

PO Box 1000 S3-30  
Richland, WA 99352  
(509) 373-7005  
(509) 372-0456

**Memorandum**

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To: Michael Neely  
CH2M-HILL PRC  
PO Box 1600  
Richland, WA 99352

Date: September 16, 2009

From: WSCF Laboratory  
WSCF Analytical Chemistry

CC:

Subject: FINAL RESULT FOR SAMPLE DELIVERY GROUP WSCF91053

Reference: (1) SOW, Mod 2, #36587, Release 3  
(2) HNF-SD-CD-QAPP-017, Rev 9, Waste Sampling & Characterization Facility Quality Assurance Plan

This letter contains the following information for sample delivery group WSCF91053

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

Electronically signed by Bill Baird  
For Lab Manager

Attachments 4

ATTACHMENT 1

**COVER SHEET**

Consisting of 2 pages  
Including cover page

## WSCF SAF Number Cross Reference

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Group # WSCF91053  
Data Deliverable Date 09/17/09

SAF #	Sample ID	Sample #	Matrix	Sampled	Received
F09-061	B21WF8	91053001	WATER	09/10/09	09/10/09

ATTACHMENT 2

**NARRATIVE**

Consisting of 2 pages  
Including cover page

**Introduction**

One (1) S&GRP samples were received at the WSCF Laboratory on September 10, 2009. The samples were analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Statement of Work (SOW), Modification No. 2 to Agreement 36587, Release 3, "FH WSCF ANALYTICAL SERVICES FOR GROUNDWATER."*

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 transport container.

The following generic data qualifiers (i.e., B, D, and J) may be applicable to this report, as appropriate

- **B** – Sample results with a concentration greater than the MDL but less than the PQL are B flagged (applies to inorganic and wetchem analyses), as appropriate.
- **D** – Sample results are D flagged if dilution(s) were required, as appropriate.
- **J** – Sample results with a concentration greater than the MDL but less than the PQL are J flagged (applies to organic analyses), as appropriate.

**Analytical Methodology for Requested Analyses**

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

**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. Analytical Note(s):

All QC controls are within the established limits.

We certify that this data package 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 data package has been authorized by the Analytical Laboratory Manager (or designee) and the Client Services representative as verified by electronic signatures shown on the WSCF ANALYTICAL RESULTS REPORT.

ATTACHMENT 3

**ANALYTICAL RESULTS**

Consisting of 8 pages  
Including cover page

## WSCF ANALYTICAL RESULTS REPORT

For

CH2M Hill Plateau Remediation

PO Box 1600  
Richland, WA 99352

Attention: Michael Neely

**Contract #** MOA-FH-CHPRC-2008  
**Group #** WSCF91053  
**Report Date** September 16, 2009

Analytical: Electronically signed by Bill Baird

Client Services: Electronically signed by Richard Barker

*All radiochemistry results are reported on an "as received" basis.*

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.

**Batch QC List**

**Attention** Michael Neely  
**Department** Organic, Volatiles

**Group #** WSCF91053

<b>QC Batch</b>	<b>Analytical Batch</b>	<b>S#</b>	<b>Type</b>	<b>Sample #</b>	<b>Client Sample#</b>	<b>Original</b>	<b>Test</b>
63635	63636	1	BLANK	14770	BLANK		SW-846 8260B Volatiles, separate prep
63635	63636	2	LCS	14771	LCS		SW-846 8260B Volatiles, separate prep
63635	63636	3	MS	14772	B21WF6(91046001MS)	91046001	SW-846 8260B Volatiles, separate prep
63635	63636	4	MSD	14773	B21WF6(91046001MSD)	91046001	SW-846 8260B Volatiles, separate prep
63635	63636	6	SAMPLE	91053001	B21WF8		SW-846 8260B Volatiles, separate prep

## Method Reference

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**Attention** Michael Neely  
**Department** Organic, Volatiles

**Group #** WSCF91053

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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, industry methods or HEIS 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 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.

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<b>LA-523-455</b>	Volatile Sample Analysis by SW-846 Method 8260B		
	EPA SW-846	8000B	Determinative Chromographic 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)

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Note: A complete list of WSCF analytical procedures and reference regulatory or industry methods is available online at <http://www7.rl.gov/rapidweb/AS-DOL/index.cfm>

# WSCF Analytical Results Report

Attention Michael Neely  
 Department Organic, Volatiles

Group # WSCF91053

Sample # 91053001  
 SAF# F09-061  
 Sample ID B21WF8

Matrix WATER  
 Sampled 09/10/09  
 Received 09/10/09

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
<b>8260 Prep</b>										<b>09/14/09</b>
<b>SW-846 8260B</b>										
1,1-Dichloroethene	75-35-4	LA-523-455	U	<1		ug/L	1	1	5	09/14/09
Trichloroethene	79-01-6	LA-523-455	U	<1		ug/L	1	1	5	09/14/09
Benzene	71-43-2	LA-523-455	U	<1		ug/L	1	1	5	09/14/09
Toluene	108-88-3	LA-523-455	U	<1		ug/L	1	1	5	09/14/09
Chlorobenzene	108-90-7	LA-523-455	U	<1		ug/L	1	1	5	09/14/09
Carbon tetrachloride	56-23-5	LA-523-455	U	<1		ug/L	1	1	5	09/14/09

MDL = Minimum Detection  
 RQ = Result Qualifier  
 TP Err = Total Propagated  
 DF = Dilution Factor  
 + - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE  
 D - Analyte was reported at a secondary dilution factor.  
 E - The calibration exceeds the calibration range (GC/MS).  
 J - Analyte < lowest calibration but >= MDL.  
 N - Presumptive compound based on MS Library search.

T - MS and/or MSD sample recovery outside control limits.  
 U - Analyzed for but not detected above limiting criteria.  
 X, Y or Z - See comment detail and/or narrative.

**Quality Control Report**

**Attention** Michael Neely  
**Department** Organic, Volatiles

**Group #** WSCF91053

**QC Batch** 63635 **Test** SW-846 8260B Volatiles, separate prep  
**Associated Samples** 91053001

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
<b>BLANK</b>		<b>QC Sample #14770</b>								
1,1-Dichloroethene	75-35-4	<1		ug/L					U	09/14/09
Trichloroethene	79-01-6	<1		ug/L					U	09/14/09
Benzene	71-43-2	<1		ug/L					U	09/14/09
Toluene	108-88-3	<1		ug/L					U	09/14/09
Chlorobenzene	108-90-7	<1		ug/L					U	09/14/09
Carbon tetrachloride	56-23-5	<1		ug/L					U	09/14/09
<b>LCS</b>		<b>QC Sample #14771</b>								
1,1-Dichloroethene	75-35-4	22		ug/L	88.4	75 - 125				09/14/09
Trichloroethene	79-01-6	22		ug/L	87.4	75 - 125				09/14/09
Benzene	71-43-2	23		ug/L	92.4	75 - 125				09/14/09
Toluene	108-88-3	23		ug/L	93	75 - 125				09/14/09
Chlorobenzene	108-90-7	24		ug/L	95.9	75 - 125				09/14/09
<b>MS</b>		<b>QC Sample #14772</b>								
		<b>Original 91046001</b>								
1,1-Dichloroethene	75-35-4	20		ug/L	81.5	75 - 125				09/14/09
Trichloroethene	79-01-6	21		ug/L	85.9	75 - 125				09/14/09
Benzene	71-43-2	24		ug/L	95.8	75 - 125				09/14/09
Toluene	108-88-3	24		ug/L	96.9	75 - 125				09/14/09
Chlorobenzene	108-90-7	24		ug/L	97.4	75 - 125				09/14/09

# Quality Control Report

Attention Michael Neely  
 Department Organic, Volatiles

Group # WSCF91053

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
<b>MSD</b>		<b>QC Sample #14773</b>								
		<b>Original 91046001</b>								
		<b>Paired 14772</b>								
1,1-Dichloroethene	75-35-4	19		ug/L	76.7	75 - 125	6.10	20		09/14/09
Trichloroethene	79-01-6	21		ug/L	83.2	75 - 125	3.20	20		09/14/09
Benzene	71-43-2	23		ug/L	92.5	75 - 125	3.50	20		09/14/09
Toluene	108-88-3	23		ug/L	93.8	75 - 125	3.30	20		09/14/09
Chlorobenzene	108-90-7	23		ug/L	93.8	75 - 125	3.80	20		09/14/09
<b>BLANK</b>		<b>QC Sample #14770</b>								
1,2-Dichloroethane-d4	17060-07-0				87.8	75 - 125				09/14/09
Toluene-d8	2037-26-5				97.9	75 - 125				09/14/09
4-Bromofluorobenzene	460-00-4				99.1	75 - 125				09/14/09
<b>LCS</b>		<b>QC Sample #14771</b>								
1,2-Dichloroethane-d4	17060-07-0				89.8	75 - 125				09/14/09
Toluene-d8	2037-26-5				98.8	75 - 125				09/14/09
4-Bromofluorobenzene	460-00-4				97.6	75 - 125				09/14/09
<b>MS</b>		<b>QC Sample #14772</b>								
		<b>Original 91046001</b>								
1,2-Dichloroethane-d4	17060-07-0				91.8	75 - 125				09/14/09
Toluene-d8	2037-26-5				100.9	75 - 125				09/14/09
4-Bromofluorobenzene	460-00-4				96.1	75 - 125				09/14/09
<b>MSD</b>		<b>QC Sample #14773</b>								
		<b>Original 91046001</b>								
		<b>Paired 14772</b>								
1,2-Dichloroethane-d4	17060-07-0				91.7	75 - 125	0.10	20		09/14/09
Toluene-d8	2037-26-5				101.4	75 - 125	0.50	20		09/14/09
4-Bromofluorobenzene	460-00-4				98.1	75 - 125	2.10	20		09/14/09

# Quality Control Report

Attention Michael Neely  
Department Organic, Volatiles

Group # WSCF91053

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
<b>SAMPLE</b>		<b>Sample #91053001</b>								
1,2-Dichloroethane-d4	17060-07-0				94.6	75 - 125				09/14/09
Toluene-d8	2037-26-5				103.4	75 - 125				09/14/09
4-Bromofluorobenzene	460-00-4				97.4	75 - 125				09/14/09

ATTACHMENT4

**SAMPLE RECEIPT**

Consisting of 3 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**

**ACKNOWLEDGEMENT OF SAMPLES RECEIVED**

**WSCF Laboratory**  
PO Box 1000 S3-30  
Richland, WA 99352

ATTN: Michael Neely

Customer Code: CHPRC  
PO #: 400637  
Work Order #: 91053  
Profile #: F09-061-004  
Proj. Mgr.:  
Phone:

The following samples were received from you on 9/10/2009 11:00:00 AM. 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	Matrix	Collected	Received
		<b>Tests scheduled</b>		
91053001	B21WF8	WATER 8260V-W	9/10/2009 06:35	9/10/2009 11:00

**Test Acronym Description**

Test Acronym	Description
8260V-W	Volatiles by 8260B (W)

