene	79-01-6	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/24/08
Benzene	71-43-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/24/08
Toluene	108-88-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/24/08
Chlorobenzene	108-90-7	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/24/08
1,1-Dichloroethane	75-34-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/24/08
Ethylbenzene	100-41-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/24/08
1,2-Dichloroethane	107-06-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/24/08
4-Methyl-2-Pentanone	108-10-1	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/24/08
Tetrachloroethene	127-18-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/24/08
Xylenes (total)	1330-20-7	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/24/08
Carbon tetrachloride	56-23-5	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/24/08
Acetone	67-64-1	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/24/08
Chloroform	67-66-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/24/08
1,1,1-Trichloroethane	71-55-6	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/24/08
Vinyl chloride	75-01-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/24/08
Methylenechloride	75-09-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/24/08
Carbon disulfide	75-15-0	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/24/08
2-Butanone	78-93-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/24/08
1,1,2-Trichloroethane	79-00-5	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/24/08
1-Butanol	71-36-3	LA-523-455	U	< 100	ug/L			1.00	1.0e+02		07/24/08
Tetrahydrofuran	109-99-9	LA-523-455	U	< 2.00	ug/L			1.00	2.0		07/24/08
trans-1,2-Dichloroethylene	156-60-5	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/24/08
cis-1,2-Dichloroethylene	156-59-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/24/08

MDL=Minimum Detection Limit
RQ=Result Qualifier
TP Err=Total Propagated Error
DF=Dilution Factor

B - The analyte < the RDL but > = the IDL/MDL (inorg)
U - Analyzed for but not detected above limiting criteria.(org)
D - Analyte was identified at a secondary dilution factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: W08-007
Sample # W08P003469
Client ID: B1W314 TRENT

Matrix: WATER

Group #: WSCF20081422
Department: Organic
Sampled: 07/13/08
Received: 07/14/08

Test Performed	CAS #	WSCF Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Ethyl cyanide	107-12-0	LA-523-455	U	< 2.00	ug/L			1.00	2.0		07/24/08
1,4-Dichlorobenzene	106-46-7	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/24/08

MDL=Minimum Detection Limit
RQ=Result Qualifier
TP Err=Total Propagated Error
DF=Dilution Factor

B - The analyte < the RDL but >= the IDL/MDL (inorg)
U - Analyzed for but not detected above limiting criteria.(org)
D - Analyte was identified at a secondary dilution factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Organic

SDG Number: WSCF20081422
Matrix: WATER
Test: VOA Ground Water Protection

Sample Date: 07/13/08
Receive Date:07/14/08

Lab ID: W08P003469
BATCH QC ASSOCIATED WITH SAMPLE

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
MS	1,1-Dichloroethene	75-35-4	28.340	113.000	% Recov	63.000	117.000				07/24/08
MS	Benzene	71-43-2	26.340	105.000	% Recov	75.000	129.000				07/24/08
MS	4-Bromofluorobenzene(Surr)	460-00-4	50.230	100.000	% Recov	75.000	125.000				07/24/08
MS	Chlorobenzene	108-90-7	26.530	106.000	% Recov	79.000	119.000				07/24/08
MS	1,2-Dichloroethane-d4(Surr)	17060-07-0	57.030	114.000	% Recov	75.000	125.000				07/24/08
MS	Toluene-d8(Surr)	2037-26-5	49.500	99.000	% Recov	75.000	125.000				07/24/08
MS	Toluene	108-88-3	26.740	107.000	% Recov	76.000	120.000				07/24/08
MS	Trichloroethene	79-01-6	22.260	89.000	% Recov	73.000	123.000				07/24/08
MSD	1,1-Dichloroethene	75-35-4	28.220	113.000	% Recov	63.000	117.000				07/24/08
MSD	Benzene	71-43-2	26.540	106.000	% Recov	75.000	129.000				07/24/08
MSD	4-Bromofluorobenzene(Surr)	460-00-4	50.400	101.000	% Recov	75.000	125.000				07/24/08
MSD	Chlorobenzene	108-90-7	26.880	108.000	% Recov	79.000	119.000				07/24/08
MSD	1,2-Dichloroethane-d4(Surr)	17060-07-0	55.900	112.000	% Recov	75.000	125.000				07/24/08
MSD	Toluene-d8(Surr)	2037-26-5	50.020	100.000	% Recov	75.000	125.000				07/24/08
MSD	Toluene	108-88-3	27.440	110.000	% Recov	76.000	120.000				07/24/08
MSD	Trichloroethene	79-01-6	23.130	92.500	% Recov	73.000	123.000				07/24/08
SPK-RPD	1,1-Dichloroethene	75-35-4	113.000		RPD			0.000	20.000		07/24/08
SPK-RPD	Benzene	71-43-2	106.000		RPD			0.948	20.000		07/24/08
SPK-RPD	4-Bromofluorobenzene(Surr)	460-00-4	101.000		RPD			0.995	20.000		07/24/08
SPK-RPD	Chlorobenzene	108-90-7	108.000		RPD			1.869	20.000		07/24/08
SPK-RPD	1,2-Dichloroethane-d4(Surr)	17060-07-0	112.000		RPD			1.770	20.000		07/24/08
SPK-RPD	Toluene-d8(Surr)	2037-26-5	100.000		RPD			1.005	20.000		07/24/08
SPK-RPD	Toluene	108-88-3	110.000		RPD			2.765	20.000		07/24/08
SPK-RPD	Trichloroethene	79-01-6	92.500		RPD			3.857	20.000		07/24/08
SURR	4-Bromofluorobenzene(Surr)	460-00-4	51.460	103.000	% Recov	75.000	125.000				07/24/08
SURR	1,2-Dichloroethane-d4(Surr)	17060-07-0	56.800	114.000	% Recov	75.000	125.000				07/24/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Organic

SDG Number: WSCF20081422
Matrix: WATER
Test: VOA Ground Water Protection

Sample Date: 07/13/08
Receive Date:07/14/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
SURR	Toluene-d8(Surr)	2037-26-5	50.520	101.000	% Recov	75.000	125.000				07/24/08
BATCH QC											
BLANK	1,1-Dichloroethane	75-34-3	< 1.0	n/a	ug/L					U	07/24/08
BLANK	1,1,1-Trichloroethane	71-55-6	< 1.0	n/a	ug/L					U	07/24/08
BLANK	1,1,2-Trichloroethane	79-00-5	< 1.0	n/a	ug/L					U	07/24/08
BLANK	1,1-Dichloroethene	75-35-4	< 1.0	n/a	ug/L					U	07/24/08
BLANK	1,2-Dichloroethane	107-06-2	< 1.0	n/a	ug/L					U	07/24/08
BLANK	1,4-Dichlorobenzene	106-46-7	< 1.0	n/a	ug/L					U	07/24/08
BLANK	1-Butanol	71-36-3	< 100	n/a	ug/L					U	07/24/08
BLANK	4-Methyl-2-Pentanone	108-10-1	< 1.0	n/a	ug/L					U	07/24/08
BLANK	Acetone	67-64-1	< 1.0	n/a	ug/L					U	07/24/08
BLANK	Benzene	71-43-2	< 1.0	n/a	ug/L					U	07/24/08
BLANK	4-Bromofluorobenzene(Surr)	460-00-4	51.440	103.000	% Recov	75.000	125.000				07/24/08
BLANK	Carbon disulfide	75-15-0	< 1.0	n/a	ug/L					U	07/24/08
BLANK	Carbon tetrachloride	56-23-5	< 1.0	n/a	ug/L					U	07/24/08
BLANK	Chloroform	67-66-3	< 1.0	n/a	ug/L					U	07/24/08
BLANK	Chlorobenzene	108-90-7	< 1.0	n/a	ug/L					U	07/24/08
BLANK	cis-1,2-Dichloroethylene	156-59-2	< 1.0	n/a	ug/L					U	07/24/08
BLANK	1,2-Dichloroethane-d4(Surr)	17060-07-0	57.540	115.000	% Recov	75.000	125.000				07/24/08
BLANK	trans-1,2-Dichloroethylene	156-60-5	< 1.0	n/a	ug/L					U	07/24/08
BLANK	Ethylbenzene	100-41-4	< 1.0	n/a	ug/L					U	07/24/08
BLANK	Ethyl cyanide	107-12-0	< 2.0	n/a	ug/L					U	07/24/08
BLANK	2-Butanone	78-93-3	< 1.0	n/a	ug/L					U	07/24/08
BLANK	Methylenechloride	75-09-2	< 1.0	n/a	ug/L					U	07/24/08
BLANK	Tetrachloroethene	127-18-4	< 1.0	n/a	ug/L					U	07/24/08
BLANK	Xylenes (total)	1330-20-7	< 1.0	n/a	ug/L	0.000	5.000			U	07/24/08
BLANK	Tetrahydrofuran	109-99-9	< 2.0	n/a	ug/L					U	07/24/08
BLANK	Toluene-d8(Surr)	2037-26-5	49.520	99.000	% Recov	75.000	125.000				07/24/08
BLANK	Toluene	108-88-3	< 1.0	n/a	ug/L					U	07/24/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Organic

SDG Number: WSCF20081422
Matrix: WATER
Test: VOA Ground Water Protection

Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
BLANK	Trichloroethene	79-01-6	< 1.0	n/a	ug/L					U	07/24/08
BLANK	Vinyl chloride	75-01-4	< 1.0	n/a	ug/L					U	07/24/08
LCS	1,1-Dichloroethene	75-35-4	28.810	115.000	% Recov	75.000	125.000				07/24/08
LCS	Benzene	71-43-2	27.800	111.000	% Recov	75.000	125.000				07/24/08
LCS	4-Bromofluorobenzene(Surr)	460-00-4	50.320	101.000	% Recov	75.000	125.000				07/24/08
LCS	Chlorobenzene	108-90-7	27.840	111.000	% Recov	75.000	125.000				07/24/08
LCS	1,2-Dichloroethane-d4(Surr)	17060-07-0	55.760	112.000	% Recov	75.000	125.000				07/24/08
LCS	Toluene-d8(Surr)	2037-26-5	50.520	101.000	% Recov	75.000	125.000				07/24/08
LCS	Toluene	108-88-3	28.000	112.000	% Recov	75.000	125.000				07/24/08
LCS	Trichloroethene	79-01-6	23.300	93.200	% Recov	75.000	125.000				07/24/08

M4W41-SLF-08-823

ATTACHMENT 4

SAMPLE RECEIPT INFORMATION

Consisting of 4 pages
Including cover page

Waste Sampling and Characterization Facility
P.O. BOX 1970 S3-30, Richland, WA 99352
PHONE: (509) 373-7004/FAX: (509) 373-7134

File 09
Due
8/13/08

ACKNOWLEDGMENT OF SAMPLES RECEIVED

GPAP

Richland, WA 99352
Attn: Steve Trent E6-35

Customer Code: PNNL-GPP
PO#: 122543
Group#: 20081422

The following samples were received from you on 07/14/08. They have been scheduled for the tests listed beside each sample. If this information is incorrect, please contact your service representative. Thank you for using Waste Sampling and Characterization Facility.

Sample#	Sample Id	Tests Scheduled	Matrix	Sample Date
W08P003468	B1W236		TRENT Water	07/13/0
		@2008	@IC-30 ALKALI	
W08P003469	B1W314		TRENT Water	07/13/0
		@2008	@VOA-GPP	

Test Acronym Description

Test Acronym	Description
@2008	ICP-200.8 MS All possible meta
@IC-30	Anions by Ion Chromatography
@VOA-GPP	VOA Ground Water Protection
ALKALI	Total Alkalinity as mg/L CaCO3

FLUOR HANFORD

8/13/08

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

S08-007-50

Collector: Scott E. Hamaker	Contact/Requester: Steve Trent	Telephone No.: 509-373-5869 MSIN FAX
SAF No.: S08-007	Sampling Origin: Hanford Site	Purchase Order/Charge Code
Project Title: SURV, JULY 2008	HNF-N-506 C7	Ice Chest No. Temp.
Shipped To (Lab): Waste Sampling & Characterization	Method of Shipment: Govt. Vehicle	Bill of Lading/Air Bill No.
Protocol: SURV	Priority: 30 Days PRIORITY	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)

20081422

SPECIAL INSTRUCTIONS Hold Time
Site-Wide Generator Knowledge Information Form applies.

Total Activity Exemption: Yes ☑ No ☐

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B1W236	W08P003418	W	7-13-08	0925	1x500-mL P	300.0_ANIONS_IC: List-1 (5)	Cool~4C
B1W236	↓	W	↓	↓	1x250-mL G/P	2320_ALKALINITY: Alkalinity (1)	Cool~4C
B1W236	↓	W	↓	↓	1x500-mL G/P	200.8_METALS_ICPMS: Uranium (1)	HNO3 to pH <2

ICED

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Scott E. Hamaker	Scott Hamaker		7-14-08 0945 ~~JUL 13 2008~~	FM Hall	FM Hall		7-14-08 0945 ~~JUL 13 2008~~
FM HALL			7-14-08 0950	Victor Sims			7-14-08 0950

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liquid	
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

FLUOR HANFORD

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

W08-007-144

Collector FLUOR HANFORD R.F. CARRIGAN	Contact/Requester Steve Trent	Telephone No. 509-373-5869 MSIN FAX
SAF No. W08-007	Sampling Origin Hanford Site	Purchase Order/Charge Code
Project Title RCRA JULY 2008	HNF-N-506-15	Ice Chest No. GW1 Temp.
Shipped To (Lab) Waste Sampling & Characterization	Method of Shipment Govt. Vehicle	Bill of Lading/Air Bill No.
Protocol RCRA	Priority: 30 Days PRIORITY	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL INSTRUCTIONS Hold Time
Site-Wide Generator Knowledge Information Form applies.

Total Activity Exemption: Yes ☑ No ☐

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B1W314	W08P003469	W	07/13/08	0944	4x40-mL aGs*	8260_VOA_GCMS: List-2 (25)	HCl or H2SO4 to pH <2 Cool~4C
B1W314	+	W	07/13/08	0944	1x500-mL G/P	200.8_METALS_ICPMS: Uranium (1)	HNO3 to pH <2

ICED

Relinquished By	Received By
Print: FLUOR HANFORD R.F. CARRIGAN; Sign: [signature]; Date/Time 0945 7-14-08	Print: Eva Hall; Sign: [signature]; Date/Time 0945 7-14-08
Relinquished By: Eva Hall [signature]; Date/Time 0950 7-14-08	Received By: Victor Bins [signature]; Date/Time 0950 7-14-08
Relinquished By; Date/Time	Received By; Date/Time
Relinquished By; Date/Time	Received By; Date/Time

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
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