

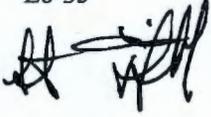
RECEIVED AUGUST 26, 2008

Fluor Hanford  
 WSCF Analytical Lab  
 P.O. Box 1000  
 Richland, WA 99352  
 Telephone 373-7495  
 Telefax 372-0456

**FLUOR****Memorandum**

M4W41-SLF-08-900

To: H. Hampt E6-35 Date: August 26, 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 WSCF20081406

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 WSCF20081406:

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

SLF/grf

Attachments 4

**RECEIVED**  
 JAN 14 2009  
 EDMC

M4W41-SLF-08-900

ATTACHMENT 1

**COVER SHEET**

Consisting of 2 pages  
Including cover page

## WSCF SAF NUMBER CROSS REFERENCE

---

Group#: WSCF20081406  
Data Deliverable Date: 11-aug-2008  
Data Deliverable: Cover Sheet

---

SAF#	Sample ID	WSCF#	Matrix
I08-043	B1VKX7	W08P003410	WATER
	B1VKX8	W08P003411	WATER
	B1VKY5	W08P003412	WATER
	B1VKY6	W08P003413	WATER
W08-005	B1VHK4	W08P003414	WATER

M4W41-SLF-08-900

ATTACHMENT 2

**NARRATIVE**

Consisting of 5 pages  
Including cover page

### Introduction

Five groundwater samples were received at the WSCF Laboratory on July 10, 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 15 through 17, for a complete listing of approved analytical methods.

### Inorganic Comments

**Ammonia** – The hold time requirement for this analysis was 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 page 26 for QC details. Analytical Note(s):

- Duplicate, Matrix Spike and Matrix Spike Duplicate were analyzed on sample# B1V9X7 (SDG# 20081363).

All QC controls are within the established limits.

**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 27 through 28 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.

**Cyanide** – 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 GRP Letter of Instruction. See page 29 for QC details. Analytical Note(s):

- Matrix Spikes and Matrix Spike Duplicates were analyzed on samples B1V569 (SDG# 20081468, SAF# F08-100) and B1VNV5 (SDG# 20081375).

All QC controls are within the established limits.

**ICP-AES 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 pages 30 through 33 for QC details. Analytical Note(s):

- Matrix Spike and Matrix Spike Duplicate were analyzed on sample# B1W2M2 (SDG# 20081385).
- Silver contamination detected in the Blank was evaluated and affected sample results were C flagged.
- Calcium, Magnesium and Sodium concentrations exceeded spiking levels by a factor of 4. Spike recoveries are not valid. Check standard was analyzed to ensure linearity because the sample results were greater than the calibration standard.

All other 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 pages 34 through 35 for QC details. Analytical Note(s):

- Matrix Spikes and Matrix Spike Duplicates were analyzed on samples B1V9X7 (SDG# 20081363); and, B1V7P8 and B1V7P9 (SDG# 20081455).
- Mercury – Sample results are X flagged. Due to a LABCORE glitch, the Batch QC data are offered below for

Batch QC - B1V9X7

Matrix Spike recovery – 90%

Matrix Spike Duplicate recovery – 93%

Spike Relative Percent Difference – 3.3%

Batch QC - B1V7P8

Matrix Spike recovery – 98%

Matrix Spike Duplicate recovery – 96%

Spike Relative Percent Difference – 2.1%

Batch QC - B1V7P9

Matrix Spike recovery – 95%

Matrix Spike Duplicate recovery – 98%

Spike Relative Percent Difference – 3.1%

All QC controls are within the established limits.

**Total Organic Carbon** – The hold time requirement for this analysis was met. A Matrix Spike, Matrix Spike Duplicate, Blank and Method Spike were analyzed with this delivery group per the GRP Letter of Instruction. See page 36 for QC details.

All QC controls are within the established limits.

Organic Comments

**Alcohol/Glycols** - The hold time requirement for this analysis was 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 page 46 for QC details. Analytical Note(s):

- Duplicate, Matrix Spike and Matrix Spike Duplicate were analyzed on sample# B1V9X7 (SDG# 20081363).

All QC controls are within the established limits.

**Semi-VOA** – 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 GPP Letter of Instruction. See pages 47 through 50 for QC details.

All QC controls are within the established limits.

**TPHD-WA** – 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. See pages 51 through 52 for QC details. Analytical Note(s):

- Duplicates, Matrix Spikes and Matrix Spike Duplicates were analyzed on samples B1W1B5 (SDG# 20081371, SAF# F08-134) and B1V9X7 (SDG# 20081363).

All QC controls are within the established limits.

**TPHG-WA** – The hold time requirement for this analysis was met. A Duplicate, Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. See page 53 for QC details. Analytical Note(s):

- Duplicate, Matrix Spike and Matrix Spike Duplicate were analyzed on sample# B1V9X7 (SDG# 20081363).

All QC controls are within the established limits.

**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 54 through 56 for QC details. Analytical Note(s):

- Matrix Spike and Matrix Spike Duplicate were analyzed on sample# B1V9X7 (SDG# 20081363).

All QC controls are within the established limits.

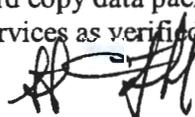
#### Radiochemistry Comments

**Rad Chem** – There are no hold times associated with WSCF's radiochemical methods. A Duplicate, Matrix Spike, Blank and Laboratory Control Sample were analyzed with this delivery group. See pages 60 through 62 for QC details. Analytical Note(s):

- Technetium-99 – Duplicate and Matrix Spike were analyzed on sample# B1VJF3 (SDG# 20081375).
- Tritium – Laboratory Control Sample recovery is less than established laboratory limits. No flags issued.

All other 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-08-900

ATTACHMENT 3

**ANALYTICAL RESULTS**

Consisting of 55 pages  
Including cover page

**WSCF**  
**ANALYTICAL RESULTS REPORT**

for

**GPAP**  
**Richland, WA 99352**

**Attention: Steve Trent E6-35**

Analytical:

*S. Fitzgerald 8/26/08*

Client Services:

*P.D. Mix 8/26/2008*

*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#: WSCF20081406  
Report Date: 25-aug-2008  
Report WGPP/ver. 5.2  
GPAP

Page 1

Department: Inorganic

## W13q Worklist/Batch/QC Report for Group# WSCF20081406

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
37055	2	37476	41836	BLANK		Anions by Ion Chromatography
37055	10	37476	41836	BLANK		Anions by Ion Chromatography
37055	3	37476	41836	LCS		Anions by Ion Chromatography
37055	8	37476	41836	SAMPLE	W08P003411	Anions by Ion Chromatography
37055	5	37476	41836	DUP	W08P003413	Anions by Ion Chromatography
37055	6	37476	41836	MS	W08P003413	Anions by Ion Chromatography
37055	7	37476	41836	MSD	W08P003413	Anions by Ion Chromatography
37055	4	37476	41836	SAMPLE	W08P003413	Anions by Ion Chromatography
37055	7	37476	41836	SPK-RPD	W08P003413	Anions by Ion Chromatography
37198	3	37634	41948	BLANK		Ammonia (N) by IC
37198	15	37634	41948	BLANK		Ammonia (N) by IC
37198	1	37634	41948	LCS		Ammonia (N) by IC
37198	5	37634	41948	DUP	W08P003344	Ammonia (N) by IC
37198	6	37634	41948	MS	W08P003344	Ammonia (N) by IC
37198	7	37634	41948	MSD	W08P003344	Ammonia (N) by IC
37198	7	37634	41948	SPK-RPD	W08P003344	Ammonia (N) by IC
37198	9	37634	41948	SAMPLE	W08P003411	Ammonia (N) by IC
37198	10	37634	41948	SAMPLE	W08P003413	Ammonia (N) by IC
37119	1	37544	41982	BLANK		Cyanide by Midi/Spectrophotom
37119	2	37544	41982	LCS		Cyanide by Midi/Spectrophotom
37119	5	37544	41982	MS	W08GR02619	Cyanide by Midi/Spectrophotom
37119	6	37544	41982	MSD	W08GR02619	Cyanide by Midi/Spectrophotom
37119	6	37544	41982	SPK-RPD	W08GR02619	Cyanide by Midi/Spectrophotom
37119	12	37544	41982	MS	W08P003362	Cyanide by Midi/Spectrophotom
37119	13	37544	41982	MSD	W08P003362	Cyanide by Midi/Spectrophotom
37119	13	37544	41982	SPK-RPD	W08P003362	Cyanide by Midi/Spectrophotom
37119	16	37544	41982	SAMPLE	W08P003411	Cyanide by Midi/Spectrophotom
37119	17	37544	41982	SAMPLE	W08P003413	Cyanide by Midi/Spectrophotom
37378	1	37803	42126	BLANK		Total Organic Carbon
37378	2	37803	42126	METHSPIKE		Total Organic Carbon
37378	3	37803	42126	SPK-RSD		Total Organic Carbon
37378	12	37803	42126	SAMPLE	W08P003411	Total Organic Carbon
37378	4	37803	42126	MS	W08P003413	Total Organic Carbon
37378	5	37803	42126	MSD	W08P003413	Total Organic Carbon
37378	7	37803	42126	SAMPLE	W08P003413	Total Organic Carbon
37378	5	37803	42126	SPK-RPD	W08P003413	Total Organic Carbon
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	15	37876	42191	SAMPLE	W08P003410	ICP-200.8 MS All possible meta
37445	16	37876	42191	SAMPLE	W08P003411	ICP-200.8 MS All possible meta
37445	17	37876	42191	SAMPLE	W08P003412	ICP-200.8 MS All possible meta
37445	18	37876	42191	SAMPLE	W08P003413	ICP-200.8 MS All possible meta
37445	7	37876	42191	MS	W08P003520	ICP-200.8 MS All possible meta
37445	8	37876	42191	MSD	W08P003520	ICP-200.8 MS All possible meta
37445	8	37876	42191	SPK-RPD	W08P003520	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
37679	1	37946	42524	BLANK		ICP Metals Analysis, Grd H20 P
37679	2	37946	42524	LCS		ICP Metals Analysis, Grd H20 P
37679	4	37946	42524	MS	W08P003391	ICP Metals Analysis, Grd H20 P
37679	5	37946	42524	MSD	W08P003391	ICP Metals Analysis, Grd H20 P
37679	5	37946	42524	SPK-RPD	W08P003391	ICP Metals Analysis, Grd H20 P
37679	15	37946	42524	SAMPLE	W08P003410	ICP Metals Analysis, Grd H20 P
37679	16	37946	42524	SAMPLE	W08P003411	ICP Metals Analysis, Grd H20 P
37679	17	37946	42524	SAMPLE	W08P003412	ICP Metals Analysis, Grd H20 P
37679	18	37946	42524	SAMPLE	W08P003413	ICP Metals Analysis, Grd H20 P

Department: Organic

## W13q Worklist/Batch/QC Report for Group# WSCF20081406

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
			41940	BLANK		NWTPH-D TPH Diesel Range (Wa)
			41940	LCS		NWTPH-D TPH Diesel Range (Wa)
			41940	MS	W08GR02298	NWTPH-D TPH Diesel Range (Wa)
			41940	MSD	W08GR02298	NWTPH-D TPH Diesel Range (Wa)
			41940	MS	W08P003344	NWTPH-D TPH Diesel Range (Wa)
			41940	MSD	W08P003344	NWTPH-D TPH Diesel Range (Wa)
			41940	SPK-RPD	W08P003344	NWTPH-D TPH Diesel Range (Wa)
			41940	SAMPLE	W08P003411	NWTPH-D TPH Diesel Range (Wa)
			41940	SURR	W08P003411	NWTPH-D TPH Diesel Range (Wa)
			41940	SAMPLE	W08P003413	NWTPH-D TPH Diesel Range (Wa)
			41940	SURR	W08P003413	NWTPH-D TPH Diesel Range (Wa)
			41983	BLANK		SW-846 8270C Semi-Vols
			41983	LCS		SW-846 8270C Semi-Vols
			41983	SAMPLE	W08P003411	SW-846 8270C Semi-Vols
			41983	SURR	W08P003411	SW-846 8270C Semi-Vols
			41983	MS	W08P003413	SW-846 8270C Semi-Vols
			41983	MSD	W08P003413	SW-846 8270C Semi-Vols
			41983	SAMPLE	W08P003413	SW-846 8270C Semi-Vols
			41983	SPK-RPD	W08P003413	SW-846 8270C Semi-Vols
			41983	SURR	W08P003413	SW-846 8270C Semi-Vols
			42208	BLANK		VOA Ground Water Protection
			42208	LCS		VOA Ground Water Protection
			42208	MS	W08P003344	VOA Ground Water Protection
			42208	MSD	W08P003344	VOA Ground Water Protection
			42208	SPK-RPD	W08P003344	VOA Ground Water Protection
			42208	SAMPLE	W08P003411	VOA Ground Water Protection
			42208	SURR	W08P003411	VOA Ground Water Protection
			42208	SAMPLE	W08P003413	VOA Ground Water Protection
			42208	SURR	W08P003413	VOA Ground Water Protection
			42208	SAMPLE	W08P003414	VOA Ground Water Protection
			42208	SURR	W08P003414	VOA Ground Water Protection
37513	1	37953	42276	BLANK		Alcohols, Glycols - 8015
37513	2	37953	42276	LCS		Alcohols, Glycols - 8015
37513	4	37953	42276	DUP	W08P003344	Alcohols, Glycols - 8015
37513	5	37953	42276	MS	W08P003344	Alcohols, Glycols - 8015
37513	6	37953	42276	MSD	W08P003344	Alcohols, Glycols - 8015
37513	6	37953	42276	SPK-RPD	W08P003344	Alcohols, Glycols - 8015
37513	8	37953	42276	SAMPLE	W08P003411	Alcohols, Glycols - 8015
37513	9	37953	42276	SAMPLE	W08P003413	Alcohols, Glycols - 8015
37521	1	37961	42284	BLANK		NWTPH-GX TPH Gasoline Range
37521	2	37961	42284	LCS		NWTPH-GX TPH Gasoline Range
37521	4	37961	42284	DUP	W08P003344	NWTPH-GX TPH Gasoline Range
37521	5	37961	42284	MS	W08P003344	NWTPH-GX TPH Gasoline Range
37521	6	37961	42284	MSD	W08P003344	NWTPH-GX TPH Gasoline Range
37521	6	37961	42284	SPK-RPD	W08P003344	NWTPH-GX TPH Gasoline Range
37521	8	37961	42284	SAMPLE	W08P003411	NWTPH-GX TPH Gasoline Range
37521	9	37961	42284	SAMPLE	W08P003413	NWTPH-GX TPH Gasoline Range

Department: Radiochemistry

## W13q Worklist/Batch/QC Report for Group# WSCF20081406

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
37120	1	37546	42002	BLANK		Tritium by Liq Sct column prep
37120	4	37546	42002	LCS		Tritium by Liq Sct column prep
37120	3	37546	42002	DUP	W08P003411	Tritium by Liq Sct column prep
37120	2	37546	42002	MS	W08P003411	Tritium by Liq Sct column prep
37120	15	37546	42002	SAMPLE	W08P003411	Tritium by Liq Sct column prep
37120	16	37546	42002	SAMPLE	W08P003413	Tritium by Liq Sct column prep
37159	1	37585	42025	BLANK		Strontium 89/90
37159	2	37585	42025	LCS		Strontium 89/90
37159	3	37585	42025	DUP	W08P003411	Strontium 89/90
37159	4	37585	42025	SAMPLE	W08P003411	Strontium 89/90
37159	5	37585	42025	SURR	W08P003411	Strontium 89/90
37159	6	37585	42025	SAMPLE	W08P003413	Strontium 89/90
37159	7	37585	42025	SURR	W08P003413	Strontium 89/90
37171	1	37603	42106	BLANK		TC99 by Liquid Scin.
37171	4	37603	42106	LCS		TC99 by Liquid Scin.
37171	3	37603	42106	DUP	W08P003355	TC99 by Liquid Scin.
37171	2	37603	42106	MS	W08P003355	TC99 by Liquid Scin.
37171	18	37603	42106	SAMPLE	W08P003411	TC99 by Liquid Scin.
37171	19	37603	42106	SAMPLE	W08P003413	TC99 by Liquid Scin.

# 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-344-406	LA-344-406: TOTAL ORGANIC CARBON (TOC) BASED ON SW-846 EPA SW-846 9060 TOTAL ORGANIC CARBON HEIS 9060_TOC Total Organic Carbon
LA-503-401	LA-503-401: ANALYSIS OF CATIONS BY ION CHROMATOGRAPHY EPA-600/4-86-024 300.7 Dissolved Sodium, Ammonium, Potassium, and Calcium in Wet Deposition by Chemical HEIS 300.7_CATIONS_IC Determination of Ammonium by Ion Chromatography
LA-505-411	LA-505-411: ELEMENTAL ANALYSIS BY INDUCTIVELY COUPLED PLASMA ATOMIC EMISSION SPE HEIS 6010_METALS_ICP Inductively Coupled Plasma-Atomic Emission Spectrometry
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-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
LA-695-402	LA-695-402: DETERMINATION OF CYANIDE BY MIDIDISTILLATION AND SPECTROPHOTOMETRIC EPA-600/4-79-020 335.2 Cyanide, Total HEIS 335.2_CYANIDE Cyanide, Total

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.

<b>LA-523-443</b>	<b>LA-523-443: GAS CHROMATOGRAPH ANALYSIS OF GASOLINE RANGE TOTAL PETROLEUM HYDROCA</b> <b>HEIS WTPH_GASOLINE</b> Total Petroleum Hydrocarbons, Gasoline <b>WDOE TPH_NWTPH-G</b> Volatile Petroleum Products Method for Soil and Water
<b>LA-523-455</b>	<b>LA-523-455: VOLATILE SAMPLE ANALYSIS BY SW-846</b> <b>EPA SW-846 8000B</b> DETERMINATIVE CHROMATOGRAPHIC SEPARATIONS <b>EPA SW-846 8260B</b> VOLATILE ORGANIC COMPOUNDS BY GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS) <b>HEIS 8260_VOA_GCMS</b> Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)
<b>LA-523-456</b>	<b>LA-523-456: SEMIVOLATILE SAMPLE ANALYSIS BY SW-846, METHOD 8270C</b> <b>EPA SW-846 8000B</b> DETERMINATIVE CHROMATOGRAPHIC SEPARATIONS <b>EPA SW-846 8270C</b> SEMIVOLATILE ORGANIC COMPOUNDS BY GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS) <b>HEIS 8270_SVOA_GCMS</b> Semivolatile Organic Compounds By Gas Chromatography/Mass Spectrometry (GC/MS)
<b>LA-523-493</b>	<b>NWTPH-Diesel and/or Gasoline</b> <b>HEIS WTPH_DIESEL (HEIS)</b> Total Petroleum Hydrocarbons in Diesel <b>WDOE TPHD</b> Total Petroleum Hydrocarbons in Diesel
<b>Organics</b>	<b>Organics - Alcohols, Glycols</b> <b>EPA SW-846 8015B</b> Nonhalogenated Organics Using GC/FID

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>.

Report Date: 25-aug-2008

Report#: WSCF20081406

Report WGPPM/5.2

Page 1

10 of 70

# WSCF METHOD REFERENCES REPORT

Department: Radiochemistry

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.

<b>LA-508-415</b>	<b>LA-508-415: OPERATION OF THE PROTEAN 2-INCH ALPHA/BETA COUNTING SYSTEM FOR GROSS</b>
<b>HEIS ALPHA_GPC</b>	GROSS ALPHA GPC
<b>HEIS BETA_GPC</b>	GROSS BETA GPC
<b>HEIS SRTOT_SEP_PRECIP_GPC</b>	Plutonium 89/90
<b>LA-508-421</b>	<b>LA-508-421: OPERATION OF THE TRI-CARB MODEL 2500TR LIQUID SCINTILLATION ANALYZER</b>
<b>HEIS ALPHA_LSC</b>	A/B Liquid Scintillation
<b>HEIS BETA_LSC</b>	A/B Liquid Scintillation
<b>HEIS TC99_3MDSK_LSC</b>	TC99 by Liquid Scintillation
<b>HEIS TRITIUM_EIE_LSC</b>	Tritium Liquid Scintillation

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>.

Report Date: 25-aug-2008

Report#: WSCF20081406

Report WGPPM/5.2

Page 2

17  
Of  
70

# WSCF

## ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent E6-35  
**SAF Number:** I08-043  
**Sample #** W08P003410  
**Client ID:** B1VKX7

**PNNL-GPP**  
**WSCF**

**Matrix:** WATER

**Group #:** WSCF20081406  
**Department:** Inorganic  
**Sampled:** 07/10/08  
**Received:** 07/10/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
<b>ICP Metals Analysis, Grd H2O P Prep</b>											
<b>ICP Metals Analysis, Grd H2O P</b>											
Aluminum	7429-90-5	LA-505-411	U	< 52.0	ug/L			1.00	52		08/20/08
Iron	7439-89-6	LA-505-411	U	< 25.0	ug/L			1.00	25		08/20/08
Magnesium	7439-95-4	LA-505-411		5.15e+03	ug/L			1.00	50		08/20/08
Manganese	7439-96-5	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
Nickel	7440-02-0	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
Potassium	7440-09-7	LA-505-411		3.02e+03	ug/L			1.00	1.7e+02		08/20/08
Silver	7440-22-4	LA-505-411	C	16.7	ug/L			1.00	5.0		08/20/08
Sodium	7440-23-5	LA-505-411		1.46e+04	ug/L			1.00	51		08/20/08
Antimony	7440-36-0	LA-505-411	U	< 56.0	ug/L			1.00	56		08/20/08
Barium	7440-39-3	LA-505-411		14.5	ug/L			1.00	4.0		08/20/08
Cadmium	7440-43-9	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
Chromium	7440-47-3	LA-505-411	U	< 13.0	ug/L			1.00	13		08/20/08
Cobalt	7440-48-4	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
Copper	7440-50-8	LA-505-411	U	< 6.00	ug/L			1.00	6.0		08/20/08
Vanadium	7440-62-2	LA-505-411		32.3	ug/L			1.00	12		08/20/08
Zinc	7440-66-6	LA-505-411	U	< 9.00	ug/L			1.00	9.0		08/20/08
Calcium	7440-70-2	LA-505-411		1.70e+04	ug/L			1.00	73		08/20/08
Lithium	7439-93-2	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
Strontium	7440-24-6	LA-505-411		104	ug/L			1.00	4.0		08/20/08
Beryllium	7440-41-7	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
<b>ICP-200.8 MS All possible meta Prep</b>											
<b>ICP-200.8 MS All possible meta</b>											
Lead	7439-92-1	LA-505-412	U	< 0.100	ug/L			1.00	0.100		08/05/08

**MDL=Minimum Detection Limit**

**RQ=Result Qualifier**

**TP Err=Total Propagated Error**

**DF=Dilution Factor**

- Indicates results that have NOT been validated;

B - The analyte < the RDL but > = the IDL/MDL (inorg)

D - Analyte was identified at a secondary dilution factor(inorg)

U - Analyzed for but not detected above limiting criteria.

X - Other flags/notes described in the comments/narrative(inorg)

+ - Indicates more than six qualifier symbols

C - The Analyte was found in the Associated Blank.(inorg)

U - Analyzed for but not detected above limiting criteria(inorg)

U - Analyzed for but not detected above limiting criteria.(org)

180770  
 Report WGPP/ver. 5.2  
 GPAP

# WSCF

## ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: I08-043

Sample # W08P003410

Client ID: B1VKX7 PNNL-GPP  
WSCF

Matrix: WATER

Group #: WSCF20081406

Department: Inorganic

Sampled: 07/10/08

Received: 07/10/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Mercury	7439-97-6	LA-505-412	UX	< 0.0500	ug/L			1.00	0.0500		08/05/08
Arsenic	7440-38-2	LA-505-412		3.99	ug/L			1.00	0.400		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)

D - Analyte was identified at a secondary dilution factor(inorg)

U - Analyzed for but not detected above limiting criteria.

X - Other flags/notes described in the comments/narrative(inorg)

C - The Analyte was found in the Associated Blank.(inorg)

U - Analyzed for but not detected above limiting criteria(inorg)

U - Analyzed for but not detected above limiting criteria.(org)

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

Report WGPP/ver. 5.2

GPAP

19  
07  
70

# WSCF ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent E6-35  
**SAF Number:** I08-043  
**Sample #** W08P003411  
**Client ID:** BIVKX8

**PNNL-GPP  
WSCF**

**Matrix:** WATER

**Group #:** WSCF20081406  
**Department:** Inorganic  
**Sampled:** 07/10/08  
**Received:** 07/10/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
<b>Anions by Ion Chromatography</b>											
Fluoride	16984-48-8	LA-533-410	D	0.427	mg/L			2.00	0.042		07/10/08
Chloride	16887-00-6	LA-533-410	D	2.01	mg/L			2.00	0.22		07/10/08
Nitrogen in Nitrite	NO2-N	LA-533-410	BD	0.0629	mg/L			2.00	0.020		07/10/08
Nitrogen in Nitrate	NO3-N	LA-533-410	D	0.743	mg/L			2.00	0.072		07/10/08
Sulfate	14808-79-8	LA-533-410	D	13.2	mg/L			2.00	0.15		07/10/08
<b>Cyanide</b>											
Cyanide	57-12-5	LA-695-402	U	< 4.00	ug/L			1.00	4.0		07/17/08
<b>ICP Metals Analysis, Grd H20 P Prep</b>											<b>08/19/08</b>
<b>ICP Metals Analysis, Grd H20 P</b>											
Aluminum	7429-90-5	LA-505-411	U	< 52.0	ug/L			1.00	52		08/20/08
Iron	7439-89-6	LA-505-411	U	< 25.0	ug/L			1.00	25		08/20/08
Magnesium	7439-95-4	LA-505-411		5.77e+03	ug/L			1.00	50		08/20/08
Manganese	7439-96-5	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
Nickel	7440-02-0	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
Potassium	7440-09-7	LA-505-411		3.28e+03	ug/L			1.00	1.7e+02		08/20/08
Silver	7440-22-4	LA-505-411	C	14.3	ug/L			1.00	5.0		08/20/08
Sodium	7440-23-5	LA-505-411		1.61e+04	ug/L			1.00	51		08/20/08
Antimony	7440-36-0	LA-505-411	U	< 56.0	ug/L			1.00	56		08/20/08
Barium	7440-39-3	LA-505-411		16.2	ug/L			1.00	4.0		08/20/08
Cadmium	7440-43-9	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
Chromium	7440-47-3	LA-505-411	U	< 13.0	ug/L			1.00	13		08/20/08
Cobalt	7440-48-4	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
Copper	7440-50-8	LA-505-411	U	< 6.00	ug/L			1.00	6.0		08/20/08
Vanadium	7440-62-2	LA-505-411		29.8	ug/L			1.00	12		08/20/08

**MDL=Minimum Detection Limit**

**RQ=Result Qualifier**

**TP Err=Total Propagated Error**

**DF=Dilution Factor**

- Indicates results that have NOT been validated;

B - The analyte < the RDL but > = the IDL/MDL (inorg)

D - Analyte was identified at a secondary dilution factor(inorg)

U - Analyzed for but not detected above limiting criteria.

X - Other flags/notes described in the comments/narrative(inorg)

+ - Indicates more than six qualifier symbols

C - The Analyte was found in the Associated Blank.(inorg)

U - Analyzed for but not detected above limiting criteria(inorg)

U - Analyzed for but not detected above limiting criteria.(org)

20080770  
 Report WGPP/ver. 5.2  
 GPAP

# WSCF ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: I08-043

Sample # W08P003411

Client ID: B1VKX8

PNNL-GPP  
WSCF

Matrix: WATER

Group #: WSCF20081406

Department: Inorganic

Sampled: 07/10/08

Received: 07/10/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Zinc	7440-66-6	LA-505-411	U	< 9.00	ug/L			1.00	9.0		08/20/08
Calcium	7440-70-2	LA-505-411		1.94e+04	ug/L			1.00	73		08/20/08
Lithium	7439-93-2	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
Strontium	7440-24-6	LA-505-411		116	ug/L			1.00	4.0		08/20/08
Beryllium	7440-41-7	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
<b>ICP-200.8 MS All possible meta Prep</b>											
<b>ICP-200.8 MS All possible meta</b>											
Lead	7439-92-1	LA-505-412	U	< 0.100	ug/L			1.00	0.100		08/05/08
Mercury	7439-97-8	LA-505-412	UX	< 0.0500	ug/L			1.00	0.0500		08/05/08
Uranium	7440-61-1	LA-505-412		1.12	ug/L			1.00	0.0500		08/05/08
Arsenic	7440-38-2	LA-505-412		3.99	ug/L			1.00	0.400		08/05/08
<b>Nitrogen in ammonium</b>											
Nitrogen in ammonium	NH4-N	LA-503-401	U	< 9.32e-03	mg/L			1.00	9.3e-03		07/21/08
<b>Total organic carbon</b>											
Total organic carbon	TOC	LA-344-406	U	< 0.300	mg/L			1.00	0.30		07/30/08

**MDL=Minimum Detection Limit**

**RQ=Result Qualifier**

**TP Err=Total Propagated Error**

**DF=Dilution Factor**

- Indicates results that have NOT been validated;

B - The analyte < the RDL but >= the IDL/MDL (inorg)

D - Analyte was identified at a secondary dilution factor(inorg)

U - Analyzed for but not detected above limiting criteria.

X - Other flags/notes described in the comments/narrative(inorg)

+ - Indicates more than six qualifier symbols

C - The Analyte was found in the Associated Blank.(inorg)

U - Analyzed for but not detected above limiting criteria(inorg)

U - Analyzed for but not detected above limiting criteria.(org)

210770  
Report WGPP/ver. 5.2  
GPAP

# WSCF ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent E6-35  
**SAF Number:** I08-043  
**Sample #** W08P003412  
**Client ID:** B1VKY5

**Group #:** WSCF20081406  
**Department:** Inorganic  
**Sampled:** 07/10/08  
**Received:** 07/10/08

PNNL-GPP  
WSCF

**Matrix:** WATER

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
<b>ICP Metals Analysis, Grd H2O P Prep</b>											
<b>ICP Metals Analysis, Grd H2O P</b>											
Aluminum	7429-90-5	LA-505-411	U	< 52.0	ug/L			1.00	52		08/20/08
Iron	7439-89-6	LA-505-411	U	< 25.0	ug/L			1.00	25		08/20/08
Magnesium	7439-95-4	LA-505-411	U	< 50.0	ug/L			1.00	50		08/20/08
Manganese	7439-96-5	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
Nickel	7440-02-0	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
Potassium	7440-09-7	LA-505-411	U	< 170	ug/L			1.00	1.7e+02		08/20/08
Silver	7440-22-4	LA-505-411	U	< 5.00	ug/L			1.00	5.0		08/20/08
Sodium	7440-23-5	LA-505-411		113	ug/L			1.00	51		08/20/08
Antimony	7440-36-0	LA-505-411	U	< 56.0	ug/L			1.00	56		08/20/08
Barium	7440-39-3	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
Cadmium	7440-43-9	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
Chromium	7440-47-3	LA-505-411	U	< 13.0	ug/L			1.00	13		08/20/08
Cobalt	7440-48-4	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
Copper	7440-50-8	LA-505-411	U	< 6.00	ug/L			1.00	6.0		08/20/08
Vanadium	7440-62-2	LA-505-411	U	< 12.0	ug/L			1.00	12		08/20/08
Zinc	7440-66-6	LA-505-411	U	< 9.00	ug/L			1.00	9.0		08/20/08
Calcium	7440-70-2	LA-505-411	U	< 73.0	ug/L			1.00	73		08/20/08
Lithium	7439-93-2	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
Strontium	7440-24-6	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
Beryllium	7440-41-7	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
<b>ICP-200.8 MS All possible meta Prep</b>											
<b>ICP-200.8 MS All possible meta</b>											
Lead	7439-92-1	LA-505-412	U	< 0.100	ug/L			1.00	0.100		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)

D - Analyte was identified at a secondary dilution factor(inorg)

U - Analyzed for but not detected above limiting criteria.

X - Other flags/notes described in the comments/narrative(inorg)

C - The Analyte was found in the Associated Blank.(inorg)

U - Analyzed for but not detected above limiting criteria(inorg)

U - Analyzed for but not detected above limiting criteria.(org)

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

22  
 Report WGPP/ver. 5.2  
 GPAP  
 70

# WSCF ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent E6-35  
**SAF Number:** I08-043  
**Sample #** W08P003412  
**Client ID:** BIVKY5

**Group #:** WSCF20081406  
**Department:** Inorganic  
**Sampled:** 07/10/08  
**Received:** 07/10/08

PNNL-GPP  
WSCF

**Matrix:** WATER

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Mercury	7439-97-6	LA-505-412	UX	< 0.500	ug/L			1.00	0.0500		08/05/08
Arsenic	7440-38-2	LA-505-412	U	< 0.400	ug/L			1.00	0.400		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)

D - Analyte was identified at a secondary dilution factor(inorg)

U - Analyzed for but not detected above limiting criteria.

X - Other flags/notes described in the comments/narrative(inorg)

C - The Analyte was found in the Associated Blank.(inorg)

U - Analyzed for but not detected above limiting criteria(inorg)

U - Analyzed for but not detected above limiting criteria.(org)

- Indicates results that have NOT been validated;

+ - Indicates more than six qualifier symbols

23 of 70

Report WGPP/ver. 5.2

GPAP

# WSCF ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent E6-35  
**SAF Number:** I08-043  
**Sample #** W08P003413  
**Client ID:** B1VKY6

**Group #:** WSCF20081406  
**Department:** Inorganic  
**Sampled:** 07/10/08  
**Received:** 07/10/08

**PNNL-GPP  
WSCF**

**Matrix:** WATER

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
<b>Anions by Ion Chromatography</b>											
Fluoride	16984-48-8	LA-533-410	DU	< 0.0420	mg/L			2.00	0.042		07/10/08
Chloride	16887-00-6	LA-533-410	DU	< 0.220	mg/L			2.00	0.22		07/10/08
Nitrogen in Nitrite	NO2-N	LA-533-410	DU	< 0.0198	mg/L			2.00	0.020		07/10/08
Nitrogen in Nitrate	NO3-N	LA-533-410	DU	< 0.0720	mg/L			2.00	0.072		07/10/08
Sulfate	14808-79-8	LA-533-410	DU	< 0.154	mg/L			2.00	0.15		07/10/08
<b>Cyanide</b>											
Cyanide	57-12-5	LA-895-402	U	< 4.00	ug/L			1.00	4.0		07/17/08
<b>ICP Metals Analysis, Grd H20 P Prep</b>											<b>08/19/08</b>
<b>ICP Metals Analysis, Grd H20 P</b>											
Aluminum	7429-90-5	LA-505-411	U	< 52.0	ug/L			1.00	52		08/20/08
Iron	7439-89-6	LA-505-411	U	< 25.0	ug/L			1.00	25		08/20/08
Magnesium	7439-95-4	LA-505-411	U	< 50.0	ug/L			1.00	50		08/20/08
Manganese	7439-96-5	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
Nickel	7440-02-0	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
Potassium	7440-09-7	LA-505-411	U	< 170	ug/L			1.00	1.7e + 02		08/20/08
Silver	7440-22-4	LA-505-411	U	< 5.00	ug/L			1.00	5.0		08/20/08
Sodium	7440-23-5	LA-505-411	U	< 51.0	ug/L			1.00	51		08/20/08
Antimony	7440-36-0	LA-505-411	U	< 56.0	ug/L			1.00	56		08/20/08
Barium	7440-39-3	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
Cadmium	7440-43-9	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
Chromium	7440-47-3	LA-505-411	U	< 13.0	ug/L			1.00	13		08/20/08
Cobalt	7440-48-4	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
Copper	7440-50-8	LA-505-411	U	< 6.00	ug/L			1.00	6.0		08/20/08
Vanadium	7440-62-2	LA-505-411	U	< 12.0	ug/L			1.00	12		08/20/08

**MDL = Minimum Detection Limit**

**RQ = Result Qualifier**

**TP Err = Total Propagated Error**

**DF = Dilution Factor**

- Indicates results that have NOT been validated;

B - The analyte < the RDL but > = the IDL/MDL (inorg)

D - Analyte was identified at a secondary dilution factor (inorg)

U - Analyzed for but not detected above limiting criteria.

X - Other flags/notes described in the comments/narrative (inorg)

+ - Indicates more than six qualifier symbols

C - The Analyte was found in the Associated Blank. (inorg)

U - Analyzed for but not detected above limiting criteria (inorg)

U - Analyzed for but not detected above limiting criteria. (org)

Report WGPP/ver. 5.2

GPAP

24 OF 70

# WSCF ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent E6-35  
**SAF Number:** I08-043  
**Sample #:** W08P003413  
**Client ID:** B1VKY6

**Group #:** WSCF20081406  
**Department:** Inorganic  
**Sampled:** 07/10/08  
**Received:** 07/10/08

PNNL-GPP  
WSCF

**Matrix:** WATER

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Zinc	7440-66-6	LA-505-411	U	< 9.00	ug/L			1.00	9.0		08/20/08
Calcium	7440-70-2	LA-505-411	U	< 73.0	ug/L			1.00	73		08/20/08
Lithium	7439-93-2	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
Strontium	7440-24-6	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
Beryllium	7440-41-7	LA-505-411	U	< 4.00	ug/L			1.00	4.0		08/20/08
<b>ICP-200.8 MS All possible meta Prep</b>											
<b>ICP-200.8 MS All possible meta</b>											
Lead	7439-92-1	LA-505-412	U	< 0.100	ug/L			1.00	0.100		08/05/08
Mercury	7439-97-6	LA-505-412	UX	< 0.0500	ug/L			1.00	0.0500		08/05/08
Uranium	7440-61-1	LA-505-412	U	< 0.0500	ug/L			1.00	0.0500		08/05/08
Arsenic	7440-38-2	LA-505-412	U	< 0.400	ug/L			1.00	0.400		08/05/08
<b>Nitrogen in ammonium</b>											
Nitrogen in ammonium	NH4-N	LA-503-401	U	< 9.32e-03	mg/L			1.00	9.3e-03		07/21/08
<b>Total organic carbon</b>											
Total organic carbon	TOC	LA-344-406	U	< 0.300	mg/L			1.00	0.30		07/30/08

**MDL=Minimum Detection Limit**

**RQ=Result Qualifier**

**TP Err=Total Propagated Error**

**DF=Dilution Factor**

- Indicates results that have NOT been validated;

B - The analyte < the RDL but > = the IDL/MDL (inorg)

D - Analyte was identified at a secondary dilution factor(inorg)

U - Analyzed for but not detected above limiting criteria.

X - Other flags/notes described in the comments/narrative(inorg)

+ - Indicates more than six qualifier symbols

C - The Analyte was found in the Associated Blank.(inorg)

U - Analyzed for but not detected above limiting criteria(inorg)

U - Analyzed for but not detected above limiting criteria.(org)

Report WGPP/ver. 5.2

GPAP

25  
01  
70

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081406  
 Matrix: WATER  
 Test: Ammonia (N) by IC

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
<b>Lab ID: W08P003344</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
DUP	Ammonia (N) by IC	7664-41-7	1.52e-2		RPD			7.595	20.000		07/21/08
MS	Ammonia (N) by IC	7664-41-7	0.5039	101.185	% Recov	80.000	120.000				07/21/08
MSD	Ammonia (N) by IC	7664-41-7	0.5189	104.197	% Recov	80.000	120.000				07/21/08
SPK-RPD	Ammonia (N) by IC	7664-41-7	104.197		RPD			2.933	20.000		07/21/08
<b>BATCH QC</b>											
BLANK	Ammonia (N) by IC	7664-41-7	<9.32e-3	n/a	mg/L	0.000	0.002			U	07/21/08
BLANK	Ammonia (N) by IC	7664-41-7	<9.32e-3	n/a	mg/L	0.000	0.002			U	07/21/08
LCS	Ammonia (N) by IC	7664-41-7	109.9239	109.924	% Recov	80.000	120.000				07/21/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081406  
 Matrix: WATER  
 Test: Anions by Ion Chromatography

Sample Date: 07/10/08  
 Receive Date: 07/10/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>Lab ID: W08P003413</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
DUP	Chloride	16887-00-6	<0.22		RPD			n/a	20.000	U	07/10/08
DUP	Fluoride	16984-48-8	<4.2e-2		RPD			n/a	20.000	U	07/10/08
DUP	Nitrogen in Nitrite	NO2-N	<1.98e-2		RPD			n/a	20.000	U	07/10/08
DUP	Nitrogen in Nitrate	NO3-N	<7.2e-2		RPD			n/a	20.000	U	07/10/08
DUP	Sulfate	14808-79-8	<0.154		RPD			n/a	20.000	U	07/10/08
MS	Chloride	16887-00-6	0.97205	97.693	% Recov	80.000	120.000				07/10/08
MS	Fluoride	16984-48-8	0.4703	95.396	% Recov	80.000	120.000				07/10/08
MS	Nitrogen in Nitrite	NO2-N	0.47855	97.286	% Recov	80.000	120.000				07/10/08
MS	Nitrogen in Nitrate	NO3-N	0.4447	99.709	% Recov	80.000	120.000				07/10/08
MS	Sulfate	14808-79-8	1.92425	98.176	% Recov	80.000	120.000				07/10/08
MSD	Chloride	16887-00-6	0.968	97.286	% Recov	80.000	120.000				07/10/08
MSD	Fluoride	16984-48-8	0.4644	94.199	% Recov	80.000	120.000				07/10/08
MSD	Nitrogen in Nitrite	NO2-N	0.47385	96.311	% Recov	80.000	120.000				07/10/08
MSD	Nitrogen in Nitrate	NO3-N	0.447	100.224	% Recov	80.000	120.000				07/10/08
MSD	Sulfate	14808-79-8	1.9581	99.903	% Recov	80.000	120.000				07/10/08
SPK-RPD	Chloride	16887-00-6	97.286		RPD			0.417	20.000		07/10/08
SPK-RPD	Fluoride	16984-48-8	94.199		RPD			1.263	20.000		07/10/08
SPK-RPD	Nitrogen in Nitrite	NO2-N	96.311		RPD			0.987	20.000		07/10/08
SPK-RPD	Nitrogen in Nitrate	NO3-N	100.224		RPD			0.515	20.000		07/10/08
SPK-RPD	Sulfate	14808-79-8	99.903		RPD			1.744	20.000		07/10/08
<b>BATCH QC</b>											
BLANK	Chloride	16887-00-6	<0.11	n/a	mg/L	0.000	0.030			U	07/10/08
BLANK	Chloride	16887-00-6	<0.11	n/a	mg/L	0.000	0.030			U	07/10/08
BLANK	Fluoride	16984-48-8	<2.1e-2	n/a	mg/L	0.000	0.030			U	07/10/08
BLANK	Fluoride	16984-48-8	<2.1e-2	n/a	mg/L	0.000	0.030			U	07/10/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081406  
 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 Nitrite	NO2-N	<9.9e-3	n/a	mg/L	0.000	0.020			U	07/10/08
BLANK	Nitrogen in Nitrite	NO2-N	<9.9e-3	n/a	mg/L	0.000	0.020			U	07/10/08
BLANK	Nitrogen in Nitrate	NO3-N	<3.6e-2	n/a	mg/L	0.000	0.040			U	07/10/08
BLANK	Nitrogen in Nitrate	NO3-N	<3.6e-2	n/a	mg/L	0.000	0.040			U	07/10/08
BLANK	Sulfate	14808-79-8	<7.7e-2	n/a	mg/L	0.000	0.200			U	07/10/08
BLANK	Sulfate	14808-79-8	<7.7e-2	n/a	mg/L	0.000	0.200			U	07/10/08
LCS	Chloride	16887-00-6	199.7634	99.385	% Recov	80.000	120.000				07/10/08
LCS	Fluoride	16984-48-8	110.139	110.581	% Recov	80.000	120.000				07/10/08
LCS	Nitrogen in Nitrite	NO2-N	101.0848	101.695	% Recov	80.000	120.000				07/10/08
LCS	Nitrogen in Nitrate	NO3-N	93.0477	103.272	% Recov	80.000	120.000				07/10/08
LCS	Sulfate	14808-79-8	395.7755	99.943	% Recov	80.000	120.000				07/10/08

28 of 70

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081406  
 Matrix: WATER  
 Test: Cyanide by Midi/Spectrophotom

Sample Date: 07/16/08  
 Receive Date: 07/16/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>Lab ID: W08GR02619</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
MS	Cyanide by Midi/Spectrophotom	57-12-5	38.8	97.000	% Recov	75.000	125.000				07/17/08
MSD	Cyanide by Midi/Spectrophotom	57-12-5	39.8	99.500	% Recov	75.000	125.000				07/17/08
SPK-RPD	Cyanide by Midi/Spectrophotom	57-12-5	99.500		RPD			2.545	20.000		07/17/08
<b>Lab ID: W08P003362</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
MS	Cyanide by Midi/Spectrophotom	57-12-5	41.7	104.250	% Recov	75.000	125.000				07/17/08
MSD	Cyanide by Midi/Spectrophotom	57-12-5	42.8	107.000	% Recov	75.000	125.000				07/17/08
SPK-RPD	Cyanide by Midi/Spectrophotom	57-12-5	107.000		RPD			2.604	20.000		07/17/08
<b>BATCH QC</b>											
BLANK	Cyanide by Midi/Spectrophotom	57-12-5	< 4	n/a	ug/L	-4.000	4.000			U	07/17/08
LCS	Cyanide by Midi/Spectrophotom	57-12-5	50.3	100.600	% Recov	85.000	115.000				07/17/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081406  
 Matrix: WATER  
 Test: ICP Metals Analysis, Grd H2O P

Sample Date: 07/09/08  
 Receive Date: 07/09/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08P003391											
BATCH QC ASSOCIATED WITH SAMPLE											
MS	Silver	7440-22-4	940.4	94.040	% Recov	75.000	125.000				08/20/08
MS	Barium	7440-39-3	444.3	88.860	% Recov	75.000	125.000				08/20/08
MS	Beryllium	7440-41-7	487.4	97.480	% Recov	75.000	125.000				08/20/08
MS	Calcium	7440-70-2	-6710	-671.000	% Recov	75.000	125.000				08/20/08
MS	Cadmium	7440-43-9	968.8	96.880	% Recov	75.000	125.000				08/20/08
MS	Cobalt	7440-48-4	950.3	95.030	% Recov	75.000	125.000				08/20/08
MS	Chromium	7440-47-3	930.5	93.050	% Recov	75.000	125.000				08/20/08
MS	Copper	7440-50-8	910.1	91.010	% Recov	75.000	125.000				08/20/08
MS	Iron	7439-89-6	937.6	93.760	% Recov	75.000	125.000				08/20/08
MS	Potassium	7440-09-7	8846	88.460	% Recov	75.000	125.000				08/20/08
MS	Magnesium	7439-95-4	-1020	-102.000	% Recov	75.000	125.000				08/20/08
MS	Manganese	7439-96-5	956.4	95.640	% Recov	75.000	125.000				08/20/08
MS	Sodium	7440-23-5	-780	-78.000	% Recov	75.000	125.000				08/20/08
MS	Nickel	7440-02-0	937.2	93.720	% Recov	75.000	125.000				08/20/08
MS	Antimony	7440-36-0	941.1	94.110	% Recov	75.000	125.000				08/20/08
MS	Strontium	7440-24-6	427.9	85.580	% Recov	75.000	125.000				08/20/08
MS	Vanadium	7440-62-2	933	93.300	% Recov	75.000	125.000				08/20/08
MS	Zinc	7440-66-6	941.3	94.130	% Recov	75.000	125.000				08/20/08
MSD	Silver	7440-22-4	992.8	99.280	% Recov	75.000	125.000				08/20/08
MSD	Barium	7440-39-3	484.3	96.860	% Recov	75.000	125.000				08/20/08
MSD	Beryllium	7440-41-7	526.6	105.320	% Recov	75.000	125.000				08/20/08
MSD	Calcium	7440-70-2	-1130	-113.000	% Recov	75.000	125.000				08/20/08
MSD	Cadmium	7440-43-9	1037	103.700	% Recov	75.000	125.000				08/20/08
MSD	Cobalt	7440-48-4	1033	103.300	% Recov	75.000	125.000				08/20/08
MSD	Chromium	7440-47-3	1009.5	100.950	% Recov	75.000	125.000				08/20/08
MSD	Copper	7440-50-8	980.7	98.070	% Recov	75.000	125.000				08/20/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081406  
 Matrix: WATER  
 Test: ICP Metals Analysis, Grd H2O P

Sample Date: 07/09/08  
 Receive Date: 07/09/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
MSD	Iron	7439-89-6	1021	102.100	% Recov	75.000	125.000				08/20/08
MSD	Potassium	7440-09-7	9856	98.560	% Recov	75.000	125.000				08/20/08
MSD	Magnesium	7439-95-4	310	31.000	% Recov	75.000	125.000			•	08/20/08
MSD	Manganese	7439-96-5	1039	103.900	% Recov	75.000	125.000				08/20/08
MSD	Sodium	7440-23-5	430	43.000	% Recov	75.000	125.000			•	08/20/08
MSD	Nickel	7440-02-0	1018.1	101.810	% Recov	75.000	125.000				08/20/08
MSD	Antimony	7440-36-0	1016	101.600	% Recov	75.000	125.000				08/20/08
MSD	Strontium	7440-24-6	490.7	98.140	% Recov	75.000	125.000				08/20/08
MSD	Vanadium	7440-62-2	1008.8	100.880	% Recov	75.000	125.000				08/20/08
MSD	Zinc	7440-66-6	1013	101.300	% Recov	75.000	125.000				08/20/08
SPK-RPD	Silver	7440-22-4	99.280		RPD			5.421	20.000		08/20/08
SPK-RPD	Barium	7440-39-3	98.860		RPD			8.615	20.000		08/20/08
SPK-RPD	Beryllium	7440-41-7	105.320		RPD			7.732	20.000		08/20/08
SPK-RPD	Calcium	7440-70-2	-113.000		RPD			-142.347	20.000	•	08/20/08
SPK-RPD	Cadmium	7440-43-9	103.700		RPD			6.800	20.000		08/20/08
SPK-RPD	Cobalt	7440-48-4	103.300		RPD			8.340	20.000		08/20/08
SPK-RPD	Chromium	7440-47-3	100.950		RPD			8.144	20.000		08/20/08
SPK-RPD	Copper	7440-50-8	98.070		RPD			7.468	20.000		08/20/08
SPK-RPD	Iron	7439-89-6	102.100		RPD			8.516	20.000		08/20/08
SPK-RPD	Potassium	7440-09-7	98.560		RPD			10.801	20.000		08/20/08
SPK-RPD	Magnesium	7439-95-4	31.000		RPD			-374.648	20.000	•	08/20/08
SPK-RPD	Manganese	7439-96-5	103.900		RPD			8.279	20.000		08/20/08
SPK-RPD	Sodium	7440-23-5	43.000		RPD			-691.429	20.000	•	08/20/08
SPK-RPD	Nickel	7440-02-0	101.810		RPD			8.275	20.000		08/20/08
SPK-RPD	Antimony	7440-36-0	101.600		RPD			7.654	20.000		08/20/08
SPK-RPD	Strontium	7440-24-6	98.140		RPD			13.673	20.000		08/20/08
SPK-RPD	Vanadium	7440-62-2	100.880		RPD			7.807	20.000		08/20/08
SPK-RPD	Zinc	7440-66-6	101.300		RPD			7.338	20.000		08/20/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081406  
 Matrix: WATER  
 Test: ICP Metals Analysis, Grd H2O P

Sample Date:  
 Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>BATCH QC</b>											
BLANK	Silver	7440-22-4	23.4	23.400	ug/L						08/20/08
BLANK	Aluminum	7429-90-5	< 52	n/a	ug/L					U	08/20/08
BLANK	Barium	7440-39-3	< 4	n/a	ug/L					U	08/20/08
BLANK	Beryllium	7440-41-7	< 4	n/a	ug/L					U	08/20/08
BLANK	Calcium	7440-70-2	< 73	n/a	ug/L					U	08/20/08
BLANK	Cadmium	7440-43-9	< 4	n/a	ug/L					U	08/20/08
BLANK	Cobalt	7440-48-4	< 4	n/a	ug/L					U	08/20/08
BLANK	Chromium	7440-47-3	< 13	n/a	ug/L					U	08/20/08
BLANK	Copper	7440-50-8	< 6	n/a	ug/L					U	08/20/08
BLANK	Iron	7439-89-8	< 25	n/a	ug/L					U	08/20/08
BLANK	Potassium	7440-09-7	< 170	n/a	ug/L					U	08/20/08
BLANK	Lithium	7439-93-2	< 4	n/a	ug/L					U	08/20/08
BLANK	Magnesium	7439-95-4	< 50	n/a	ug/L					U	08/20/08
BLANK	Manganese	7439-96-5	< 4	n/a	ug/L					U	08/20/08
BLANK	Sodium	7440-23-5	< 51	n/a	ug/L					U	08/20/08
BLANK	Nickel	7440-02-0	< 4	n/a	ug/L					U	08/20/08
BLANK	Antimony	7440-36-0	< 56	n/a	ug/L					U	08/20/08
BLANK	Strontium	7440-24-6	< 4	n/a	ug/L					U	08/20/08
BLANK	Vanadium	7440-62-2	< 12	n/a	ug/L					U	08/20/08
BLANK	Zinc	7440-66-8	< 9	n/a	ug/L					U	08/20/08
LCS	Silver	7440-22-4	912.3	91.230	% Recov	80.000	120.000				08/20/08
LCS	Aluminum	7429-90-5	886.8	88.680	% Recov	80.000	120.000				08/20/08
LCS	Barium	7440-39-3	449.7	89.940	% Recov	80.000	120.000				08/20/08
LCS	Beryllium	7440-41-7	508.3	101.660	% Recov	80.000	120.000				08/20/08
LCS	Calcium	7440-70-2	962.5	96.250	% Recov	80.000	120.000				08/20/08
LCS	Cadmium	7440-43-9	946.5	94.650	% Recov	80.000	120.000				08/20/08
LCS	Cobalt	7440-48-4	984.9	98.490	% Recov	80.000	120.000				08/20/08
LCS	Chromium	7440-47-3	960.9	96.090	% Recov	80.000	120.000				08/20/08

32 of 70

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081406  
 Matrix: WATER  
 Test: ICP Metals Analysis, Grd H2O P

Sample Date:  
 Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
LCS	Copper	7440-50-8	916.1	91.610	% Recov	80.000	120.000				08/20/08
LCS	Iron	7439-89-6	942.1	94.210	% Recov	80.000	120.000				08/20/08
LCS	Potassium	7440-09-7	8822	88.220	% Recov	80.000	120.000				08/20/08
LCS	Lithium	7439-93-2	406	81.200	% Recov	80.000	120.000				08/20/08
LCS	Magnesium	7439-95-4	881.8	88.180	% Recov	80.000	120.000				08/20/08
LCS	Manganese	7439-96-5	954.8	95.480	% Recov	80.000	120.000				08/20/08
LCS	Sodium	7440-23-5	854.9	85.490	% Recov	80.000	120.000				08/20/08
LCS	Nickel	7440-02-0	965.1	96.510	% Recov	80.000	120.000				08/20/08
LCS	Antimony	7440-36-0	870	87.000	% Recov	80.000	120.000				08/20/08
LCS	Strontium	7440-24-6	456.4	91.280	% Recov	80.000	120.000				08/20/08
LCS	Vanadium	7440-62-2	945.1	94.510	% Recov	80.000	120.000				08/20/08
LCS	Zinc	7440-66-6	933.9	93.390	% Recov	80.000	120.000				08/20/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081406  
 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
<b>Lab ID: W08P003344</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
MS	Arsenic	7440-38-2	34.13	85.325	% Recov	70.000	130.000				08/05/08
MS	Lead	7439-92-1	33.88	84.700	% Recov	70.000	130.000				08/05/08
MS	Uranium	7440-61-1	34.82	87.050	% Recov	70.000	130.000				08/05/08
MSD	Arsenic	7440-38-2	35.34	88.350	% Recov	70.000	130.000				08/05/08
MSD	Lead	7439-92-1	34.27	85.675	% 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	Arsenic	7440-38-2	88.350		RPD			3.484	20.000		08/05/08
SPK-RPD	Lead	7439-92-1	85.675		RPD			1.145	20.000		08/05/08
SPK-RPD	Uranium	7440-61-1	89.800		RPD			3.110	20.000		08/05/08
<b>Lab ID: W08P003520</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
MS	Arsenic	7440-38-2	34.89	87.225	% Recov	70.000	130.000				08/05/08
MS	Lead	7439-92-1	35.48	88.700	% Recov	70.000	130.000				08/05/08
MSD	Arsenic	7440-38-2	34.04	85.100	% Recov	70.000	130.000				08/05/08
MSD	Lead	7439-92-1	34.83	87.075	% Recov	70.000	130.000				08/05/08
SPK-RPD	Arsenic	7440-38-2	85.100		RPD			2.466	20.000		08/05/08
SPK-RPD	Lead	7439-92-1	87.075		RPD			1.849	20.000		08/05/08
<b>Lab ID: W08P003521</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
MS	Arsenic	7440-38-2	34.32	85.800	% Recov	70.000	130.000				08/05/08
MS	Lead	7439-92-1	34.6	86.500	% Recov	70.000	130.000				08/05/08
MS	Uranium	7440-61-1	30.1	75.250	% Recov	70.000	130.000				08/05/08
MSD	Arsenic	7440-38-2	34.58	86.450	% Recov	70.000	130.000				08/05/08
MSD	Lead	7439-92-1	34.79	86.975	% Recov	70.000	130.000				08/05/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081406  
 Matrix: WATER  
 Test: ICP-200.8 MS All possible meta

Sample Date: 07/15/08  
 Receive Date: 07/15/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
MSD	Uranium	7440-61-1	32.8	82.000	% Recov	70.000	130.000				08/05/08
SPK-RPD	Arsenic	7440-38-2	86.450		RPD			0.755	20.000		08/05/08
SPK-RPD	Lead	7439-92-1	86.975		RPD			0.548	20.000		08/05/08
SPK-RPD	Uranium	7440-61-1	82.000		RPD			8.585	20.000		08/05/08
<b>BATCH QC</b>											
BLANK	Arsenic	7440-38-2	<0.4	n/a	ug/L					U	08/05/08
BLANK	Lead	7439-92-1	<0.1	n/a	ug/L					U	08/05/08
BLANK	Uranium	7440-61-1	<5e-2	n/a	ug/L					U	08/05/08
LCS	Arsenic	7440-38-2	37.3	93.250	% Recov	85.000	115.000				08/05/08
LCS	Lead	7439-92-1	37.64	94.100	% Recov	85.000	115.000				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: WSCF20081406  
 Matrix: WATER  
 Test: Total Organic Carbon

Sample Date: 07/10/08  
 Receive Date: 07/10/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>Lab ID: W08P003413</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
MS	Total Organic Carbon	TOC	4.168	104.150	% Recov	75.000	125.000				07/30/08
MSD	Total Organic Carbon	TOC	4.118	102.950	% Recov	75.000	125.000				07/30/08
SPK-RPD	Total Organic Carbon	TOC	102.950		RPD			1.159	20.000		07/30/08
<b>BATCH QC</b>											
BLANK	Total Organic Carbon	TOC	<0.450	n/a	mg/L	0.000	300.000			U	07/30/08
METHSPIKE	Total Organic Carbon	TOC	2.135	106.750	% Recov	80.000	120.000				07/30/08
SPK-RSD	Total Organic Carbon	TOC	1.227	1.227	% RSD	0.000	20.000				07/30/08

# WSCF ANALYTICAL COMMENT REPORT

**Attention:** Steve Trent E6-35

**Group #:** WSCF20081406  
**Department:** Inorganic

Sample #	Client ID	Lab Area	Test	Comment
		VALGROUP		<p>SVOA: Low phenolic surrogate recoveries are matrix effects of a sample unrelated to the samples in this batch. All surrogate recoveries are within QC control limits. cgc</p> <p>H-3 LCS recovery is low. Since all the other QC checks came out fine, this batch has been approved. Imh</p> <p>ICP-MS: Mercury data not uploaded. Spike recovery data not available. Samples spiked were W08P-3344(90% &amp; 93% recovery) W08P-3520(98% &amp; 96% recovery), W08P-3521(95% &amp; 98% recovery) Information is in the raw data "X" flags</p> <p>ICP-AES: [Samples W08P3410-3413] High silver preparation blank result; "C" flag if applicable. No zirconium present in the LCS standard. Magnesium, sodium, and calcium sample results exceed spiking level by a factor of 4 so spike recoveries are not valid. Check standard used to ensure magnesium, sodium, and calcium linearity because sample results are greater than the calibration standard.</p>

**Lab Areas:** VALGROUP - Group Validation  
LOGSAMP - Login for Sample

VALTEST - Test Validation  
LOGTEST - Login for Tests

TESTDATA - Test Data Entry

This report may not be reproduced, except in its entirety without the written approval of the WSCF Laboratory.

# WSCF ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent E6-35  
**SAF Number:** I08-043  
**Sample #** W08P003411  
**Client ID:** B1VKX8

**PNNL-GPP  
WSCF**

**Matrix:** WATER

**Group #:** WSCF20081406  
**Department:** Organic  
**Sampled:** 07/10/08  
**Received:** 07/10/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
<b>Alcohols, Glycols - 8015 Prep</b>											
<b>Alcohols, Glycols - 8015</b>											
Ethyl acetate	141-78-6	Organics	U	< 5.00e+03	ug/L			1.00	5.0e+03		07/18/08
<b>NWTPH-D TPH Diesel Range (Wa) Prep</b>											
<b>NWTPH-D TPH Diesel Range (Wa)</b>											
Total Pet. Hydrocarbons Diesel	TPHDIESEL	LA-523-493	U	< 71.0	ug/L			1.00	71		07/21/08
Kerosene	TPHKEROSENE	LA-523-493	U	< 71.0	ug/L			1.00	71		07/21/08
<b>NWTPH-GX TPH Gasoline Range Prep</b>											
<b>NWTPH-GX TPH Gasoline Range</b>											
Total Pet. Hydrocarbons Gas	TPHGASOLINE	LA-523-443	U	< 50.0	ug/L			1.00	50		07/16/08
<b>SW-846 8270C Semi-Vols Prep</b>											
<b>SW-846 8270C Semi-Vols</b>											
4-Nitrophenol	100-02-7	LA-523-456	U	< 0.950	ug/L			1.00	0.95		07/21/08
1,4-Dichlorobenzene	106-46-7	LA-523-456	U	< 1.30	ug/L			1.00	1.3		07/21/08
Phenol	108-95-2	LA-523-456	U	< 0.480	ug/L			1.00	0.48		07/21/08
1,2,4-Trichlorobenzene	120-82-1	LA-523-456	U	< 2.10	ug/L			1.00	2.1		07/21/08
2,4-Dinitrotoluene	121-14-2	LA-523-456	U	< 0.480	ug/L			1.00	0.48		07/21/08
Pyrene	129-00-0	LA-523-456	U	< 0.480	ug/L			1.00	0.48		07/21/08
4-Chloro-3-methylphenol	59-50-7	LA-523-456	U	< 0.480	ug/L			1.00	0.48		07/21/08
N-Nitrosodi-n-dipropylamine	621-64-7	LA-523-456	U	< 0.570	ug/L			1.00	0.57		07/21/08
Acenaphthene	83-32-9	LA-523-456	U	< 2.50	ug/L			1.00	2.5		07/21/08
Pentachlorophenol	87-86-5	LA-523-456	U	< 1.40	ug/L			1.00	1.4		07/21/08
2-Chlorophenol	95-57-8	LA-523-456	U	< 0.480	ug/L			1.00	0.48		07/21/08
Bis(2-ethylhexyl) phthalate	117-81-7	LA-523-456	U	< 0.760	ug/L			1.00	0.76		07/21/08
2,4-Dichlorophenol	120-83-2	LA-523-456	U	< 0.480	ug/L			1.00	0.48		07/21/08

**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)  
 D - Analyte was identified at a secondary dilution factor(inorg)  
 U - Analyzed for but not detected above limiting criteria.  
 X - Other flags/notes described in the comments/narrative(inorg)

C - The Analyte was found in the Associated Blank.(inorg)  
 U - Analyzed for but not detected above limiting criteria(inorg)  
 U - Analyzed for but not detected above limiting criteria.(org)

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

38  
 0770  
 Report WGPP/ver. 5.2  
 GPAP

# WSCF

## ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent E6-35  
**SAF Number:** I08-043  
**Sample #** W08P003411  
**Client ID:** B1VKX8

**Group #:** WSCF20081406  
**Department:** Organic  
**Sampled:** 07/10/08  
**Received:** 07/10/08

PNNL-GPP  
WSCF

Matrix: WATER

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
2-Nitrophenol	88-75-5	LA-523-456	U	< 0.480	ug/L			1.00	0.48		07/21/08
Naphthalene	91-20-3	LA-523-456	U	< 2.00	ug/L			1.00	2.0		07/21/08
2-Methylphenol (cresol, o-)	95-48-7	LA-523-456	U	< 0.480	ug/L			1.00	0.48		07/21/08
3 & 4 Methylphenol Total	65794-96-9	LA-523-456	U	< 0.480	ug/L			1.00	0.48		07/21/08
Tributyl phosphate	126-73-8	LA-523-456	U	< 0.480	ug/L			1.00	0.48		07/21/08
Benzothiazole	95-16-9	LA-523-456	U	< 0.570	ug/L			1.00	0.57		07/21/08
2-Picoline	109-06-8	LA-523-456	U	< 4.80	ug/L			1.00	4.8		07/21/08
Total cresols	1319-77-3	LA-523-456	U	< 0.950	ug/L			1.00	0.95		07/21/08
Tris-2-chloroethyl phosphate	115-96-8	LA-523-456	U	< 0.620	ug/L			1.00	0.62		07/21/08
<b>VOA Ground Water Protection</b>											
1,1-Dichloroethene	75-35-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
Trichloroethene	79-01-6	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
Benzene	71-43-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
Toluene	108-88-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
Chlorobenzene	108-90-7	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
1,1-Dichloroethane	75-34-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
Ethylbenzene	100-41-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
1,2-Dichloroethane	107-06-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
4-Methyl-2-Pentanone	108-10-1	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
Tetrachloroethene	127-18-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
Xylenes (total)	1330-20-7	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
Carbon tetrachloride	56-23-5	LA-523-455		20.0	ug/L			1.00	1.0		07/18/08
Acetone	67-64-1	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
Chloroform	67-66-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
1,1,1-Trichloroethane	71-55-6	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08

**MDL = Minimum Detection Limit**

**RQ = Result Qualifier**

**TP Err = Total Propagated Error**

**DF = Dilution Factor**

- Indicates results that have NOT been validated;

B - The analyte < the RDL but > = the IDL/MDL (inorg)

D - Analyte was identified at a secondary dilution factor (inorg)

U - Analyzed for but not detected above limiting criteria.

X - Other flags/notes described in the comments/narrative (inorg)

+ - Indicates more than six qualifier symbols

C - The Analyte was found in the Associated Blank. (inorg)

U - Analyzed for but not detected above limiting criteria (inorg)

U - Analyzed for but not detected above limiting criteria. (org)

39  
07  
70  
Report WGPP/ver. 5.2  
GPAP

# WSCF

## ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: I08-043

Sample # W08P003411

Client ID: B1VKX8

PNNL-GPP  
WSCF

Matrix: WATER

Group #: WSCF20081406

Department: Organic

Sampled: 07/10/08

Received: 07/10/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Vinyl chloride	75-01-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
Methylenechloride	75-09-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
Carbon disulfide	75-15-0	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
2-Butanone	78-93-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
1,1,2-Trichloroethane	79-00-5	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
1-Butanol	71-36-3	LA-523-455	U	< 100	ug/L			1.00	1.0e+02		07/18/08
Tetrahydrofuran	109-99-9	LA-523-455	U	< 2.00	ug/L			1.00	2.0		07/18/08
trans-1,2-Dichloroethylene	156-60-5	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
cis-1,2-Dichloroethylene	156-59-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
Ethyl cyanide	107-12-0	LA-523-455	U	< 2.00	ug/L			1.00	2.0		07/18/08
1,4-Dichlorobenzene	106-46-7	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08

**MDL=Minimum Detection Limit**

**RQ=Result Qualifier**

**TP Err=Total Propagated Error**

**DF=Dilution Factor**

- Indicates results that have NOT been validated;

B - The analyte < the RDL but > = the IDL/MDL (inorg)

D - Analyte was identified at a secondary dilution factor(inorg)

U - Analyzed for but not detected above limiting criteria.

X - Other flags/notes described in the comments/narrative(inorg)

+ - Indicates more than six qualifier symbols

C - The Analyte was found in the Associated Blank.(inorg)

U - Analyzed for but not detected above limiting criteria(inorg)

U - Analyzed for but not detected above limiting criteria.(org)

40 of 70

Report WGPP/ver. 5.2

GPAP

# WSCF

## ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent E6-35  
**SAF Number:** I08-043  
**Sample #** W08P003413  
**Client ID:** B1VKY6

**Group #:** WSCF20081406  
**Department:** Organic  
**Sampled:** 07/10/08  
**Received:** 07/10/08

PNNL-GPP  
WSCF

**Matrix:** WATER

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
<b>Alcohols, Glycols - 8015 Prep</b>											
<b>Alcohols, Glycols - 8015</b>											
Ethyl acetate	141-78-6	Organics	U	< 5.00e+03	ug/L			1.00	5.0e+03		07/18/08
<b>NWTPH-D TPH Diesel Range (Wa) Prep</b>											
<b>NWTPH-D TPH Diesel Range (Wa)</b>											
Total Pet. Hydrocarbons Diesel	TPHDIESEL	LA-523-493	U	< 71.0	ug/L			1.00	71		07/21/08
Kerosene	TPHKEROSENE	LA-523-493	U	< 71.0	ug/L			1.00	71		07/21/08
<b>NWTPH-GX TPH Gasoline Range Prep</b>											
<b>NWTPH-GX TPH Gasoline Range</b>											
Total Pet. Hydrocarbons Gas	TPHGASOLINE	LA-523-443	U	< 50.0	ug/L			1.00	50		07/16/08
<b>SW-846 8270C Semi-Vols Prep</b>											
<b>SW-846 8270C Semi-Vols</b>											
4-Nitrophenol	100-02-7	LA-523-456	U	< 0.950	ug/L			1.00	0.95		07/21/08
1,4-Dichlorobenzene	106-46-7	LA-523-456	U	< 1.30	ug/L			1.00	1.3		07/21/08
Phenol	108-95-2	LA-523-456	U	< 0.480	ug/L			1.00	0.48		07/21/08
1,2,4-Trichlorobenzene	120-82-1	LA-523-456	U	< 2.10	ug/L			1.00	2.1		07/21/08
2,4-Dinitrotoluene	121-14-2	LA-523-456	U	< 0.480	ug/L			1.00	0.48		07/21/08
Pyrene	129-00-0	LA-523-456	U	< 0.480	ug/L			1.00	0.48		07/21/08
4-Chloro-3-methylphenol	59-50-7	LA-523-456	U	< 0.480	ug/L			1.00	0.48		07/21/08
N-Nitrosodi-n-dipropylamine	621-64-7	LA-523-456	U	< 0.570	ug/L			1.00	0.57		07/21/08
Acenaphthene	83-32-9	LA-523-456	U	< 2.50	ug/L			1.00	2.5		07/21/08
Pentachlorophenol	87-86-5	LA-523-456	U	< 1.40	ug/L			1.00	1.4		07/21/08
2-Chlorophenol	95-57-8	LA-523-456	U	< 0.480	ug/L			1.00	0.48		07/21/08
Bis(2-ethylhexyl) phthalate	117-81-7	LA-523-456	U	< 0.760	ug/L			1.00	0.76		07/21/08
2,4-Dichlorophenol	120-83-2	LA-523-456	U	< 0.480	ug/L			1.00	0.48		07/21/08

**MDL = Minimum Detection Limit**

**RQ = Result Qualifier**

**TP Err = Total Propagated Error**

**DF = Dilution Factor**

- Indicates results that have NOT been validated;

B - The analyte < the RDL but > = the IDL/MDL (inorg)

D - Analyte was identified at a secondary dilution factor (inorg)

U - Analyzed for but not detected above limiting criteria.

X - Other flags/notes described in the comments/narrative (inorg)

+ - Indicates more than six qualifier symbols

C - The Analyte was found in the Associated Blank. (inorg)

U - Analyzed for but not detected above limiting criteria (inorg)

U - Analyzed for but not detected above limiting criteria. (org)

Report WGPP/ver. 5.2

GPAP

41  
07/10

# WSCF

## ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent E6-35  
**SAF Number:** I08-043  
**Sample #** W08P003413  
**Client ID:** B1VKY6

**Group #:** WSCF20081406  
**Department:** Organic  
**Sampled:** 07/10/08  
**Received:** 07/10/08

PNNL-GPP  
WSCF

Matrix: WATER

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
2-Nitrophenol	88-75-5	LA-523-456	U	< 0.480	ug/L			1.00	0.48		07/21/08
Naphthalene	91-20-3	LA-523-456	U	< 2.00	ug/L			1.00	2.0		07/21/08
2-Methylphenol (cresol, o-)	95-48-7	LA-523-456	U	< 0.480	ug/L			1.00	0.48		07/21/08
3 & 4 Methylphenol Total	65794-96-9	LA-523-456	U	< 0.480	ug/L			1.00	0.48		07/21/08
Tributyl phosphate	126-73-8	LA-523-456	U	< 0.480	ug/L			1.00	0.48		07/21/08
Benzothiazole	95-16-9	LA-523-456	U	< 0.570	ug/L			1.00	0.57		07/21/08
2-Picoline	109-06-8	LA-523-456	U	< 4.80	ug/L			1.00	4.8		07/21/08
Total cresols	1319-77-3	LA-523-456	U	< 0.950	ug/L			1.00	0.95		07/21/08
Tris-2-chloroethyl phosphate	115-96-8	LA-523-456	U	< 0.620	ug/L			1.00	0.62		07/21/08
<b>VOA Ground Water Protection</b>											
1,1-Dichloroethene	75-35-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
Trichloroethene	79-01-6	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
Benzene	71-43-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
Toluene	106-88-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
Chlorobenzene	106-90-7	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
1,1-Dichloroethane	75-34-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
Ethylbenzene	100-41-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
1,2-Dichloroethane	107-06-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
4-Methyl-2-Pentanone	108-10-1	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
Tetrachloroethene	127-18-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
Xylenes (total)	1330-20-7	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
Carbon tetrachloride	56-23-5	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
Acetone	67-64-1	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
Chloroform	67-66-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
1,1,1-Trichloroethane	71-55-6	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08

**MDL=Minimum Detection Limit**

**RQ=Result Qualifier**

**TP Err=Total Propagated Error**

**DF=Dilution Factor**

- Indicates results that have NOT been validated;

B - The analyte < the RDL but > = the IDL/MDL (inorg)

D - Analyte was identified at a secondary dilution factor(inorg)

U - Analyzed for but not detected above limiting criteria.

X - Other flags/notes described in the comments/narrative(inorg)

+ - Indicates more than six qualifier symbols

C - The Analyte was found in the Associated Blank.(Inorg)

U - Analyzed for but not detected above limiting criteria(inorg)

U - Analyzed for but not detected above limiting criteria.(org)

42  
07  
70  
Report WGPP/ver. 5.2  
GPAP

# WSCF

## ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent E6-35  
**SAF Number:** I08-043  
**Sample #** W08P003413  
**Client ID:** B1VKY6

**PNNL-GPP**  
**WSCF**

**Matrix:** WATER

**Group #:** WSCF20081406  
**Department:** Organic  
**Sampled:** 07/10/08  
**Received:** 07/10/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Vinyl chloride	75-01-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
Methylenechloride	75-09-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
Carbon disulfide	75-15-0	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
2-Butanone	78-93-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
1,1,2-Trichloroethane	79-00-5	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
1-Butanol	71-36-3	LA-523-455	U	< 100	ug/L			1.00	1.0e+02		07/18/08
Tetrahydrofuran	109-99-9	LA-523-455	U	< 2.00	ug/L			1.00	2.0		07/18/08
trans-1,2-Dichloroethylene	156-80-5	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
cis-1,2-Dichloroethylene	156-59-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08
Ethyl cyanide	107-12-0	LA-523-455	U	< 2.00	ug/L			1.00	2.0		07/18/08
1,4-Dichlorobenzene	106-46-7	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08

**MDL=Minimum Detection Limit**

**RQ=Result Qualifier**

**TP Err=Total Propagated Error**

**DF=Dilution Factor**

- Indicates results that have NOT been validated;

B - The analyte < the RDL but > = the IDL/MDL (inorg)

D - Analyte was identified at a secondary dilution factor(inorg)

U - Analyzed for but not detected above limiting criteria.

X - Other flags/notes described in the comments/narrative(inorg)

+ - Indicates more than six qualifier symbols

C - The Analyte was found in the Associated Blank.(inorg)

U - Analyzed for but not detected above limiting criteria(inorg)

U - Analyzed for but not detected above limiting criteria.(org)

43  
of  
70  
Report WGPP/ver. 5.2  
GPAP

# WSCF

## ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent E6-35  
**SAF Number:** W08-005  
**Sample #** W08P003414  
**Client ID:** B1VHK4

**PNNL-GPP**  
**WSCF**

**Matrix:** WATER

**Group #:** WSCF20081406  
**Department:** Organic  
**Sampled:** 07/10/08  
**Received:** 07/10/08

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

**MDL = Minimum Detection Limit**

**RQ = Result Qualifier**

**TP Err = Total Propagated Error**

**DF = Dilution Factor**

- Indicates results that have NOT been validated;

B - The analyte < the RDL but > = the IDL/MDL (inorg)

D - Analyte was identified at a secondary dilution factor (inorg)

U - Analyzed for but not detected above limiting criteria.

X - Other flags/notes described in the comments/narrative (inorg)

+ - Indicates more than six qualifier symbols

C - The Analyte was found in the Associated Blank. (inorg)

U - Analyzed for but not detected above limiting criteria (inorg)

U - Analyzed for but not detected above limiting criteria. (org)

44  
07  
70

Report WGPP/ver. 5.2

GPAP

# WSCF

## ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: W08-005

Sample # W08P003414

Client ID: B1VHK4

PNNL-GPP  
WSCF

Matrix: WATER

Group #: WSCF20081406

Department: Organic

Sampled: 07/10/08

Received: 07/10/08

Test Performed	CAS #	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		07/18/08
1,4-Dichlorobenzene	106-46-7	LA-523-455	U	< 1.00	ug/L			1.00	1.0		07/18/08

**MDL=Minimum Detection Limit**

**RQ=Result Qualifier**

**TP Err=Total Propagated Error**

**DF=Dilution Factor**

- Indicates results that have NOT been validated;

B - The analyte < the RDL but > = the IDL/MDL (inorg)

D - Analyte was identified at a secondary dilution factor.(inorg)

U - Analyzed for but not detected above limiting criteria.

X - Other flags/notes described in the comments/narrative(inorg)

+ - Indicates more than six qualifier symbols

C - The Analyte was found in the Associated Blank.(inorg)

U - Analyzed for but not detected above limiting criteria(inorg)

U - Analyzed for but not detected above limiting criteria.(org)

Report WGPP/ver. 5.2

GPAP

450170

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Organic**

SDG Number: WSCF20081406  
 Matrix: WATER  
 Test: Alcohols, Glycols - 8015

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
<b>Lab ID: W08P003344</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
DUP	2-Bromoethanol	540-51-2	16000		RPD			9.524	25.000		07/18/08
DUP	Ethyl acetate	141-78-6	< 5000		RPD			n/a	25.000	U	07/18/08
MS	2-Bromoethanol	540-51-2	14900	84.659	% Recov	70.000	125.000				07/18/08
MS	Ethyl acetate	141-78-6	8000	88.889	% Recov	75.000	125.000				07/18/08
MSD	2-Bromoethanol	540-51-2	15900	90.341	% Recov	70.000	125.000				07/18/08
MSD	Ethyl acetate	141-78-6	7100	78.889	% Recov	75.000	125.000				07/18/08
SPK-RPD	2-Bromoethanol	540-51-2	90.341		RPD			6.494	20.000		07/18/08
SPK-RPD	Ethyl acetate	141-78-6	78.889		RPD			11.921	20.000		07/18/08
<b>BATCH QC</b>											
BLANK	2-Bromoethanol	540-51-2	37000	105.114	% Recov	75.000	125.000				07/18/08
BLANK	Ethyl acetate	141-78-6	< 5000	n/a	ug/L	0.000	5.000			U	07/18/08
LCS	2-Bromoethanol	540-51-2	33000	93.750	% Recov	70.000	130.000				07/18/08
LCS	Ethyl acetate	141-78-6	7200	80.000	% Recov	70.000	130.000				07/18/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Organic**

SDG Number: WSCF20081406  
 Matrix: WATER  
 Test: SW-846 8270C Semi-Vols

Sample Date: 07/10/08  
 Receive Date: 07/10/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>Lab ID: W08P003411</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
SURR	2-Fluorophenol(Surr)	367-12-4	14.268	74.900	% Recov	50.000	110.000				07/21/08
SURR	2-Fluorobiphenyl(Surr)	321-60-8	16.953	89.000	% Recov	58.000	109.000				07/21/08
SURR	Nitrobenzene-d5(Surr)	4165-60-0	16.896	88.700	% Recov	60.000	118.000				07/21/08
SURR	Phenol-d5(Surr)	4165-62-2	16.112	84.600	% Recov	59.000	116.000				07/21/08
SURR	2,4,6-Tribromophenol(Surr)	118-79-6	15.034	78.900	% Recov	60.000	120.000				07/21/08
SURR	Terphenyl-d14(Surr)	98904-43-9	20.266	106.000	% Recov	60.000	120.000				07/21/08
<b>Lab ID: W08P003413</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
MS	1,2,4-Trichlorobenzene	120-82-1	22.039	99.200	% Recov	50.000	120.000				07/21/08
MS	1,4-Dichlorobenzene	106-46-7	21.802	98.100	% Recov	41.000	113.000				07/21/08
MS	2,4-Dinitrotoluene	121-14-2	20.514	92.300	% Recov	65.000	109.000				07/21/08
MS	2-Fluorophenol(Surr)	367-12-4	17.246	77.600	% Recov	50.000	110.000				07/21/08
MS	Acenaphthene	83-32-9	22.010	99.000	% Recov	62.000	112.000				07/21/08
MS	4-Chloro-3-methylphenol	59-50-7	33.101	99.300	% Recov	59.000	115.000				07/21/08
MS	2-Chlorophenol	95-57-8	30.374	91.100	% Recov	69.000	111.000				07/21/08
MS	N-Nitrosodi-n-dipropylamine	621-64-7	21.537	96.900	% Recov	69.000	115.000				07/21/08
MS	2-Fluorobiphenyl(Surr)	321-60-8	21.861	98.400	% Recov	58.000	109.000				07/21/08
MS	Phenol	108-95-2	27.406	82.200	% Recov	59.000	115.000				07/21/08
MS	Nitrobenzene-d5(Surr)	4165-60-0	22.329	100.000	% Recov	60.000	118.000				07/21/08
MS	4-Nitrophenol	100-02-7	28.955	86.900	% Recov	32.000	130.000				07/21/08
MS	Pentachlorophenol	87-86-5	30.250	90.800	% Recov	51.000	121.000				07/21/08
MS	Phenol-d5(Surr)	4165-62-2	20.957	94.300	% Recov	59.000	116.000				07/21/08
MS	Pyrene	129-00-0	24.024	108.000	% Recov	58.000	116.000				07/21/08
MS	2,4,6-Tribromophenol(Surr)	118-79-6	21.059	94.800	% Recov	60.000	120.000				07/21/08
MS	Terphenyl-d14(Surr)	98904-43-9	24.189	109.000	% Recov	60.000	120.000				07/21/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Organic**

SDG Number: WSCF20081406  
 Matrix: WATER  
 Test: SW-846 8270C Semi-Vols

Sample Date: 07/10/08  
 Receive Date: 07/10/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
MSD	1,2,4-Trichlorobenzene	120-82-1	21.050	94.700	% Recov	50.000	120.000				07/21/08
MSD	1,4-Dichlorobenzene	106-46-7	21.032	94.600	% Recov	41.000	113.000				07/21/08
MSD	2,4-Dinitrotoluene	121-14-2	19.612	88.300	% Recov	65.000	109.000				07/21/08
MSD	2-Fluorophenol(Surr)	367-12-4	14.876	66.900	% Recov	50.000	110.000				07/21/08
MSD	Acenaphthene	83-32-9	21.752	97.900	% Recov	62.000	112.000				07/21/08
MSD	4-Chloro-3-methylphenol	59-50-7	31.078	93.200	% Recov	59.000	115.000				07/21/08
MSD	2-Chlorophenol	95-57-8	29.390	88.200	% Recov	69.000	111.000				07/21/08
MSD	N-Nitrosodi-n-dipropylamine	621-64-7	21.233	95.500	% Recov	69.000	115.000				07/21/08
MSD	2-Fluorobiphenyl(Surr)	321-60-8	21.823	98.200	% Recov	58.000	109.000				07/21/08
MSD	Phenol	108-95-2	26.436	79.300	% Recov	59.000	115.000				07/21/08
MSD	Nitrobenzene-d5(Surr)	4165-60-0	21.574	97.100	% Recov	60.000	118.000				07/21/08
MSD	4-Nitrophenol	100-02-7	28.723	86.200	% Recov	32.000	130.000				07/21/08
MSD	Pentachlorophenol	87-86-5	29.578	88.700	% Recov	51.000	121.000				07/21/08
MSD	Phenol-d5(Surr)	4165-62-2	19.798	89.100	% Recov	59.000	116.000				07/21/08
MSD	Pyrene	129-00-0	24.057	108.000	% Recov	58.000	116.000				07/21/08
MSD	2,4,6-Tribromophenol(Surr)	118-79-6	20.372	91.700	% Recov	60.000	120.000				07/21/08
MSD	Terphenyl-d14(Surr)	98904-43-9	24.067	108.000	% Recov	60.000	120.000				07/21/08
SPK-RPD	1,2,4-Trichlorobenzene	120-82-1	94.700		RPD			4.642	25.000		07/21/08
SPK-RPD	1,4-Dichlorobenzene	106-46-7	94.600		RPD			3.633	25.000		07/21/08
SPK-RPD	2,4-Dinitrotoluene	121-14-2	88.300		RPD			4.430	25.000		07/21/08
SPK-RPD	2-Fluorophenol(Surr)	367-12-4	66.900		RPD			14.810	25.000		07/21/08
SPK-RPD	Acenaphthene	83-32-9	97.900		RPD			1.117	25.000		07/21/08
SPK-RPD	4-Chloro-3-methylphenol	59-50-7	93.200		RPD			6.338	25.000		07/21/08
SPK-RPD	2-Chlorophenol	95-57-8	88.200		RPD			3.235	25.000		07/21/08
SPK-RPD	N-Nitrosodi-n-dipropylamine	621-64-7	95.500		RPD			1.455	25.000		07/21/08
SPK-RPD	2-Fluorobiphenyl(Surr)	321-60-8	98.200		RPD			0.203	25.000		07/21/08
SPK-RPD	Phenol	108-95-2	79.300		RPD			3.591	16.000		07/21/08
SPK-RPD	Nitrobenzene-d5(Surr)	4165-60-0	97.100		RPD			2.943	25.000		07/21/08
SPK-RPD	4-Nitrophenol	100-02-7	86.200		RPD			0.809	25.000		07/21/08
SPK-RPD	Pentachlorophenol	87-86-5	88.700		RPD			2.340	25.000		07/21/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Organic**

SDG Number: WSCF20081406  
 Matrix: WATER  
 Test: SW-846 8270C Semi-Vols

Sample Date: 07/10/08  
 Receive Date: 07/10/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
SPK-RPD	Phenol-d5(Surr)	4165-62-2	89.100		RPD			5.671	25.000		07/21/08
SPK-RPD	Pyrene	129-00-0	108.000		RPD			0.000	25.000		07/21/08
SPK-RPD	2,4,6-Tribromophenol(Surr)	118-79-6	91.700		RPD			3.324	25.000		07/21/08
SPK-RPD	Terphenyl-d14(Surr)	98904-43-9	108.000		RPD			0.922	25.000		07/21/08
SURR	2-Fluorophenol(Surr)	367-12-4	14.045	73.700	% Recov	50.000	110.000				07/21/08
SURR	2-Fluorobiphenyl(Surr)	321-60-8	16.800	88.200	% Recov	58.000	109.000				07/21/08
SURR	Nitrobenzene-d5(Surr)	4165-60-0	17.176	90.200	% Recov	60.000	118.000				07/21/08
SURR	Phenol-d5(Surr)	4165-62-2	15.614	82.000	% Recov	59.000	116.000				07/21/08
SURR	2,4,6-Tribromophenol(Surr)	118-79-6	14.596	76.600	% Recov	60.000	120.000				07/21/08
SURR	Terphenyl-d14(Surr)	98904-43-9	18.829	98.900	% Recov	60.000	120.000				07/21/08

## BATCH QC

BLANK	1,2,4-Trichlorobenzene	120-82-1	< 2.2	n/a	ug/L					U	07/21/08
BLANK	1,4-Dichlorobenzene	106-46-7	< 1.4	n/a	ug/L					U	07/21/08
BLANK	2,4-Dichlorophenol	120-83-2	< 0.50	n/a	ug/L					U	07/21/08
BLANK	2,4-Dinitrotoluene	121-14-2	< 0.50	n/a	ug/L					U	07/21/08
BLANK	2-Fluorophenol(Surr)	367-12-4	17.902	89.500	% Recov	50.000	110.000				07/21/08
BLANK	2-Methylphenol (cresol, o-)	95-48-7	< 0.50	n/a	ug/L					U	07/21/08
BLANK	2-Nitrophenol	88-75-5	< 0.50	n/a	ug/L					U	07/21/08
BLANK	2-Picoline	109-06-8	< 5.0	n/a	ug/L					U	07/21/08
BLANK	3 & 4 Methylphenol Total	65794-96-9	< 0.50	n/a	ug/L	0.000	5.000			U	07/21/08
BLANK	Acenaphthene	83-32-9	< 2.6	n/a	ug/L					U	07/21/08
BLANK	Bis(2-ethylhexyl) phthalate	117-81-7	< 0.80	n/a	ug/L					U	07/21/08
BLANK	Benzothiazole	95-16-9	< 0.60	n/a	ug/L	0.000	300.000			U	07/21/08
BLANK	4-Chloro-3-methylphenol	59-50-7	< 0.50	n/a	ug/L					U	07/21/08
BLANK	2-Chlorophenol	95-57-8	< 0.50	n/a	ug/L					U	07/21/08
BLANK	N-Nitrosodi-n-dipropylamine	621-84-7	< 0.60	n/a	ug/L					U	07/21/08
BLANK	2-Fluorobiphenyl(Surr)	321-60-8	19.725	98.600	% Recov	58.000	109.000				07/21/08
BLANK	Phenol	108-95-2	< 0.50	n/a	ug/L					U	07/21/08
BLANK	Naphthalene	91-20-3	< 2.1	n/a	ug/L					U	07/21/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Organic**

SDG Number: WSCF20081406  
 Matrix: WATER  
 Test: SW-846 8270C Semi-Vols

Sample Date:  
 Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
BLANK	Nitrobenzene-d5(Surr)	4165-60-0	19.651	98.300	% Recov	60.000	118.000				07/21/08
BLANK	4-Nitrophenol	100-02-7	< 1.0	n/a	ug/L					U	07/21/08
BLANK	Pentachlorophenol	87-86-5	< 1.5	n/a	ug/L					U	07/21/08
BLANK	Phenol-d5(Surr)	4165-62-2	18.838	94.200	% Recov	59.000	116.000				07/21/08
BLANK	Pyrene	129-00-0	< 0.50	n/a	ug/L					U	07/21/08
BLANK	Tris-2-chloroethyl phosphate	115-96-8	< 0.65	n/a	ug/L	0.000	300.000			U	07/21/08
BLANK	Tributyl phosphate	126-73-8	< 0.50	n/a	ug/L					U	07/21/08
BLANK	2,4,6-Tribromophenol(Surr)	118-79-6	17.552	87.800	% Recov	60.000	120.000				07/21/08
BLANK	Terphenyl-d14(Surr)	98904-43-9	22.237	111.000	% Recov	60.000	120.000				07/21/08
LCS	1,2,4-Trichlorobenzene	120-82-1	19.154	95.800	% Recov	46.000	107.000				07/21/08
LCS	1,4-Dichlorobenzene	106-46-7	18.815	94.100	% Recov	42.000	111.000				07/21/08
LCS	2,4-Dinitrotoluene	121-14-2	18.183	90.900	% Recov	59.000	106.000				07/21/08
LCS	2-Fluorophenol(Surr)	367-12-4	15.580	77.900	% Recov	50.000	110.000				07/21/08
LCS	Acenaphthene	83-32-9	19.490	97.400	% Recov	61.000	116.000				07/21/08
LCS	4-Chloro-3-methylphenol	59-50-7	28.483	94.900	% Recov	61.000	106.000				07/21/08
LCS	2-Chlorophenol	95-57-8	27.294	91.000	% Recov	66.000	106.000				07/21/08
LCS	N-Nitrosodi-n-dipropylamine	621-64-7	18.842	94.200	% Recov	71.000	114.000				07/21/08
LCS	2-Fluorobiphenyl(Surr)	321-60-8	19.913	99.600	% Recov	58.000	109.000				07/21/08
LCS	Phenol	108-95-2	24.129	80.400	% Recov	67.000	105.000				07/21/08
LCS	Nitrobenzene-d5(Surr)	4165-60-0	19.612	98.100	% Recov	60.000	118.000				07/21/08
LCS	4-Nitrophenol	100-02-7	26.913	89.700	% Recov	32.000	118.000				07/21/08
LCS	Pentachlorophenol	87-86-5	26.463	88.200	% Recov	62.000	114.000				07/21/08
LCS	Phenol-d5(Surr)	4165-62-2	18.431	92.200	% Recov	59.000	116.000				07/21/08
LCS	Pyrene	129-00-0	21.176	106.000	% Recov	66.000	118.000				07/21/08
LCS	2,4,6-Tribromophenol(Surr)	118-79-6	19.486	97.400	% Recov	60.000	120.000				07/21/08
LCS	Terphenyl-d14(Surr)	98904-43-9	21.782	109.000	% Recov	60.000	120.000				07/21/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Organic**

SDG Number: WSCF20081406  
 Matrix: WATER  
 Test: NWTPH-D TPH Diesel Range (Wa)

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
<b>Lab ID: W08GR02298</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
MS	ortho-Terphenyl	Surr	84-15-1	457.71	96.100	% Recov	70.000	130.000			07/21/08
MS	Total Pet. Hydrocarbons	Diesel	TPHDIESEL	2508.1	105.000	% Recov	75.000	125.000			07/21/08
MSD	ortho-Terphenyl	Surr	84-15-1	502.96	101.000	% Recov	70.000	130.000			07/21/08
MSD	Total Pet. Hydrocarbons	Diesel	TPHDIESEL	2831.8	113.000	% Recov	75.000	125.000			07/21/08
<b>Lab ID: W08P003344</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
MS	ortho-Terphenyl	Surr	84-15-1	487.53	102.000	% Recov	70.000	130.000			07/21/08
MS	Total Pet. Hydrocarbons	Diesel	TPHDIESEL	2566.0	108.000	% Recov	75.000	125.000			07/21/08
MSD	ortho-Terphenyl	Surr	84-15-1	518.25	109.000	% Recov	70.000	130.000			07/21/08
MSD	Total Pet. Hydrocarbons	Diesel	TPHDIESEL	2722.7	114.000	% Recov	75.000	125.000			07/21/08
SPK-RPD	ortho-Terphenyl	Surr	84-15-1	109.000		RPD			6.635	20.000	07/21/08
SPK-RPD	Total Pet. Hydrocarbons	Diesel	TPHDIESEL	114.000		RPD			5.405	20.000	07/21/08
<b>Lab ID: W08P003411</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
SURR	ortho-Terphenyl	Surr	84-15-1	391.77	82.300	% Recov	70.000	130.000			07/21/08
<b>Lab ID: W08P003413</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
SURR	ortho-Terphenyl	Surr	84-15-1	433.03	90.900	% Recov	70.000	130.000			07/21/08
<b>BATCH QC</b>											
BLANK	Kerosene		TPHKEROSENE	< 75	n/a	ug/L				U	07/21/08
BLANK	ortho-Terphenyl	Surr	84-15-1	448.16	89.600	% Recov	70.000	130.000			07/21/08
BLANK	Total Pet. Hydrocarbons	Diesel	TPHDIESEL	< 75	n/a	ug/L				U	07/21/08

51 of 70

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Organic

SDG Number: WSCF20081406

Matrix: WATER

Test: NWTPH-D TPH Diesel Range (Wa)

Sample Date:

Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
LCS	ortho-Terphenyl Surr	84-15-1	513.78	103.000	% Recov	70.000	130.000				07/21/08
LCS	Total Pet. Hydrocarbons Diesel	TPHDIESEL	2644.9	106.000	% Recov	80.000	120.000				07/21/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Organic**

SDG Number: WSCF20081406  
 Matrix: WATER  
 Test: NWTPH-GX TPH Gasoline Range

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
<b>Lab ID: W08P003344</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
DUP	Total Pet. Hydrocarbons Gas	TPHGASOLINE	<50		RPD			n/a	20.000	U	07/16/08
MS	Total Pet. Hydrocarbons Gas	TPHGASOLINE	2700	108.000	% Recov	75.000	125.000				07/16/08
MSD	Total Pet. Hydrocarbons Gas	TPHGASOLINE	2700	108.000	% Recov	75.000	125.000				07/16/08
SPK-RPD	Total Pet. Hydrocarbons Gas	TPHGASOLINE	108.000		RPD			0.000	20.000		07/16/08
<b>BATCH QC</b>											
BLANK	Total Pet. Hydrocarbons Gas	TPHGASOLINE	<50	n/a	mg/L	0.000	300.000			U	07/16/08
LCS	Total Pet. Hydrocarbons Gas	TPHGASOLINE	2500	100.000	%rec	80.000	120.000				07/16/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Organic**

SDG Number: WSCF20081406  
 Matrix: WATER  
 Test: VOA Ground Water Protection

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	1,1-Dichloroethene	75-35-4	28.220	113.000	% Recov	63.000	117.000				07/18/08
MS	Benzene	71-43-2	25.200	101.000	% Recov	75.000	129.000				07/18/08
MS	4-Bromofluorobenzene(Surr)	460-00-4	50.130	100.000	% Recov	75.000	125.000				07/18/08
MS	Chlorobenzene	108-90-7	25.630	103.000	% Recov	79.000	119.000				07/18/08
MS	1,2-Dichloroethane-d4(Surr)	17060-07-0	56.270	113.000	% Recov	75.000	125.000				07/18/08
MS	Toluene-d8(Surr)	2037-26-5	50.390	101.000	% Recov	75.000	125.000				07/18/08
MS	Toluene	108-88-3	25.580	102.000	% Recov	76.000	120.000				07/18/08
MS	Trichloroethene	79-01-6	24.780	99.100	% Recov	73.000	123.000				07/18/08
MSD	1,1-Dichloroethene	75-35-4	27.920	112.000	% Recov	63.000	117.000				07/18/08
MSD	Benzene	71-43-2	24.720	98.900	% Recov	75.000	129.000				07/18/08
MSD	4-Bromofluorobenzene(Surr)	460-00-4	51.340	103.000	% Recov	75.000	125.000				07/18/08
MSD	Chlorobenzene	108-90-7	25.270	101.000	% Recov	79.000	119.000				07/18/08
MSD	1,2-Dichloroethane-d4(Surr)	17060-07-0	56.600	113.000	% Recov	75.000	125.000				07/18/08
MSD	Toluene-d8(Surr)	2037-26-5	50.060	100.000	% Recov	75.000	125.000				07/18/08
MSD	Toluene	108-88-3	25.120	100.000	% Recov	76.000	120.000				07/18/08
MSD	Trichloroethene	79-01-6	23.590	94.400	% Recov	73.000	123.000				07/18/08
SPK-RPD	1,1-Dichloroethene	75-35-4	112.000		RPD			0.889	20.000		07/18/08
SPK-RPD	Benzene	71-43-2	98.900		RPD			2.101	20.000		07/18/08
SPK-RPD	4-Bromofluorobenzene(Surr)	460-00-4	103.000		RPD			2.958	20.000		07/18/08
SPK-RPD	Chlorobenzene	108-90-7	101.000		RPD			1.961	20.000		07/18/08
SPK-RPD	1,2-Dichloroethane-d4(Surr)	17060-07-0	113.000		RPD			0.000	20.000		07/18/08
SPK-RPD	Toluene-d8(Surr)	2037-26-5	100.000		RPD			0.995	20.000		07/18/08
SPK-RPD	Toluene	108-88-3	100.000		RPD			1.980	20.000		07/18/08
SPK-RPD	Trichloroethene	79-01-6	94.400		RPD			4.858	20.000		07/18/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Organic**

SDG Number: WSCF20081406  
 Matrix: WATER  
 Test: VOA Ground Water Protection

Sample Date: 07/10/08  
 Receive Date: 07/10/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
---------	---------	-------	----------	----------	-------	-------------	-------------	--------	-----------	----	---------------

**Lab ID: W08P003411**  
**BATCH QC ASSOCIATED WITH SAMPLE**

SURR	4-Bromofluorobenzene(Surr)	460-00-4	50.600	101.000	% Recov	75.000	125.000				07/18/08
SURR	1,2-Dichloroethane-d4(Surr)	17060-07-0	56.400	113.000	% Recov	75.000	125.000				07/18/08
SURR	Toluene-d8(Surr)	2037-26-5	51.160	102.000	% Recov	75.000	125.000				07/18/08

**Lab ID: W08P003413**  
**BATCH QC ASSOCIATED WITH SAMPLE**

SURR	4-Bromofluorobenzene(Surr)	460-00-4	50.200	100.000	% Recov	75.000	125.000				07/18/08
SURR	1,2-Dichloroethane-d4(Surr)	17060-07-0	57.100	114.000	% Recov	75.000	125.000				07/18/08
SURR	Toluene-d8(Surr)	2037-26-5	51.290	103.000	% Recov	75.000	125.000				07/18/08

**Lab ID: W08P003414**  
**BATCH QC ASSOCIATED WITH SAMPLE**

SURR	4-Bromofluorobenzene(Surr)	460-00-4	50.440	101.000	% Recov	75.000	125.000				07/18/08
SURR	1,2-Dichloroethane-d4(Surr)	17060-07-0	58.960	118.000	% Recov	75.000	125.000				07/18/08
SURR	Toluene-d8(Surr)	2037-26-5	50.640	101.000	% Recov	75.000	125.000				07/18/08

**BATCH QC**

BLANK	1,1-Dichloroethane	75-34-3	< 1.0	n/a	ug/L					U	07/17/08
BLANK	1,1,1-Trichloroethane	71-55-6	< 1.0	n/a	ug/L					U	07/17/08
BLANK	1,1,2-Trichloroethane	79-00-5	< 1.0	n/a	ug/L					U	07/17/08
BLANK	1,1-Dichloroethene	75-35-4	< 1.0	n/a	ug/L					U	07/17/08
BLANK	1,2-Dichloroethane	107-06-2	< 1.0	n/a	ug/L					U	07/17/08
BLANK	1,4-Dichlorobenzene	106-46-7	< 1.0	n/a	ug/L					U	07/17/08
BLANK	1-Butanol	71-36-3	< 100	n/a	ug/L					U	07/17/08
BLANK	4-Methyl-2-Pentanone	108-10-1	< 1.0	n/a	ug/L					U	07/17/08
BLANK	Acetone	67-64-1	< 1.0	n/a	ug/L					U	07/17/08
BLANK	Benzene	71-43-2	< 1.0	n/a	ug/L					U	07/17/08

55 of 70

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Organic**

SDG Number: WSCF20081406  
 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	4-Bromofluorobenzene(Surr)	460-00-4	50.930	102.000	% Recov	75.000	125.000				07/17/08
BLANK	Carbon disulfide	75-15-0	< 1.0	n/a	ug/L					U	07/17/08
BLANK	Carbon tetrachloride	56-23-5	< 1.0	n/a	ug/L					U	07/17/08
BLANK	Chloroform	67-66-3	< 1.0	n/a	ug/L					U	07/17/08
BLANK	Chlorobenzene	108-90-7	< 1.0	n/a	ug/L					U	07/17/08
BLANK	cis-1,2-Dichloroethylene	158-59-2	< 1.0	n/a	ug/L					U	07/17/08
BLANK	1,2-Dichloroethane-d4(Surr)	17060-07-0	55.280	111.000	% Recov	75.000	125.000				07/17/08
BLANK	trans-1,2-Dichloroethylene	156-60-5	< 1.0	n/a	ug/L					U	07/17/08
BLANK	Ethylbenzene	100-41-4	< 1.0	n/a	ug/L					U	07/17/08
BLANK	Ethyl cyanide	107-12-0	< 2.0	n/a	ug/L					U	07/17/08
BLANK	2-Butanone	78-93-3	< 1.0	n/a	ug/L					U	07/17/08
BLANK	Methylenechloride	75-09-2	< 1.0	n/a	ug/L					U	07/17/08
BLANK	Tetrachloroethene	127-18-4	< 1.0	n/a	ug/L					U	07/17/08
BLANK	Xylenes (total)	1330-20-7	< 1.0	n/a	ug/L	0.000	5.000			U	07/17/08
BLANK	Tetrahydrofuran	109-99-9	< 2.0	n/a	ug/L					U	07/17/08
BLANK	Toluene-d8(Surr)	2037-26-5	49.080	98.100	% Recov	75.000	125.000				07/17/08
BLANK	Toluene	108-88-3	< 1.0	n/a	ug/L					U	07/17/08
BLANK	Trichloroethene	79-01-6	< 1.0	n/a	ug/L					U	07/17/08
BLANK	Vinyl chloride	75-01-4	< 1.0	n/a	ug/L					U	07/17/08
LCS	1,1-Dichloroethene	75-35-4	28.380	114.000	% Recov	75.000	125.000				07/18/08
LCS	Benzene	71-43-2	26.300	105.000	% Recov	75.000	125.000				07/18/08
LCS	4-Bromofluorobenzene(Surr)	460-00-4	50.610	101.000	% Recov	75.000	125.000				07/18/08
LCS	Chlorobenzene	108-90-7	26.260	105.000	% Recov	75.000	125.000				07/18/08
LCS	1,2-Dichloroethane-d4(Surr)	17060-07-0	53.080	106.000	% Recov	75.000	125.000				07/18/08
LCS	Toluene-d8(Surr)	2037-26-5	50.090	100.000	% Recov	75.000	125.000				07/18/08
LCS	Toluene	108-88-3	26.530	106.000	% Recov	75.000	125.000				07/18/08
LCS	Trichloroethene	79-01-6	20.840	83.400	% Recov	75.000	125.000				07/18/08

# WSCF ANALYTICAL COMMENT REPORT

Attention: Steve Trent E6-35

Group #: WSCF20081406  
Department: Organic

Sample #	Client ID	Lab Area	Test	Comment
		VALGROUP		<p>SVOA: Low phenolic surrogate recoveries are matrix effects of a sample unrelated to the samples in this batch. All surrogate recoveries are within QC control limits. cgc</p> <p>H-3 LCS recovery is low. Since all the other QC checks came out fine, this batch has been approved. lmh</p> <p>ICP-MS: Mercury data not uploaded. Spike recovery data not available. Samples spiked were W08P-3344(90% &amp; 93% recovery) W08P-3520(98% &amp; 96% recovery), W08P-3521(95% &amp; 98% recovery) Information is in the raw data "X" flags</p> <p>ICP-AES: [Samples W08P3410-3413] High silver preparation blank result; "C" flag if applicable. No zirconium present in the LCS standard. Magnesium, sodium, and calcium sample results exceed spiking level by a factor of 4 so spike recoveries are not valid. Check standard used to ensure magnesium, sodium, and calcium linearity because sample results are greater than the calibration standard.</p>

Lab Areas: VALGROUP - Group Validation  
LOGSAMP - Login for Sample

VALTEST - Test Validation  
LOGTEST - Login for Tests

TESTDATA - Test Data Entry

This report may not be reproduced, except in its entirety without the written approval of the WSCF Laboratory.

wgppc/5.2 Report#: WSCF20081406

Report Date: 25-aug-2008

Page 1

57 of 70

# WSCF ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: I08-043

Sample # W08P003411

Client ID: B1VKX8

PNNL-GPP  
WSCF

Matrix: WATER

Group #: WSCF20081406

Department: Radiochemistry

Sampled: 07/10/08

Received: 07/10/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
<b>Strontium 89/90</b>											
Strontium-89/90	SR-RAD	LA-508-415	U	-2.10	pCi/L	+ -2.10	pCi/L	1.00	1.1		07/21/08
Sr-85 Tracer by Beta Counting	SR85	LA-508-415		83.8	Percent			1.00	0.0		07/21/08
<b>TC99 by Liquid Scin.</b>											
Tc-99 by Liquid Scin.	14133-76-7	LA-508-421		8.70	pCi/L	+ -4.00	pCi/L	1.00	5.8		07/17/08
<b>Tritium by Liq Sct column prep</b>											
Tritium	10028-17-8	LA-508-421	U	78.0	pCi/L	+ -99.8	pCi/L	1.00	2.3e +02		07/15/08

**MDL = Minimum Detection Limit**

**RQ = Result Qualifier**

**TP Err = Total Propagated Error**

**DF = Dilution Factor**

- Indicates results that have NOT been validated;

B - The analyte < the RDL but > = the IDL/MDL (inorg)

D - Analyte was identified at a secondary dilution factor (inorg)

U - Analyzed for but not detected above limiting criteria.

X - Other flags/notes described in the comments/narrative (inorg)

+ - Indicates more than six qualifier symbols

C - The Analyte was found in the Associated Blank. (inorg)

U - Analyzed for but not detected above limiting criteria (inorg)

U - Analyzed for but not detected above limiting criteria. (org)

58  
07  
70

Report WGPP/ver. 5.2

GPAP

# WSCF ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent E6-35  
**SAF Number:** I08-043  
**Sample #** W08P003413  
**Client ID:** B1VKY6

**PNNL-GPP  
WSCF**

**Matrix:** WATER

**Group #:** WSCF20081406  
**Department:** Radiochemistry  
**Sampled:** 07/10/08  
**Received:** 07/10/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
<b>Strontium 89/90</b>											
Strontium-89/90	SR-RAD	LA-508-415	U	-1.70	pCi/L	+ -1.70	pCi/L	1.00	1.1		07/21/08
Sr-85 Tracer by Beta Counting	SR85	LA-508-415		83.2	Percent			1.00	0.0		07/21/08
<b>TC99 by Liquid Scin.</b>											
Tc-99 by Liquid Scin.	14133-76-7	LA-508-421	U	-0.900	pCi/L	+ -3.38	pCi/L	1.00	5.8		07/17/08
<b>Tritium by Liq Sct column prep</b>											
Tritium	10028-17-8	LA-508-421	U	-51.0	pCi/L	+ -81.7	pCi/L	1.00	2.3e +02		07/15/08

**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)  
 D - Analyte was identified at a secondary dilution factor(inorg)  
 U - Analyzed for but not detected above limiting criteria.  
 X - Other flags/notes described in the comments/narrative(inorg)

C - The Analyte was found in the Associated Blank.(inorg)  
 U - Analyzed for but not detected above limiting criteria(inorg)  
 U - Analyzed for but not detected above limiting criteria.(org)

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

Report WGPP/ver. 5.2

GPAP

59 of 70

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20081406  
 Matrix: WATER  
 Test: Strontium 89/90

Sample Date: 07/10/08  
 Receive Date: 07/10/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>Lab ID: W08P003411</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
DUP	Sr-85 Tracer by Beta Counting	SR85	82.4	82.400	% Recov	30.000	105.000				07/21/08
DUP	Strontium-89/90	SR-RAD	U-2.2		RPD			n/a	20.000		07/21/08
SURR	Sr-85 Tracer by Beta Counting	SR85	83.8	83.800	% Recov	30.000	105.000				07/21/08
<b>Lab ID: W08P003413</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
SURR	Sr-85 Tracer by Beta Counting	SR85	83.2	83.200	% Recov	30.000	105.000				07/21/08
<b>BATCH QC</b>											
BLANK	Sr-85 Tracer by Beta Counting	SR85	79.2	79.200	% Recov	30.000	105.000				07/21/08
BLANK	Strontium-89/90	10098-97-2	U-2.7	n/a	pCi/L	-10.000	100.000				07/21/08
LCS	Sr-85 Tracer by Beta Counting	SR85	75.8	75.800	% Recov	30.000	105.000				07/21/08
LCS	Strontium-89/90	10098-97-2	139	100.122	% Recov	80.000	120.000				07/21/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20081406  
 Matrix: WATER  
 Test: TC99 by Liquid Scin.

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
<b>Lab ID: W08P003355</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
DUP	Tc-99 by Liquid Scin.	14133-76-7	6.6E +01		RPD			7.874	20.000		07/17/08
MS	Tc-99 by Liquid Scin.	14133-76-7	204.7	108.825	% Recov	75.000	125.000				07/17/08
<b>BATCH QC</b>											
BLANK	Tc-99 by Liquid Scin.	14133-76-7	U-0.7	n/a	pCi/L	-10.000	10.000				07/17/08
LCS	Tc-99 by Liquid Scin.	14133-76-7	204.7	108.825	% Recov	80.000	120.000				07/17/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20081406  
 Matrix: WATER  
 Test: Tritium by Liq Sct column prep

Sample Date: 07/10/08  
 Receive Date: 07/10/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>Lab ID: W08P003411</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
DUP	Tritium	10028-17-8	U2.2E+01		RPD			n/a	20.000		07/15/08
MS	Tritium	10028-17-8	20422.5	79.240	% Recov	75.000	125.000				07/15/08
<b>BATCH QC</b>											
BLANK	Tritium	10028-17-8	U-9.5E+01	n/a	pCi/L	-10.000	1000.000				07/15/08
LCS	Tritium	10028-17-8	2180.0	63.814	% Recov	80.000	120.000				07/15/08

# WSCF ANALYTICAL COMMENT REPORT

Attention: Steve Trent E6-35

Group #: WSCF20081406  
Department: Radiochemistry

Sample #	Client ID	Lab Area	Test	Comment
		VALGROUP		<p>SVOA: Low phenolic surrogate recoveries are matrix effects of a sample unrelated to the samples in this batch. All surrogate recoveries are within QC control limits. cgc</p> <p>H-3 LCS recovery is low. Since all the other QC checks came out fine, this batch has been approved. lnh</p> <p>ICP-MS: Mercury data not uploaded. Spike recovery data not available. Samples spiked were W08P-3344(90% &amp; 93% recovery) W08P-3520(98% &amp; 96% recovery), W08P-3521(95% &amp; 98% recovery) Information is in the raw data "X" flags</p> <p>ICP-AES: [Samples W08P3410-3413] High silver preparation blank result; "C" flag if applicable. No zirconium present in the LCS standard. Magnesium, sodium, and calcium sample results exceed spiking level by a factor of 4 so spike recoveries are not valid. Check standard used to ensure magnesium, sodium, and calcium linearity because sample results are greater than the calibration standard.</p>

Lab Areas: VALGROUP - Group Validation  
LOGSAMP - Login for Sample

VALTEST - Test Validation  
LOGTEST - Login for Tests

TESTDATA - Test Data Entry

This report may not be reproduced, except in its entirety without the written approval of the WSCF Laboratory.

M4W41-SLF-08-900

ATTACHMENT 4

**SAMPLE RECEIPT INFORMATION**

Consisting of 7 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*  
08/21/08  
*[Signature]*

ACKNOWLEDGMENT OF SAMPLES RECEIVED

GPAP

Richland, WA 99352  
Attn: Steve Trent E6-35

Customer Code: PNNL-GPP  
PO#: 122543  
Group#: 20081406

The following samples were received from you on 07/10/08. 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
W08P003410	B1VKX7	PNNL-GPP @2008	Water @GPP6010	07/10/08
W08P003411	B1VKX8	PNNL-GPP @2008 @SR89_90 CN-02	Water @8015GPP @GPP6010 @SVOCGPP @TC99-30 NH4-IC TOC-30	07/10/08
W08P003412	B1VKY5	PNNL-GPP @2008	Water @GPP6010	07/10/08
W08P003413	B1VKY6	PNNL-GPP @2008 @SR89_90 CN-02	Water @8015GPP @GPP6010 @SVOCGPP @TC99-30 NH4-IC TOC-30	07/10/08
W08P003414	B1VHK4	PNNL-GPP @VOA-GPP	Water	07/10/08

Test Acronym Description

Test Acronym	Description
@2008	ICP-200.8 MS All possible meta
@8015GPP	Alcohols, Glycols - 8015
@GPP6010	ICP Metals Analysis, Grd H2O P
@H3-33	Tritium by Liq Sct column prep
@IC-30	Anions by Ion Chromatography
@SR89_90	Strontium 89/90
@SVOCGPP	SW-846 8270C Semi-Vols
@TC99-30	TC99 by Liquid Scin.
@TPHD-WA	NWTPH-D TPH Diesel Range (Wa)
@TPHG-WA	NWTPH-GX TPH Gasoline Range
@VOA-GPP	VOA Ground Water Protection
CN-02	Cyanide by Midi/Spectrophotom
NH4-IC	Ammonia (N) by IC
TOC-30	Total Organic Carbon

FLUOR HANFORD

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

108-043-51

08/21/08 20081406

Page 1 of 2

Collector <b>F. M. Hall</b>	Contact/Requester Steve Trent	Telephone No. 509-373-5869	MSIN	FAX
SAF No. 108-043	Sampling Origin Hanford Site	Purchase Order/Charge Code		
Project Title 2UPL JUNE 2008	<b>HNF-506-77</b>	Ice Chest No. <b>ERC-02-401</b>	Temp.	
Shipped To (Lab) Waste Sampling & Characterization	Method of Shipment Govt. Vehicle	Bill of Lading/Air Bill No.		
Protocol SURV	Priority: 45 Days	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  
 200 Area Generator Knowledge Information Form applies.

Total Activity Exemption: Yes  No

# ICED

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B1VKX7 (F)	W08A03410	W	7/19/08	1109	1x500-mL G/P	200.8_METALS_ICPMS: Arsenic (1); 200.8_METALS_ICPMS: Lead (1)	HNO3 to pH <2
B1VKX7 (F)	↓	W	↓	↓	1x500-mL G/P	200.8_METALS_ICPMS: Mercury (1)	HNO3 to pH <2
B1VKX7 (F)	↓	W	↓	↓	1x500-mL G/P	6010_METALS_ICP: List-1 + Lithium (20)	HNO3 to pH <2
B1VKX8	3411	W	↓	↓	4x40-mL aGs*	8260_VOA_GCMS: List-2 (25)	HCl or H2SO4 to pH <2 Cool-4C
B1VKX8	↓	W	↓	↓	1x500-mL G/P	200.8_METALS_ICPMS: Uranium (1)	HNO3 to pH <2
B1VKX8	↓	W	↓	↓	1x500-mL P	300.0_ANIONS_IC: List-1 (5)	Cool-4C
B1VKX8	↓	W	↓	↓	1x1000-mL G/P	TC99_3MDSK_LSC: Tc-99 (1)	HCl to pH <2
B1VKX8	↓	W	↓	↓	1x1-L G/P	Strontium-89,90 - Total Sr	HNO3 to pH <2
B1VKX8	↓	W	↓	↓	1x250-mL G	TRITIUM_EIE_LSC: Tritium (1)	None
B1VKX8	↓	W	↓	↓	3x40-mL aGs*	Alcohols, Glycols, & Ketones - 8015	Cool-4C
B1VKX8	↓	W	↓	↓	4x1000-mL aG	8270_SVOA_GCMS: List-1 + Cresol (14)	Cool-4C
B1VKX8	↓	W	↓	↓	1x500-mL G/P	200.8_METALS_ICPMS: Arsenic (1); 200.8_METALS_ICPMS: Lead (1)	HNO3 to pH <2
B1VKX8	↓	W	↓	↓	1x500-mL G/P	200.8_METALS_ICPMS: Mercury (1)	HNO3 to pH <2
B1VKX8	↓	W	↓	↓	1x500-mL G/P	6010_METALS_ICP: List-1 + Lithium (20)	HNO3 to pH <2
B1VKX8	↓	W	↓	↓	1x250-mL G/P	300.7_CATIONS_IC: Ammonia (1)	H2SO4 to pH <2
B1VKX8	↓	W	↓	↓	1x250-mL G/P	335.2_CYANIDE: Cyanide (1)	NaOH to pH >= 12 Cool-4C

Relinquished By <b>F. M. Hall</b>	Print	Sign	Date/Time JUL 10 2008	Received By <i>[Signature]</i>	Print	Sign	Date/Time JUL 10 2008	Matrix *
Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time	S = Soil DS = Drum Solid SF = Sediment DL = Drum Liner SO = Solid T = Tissue SL = Sludge W1 = Wine W = Water I = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time	
Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time	
Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time	
<b>FINAL SAMPLE DISPOSITION</b>	Disposal Method (e.g., Return to customer, per lab procedure, used in process)		Disposed By		Date/Time			

66 of 70



FLUOR HANFORD

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

108-043-52

Page 1 of 2

Collector <b>F. M. Hall</b>	Contact/Requester <b>Steve Trent</b>	Telephone No. 509-373-5869	MSIN FAX
SAF No. 108-043	Sampling Origin Hanford Site	Purchase Order/Charge Code	
Project Title 2UPL JUNE 2008	<b>HNF-N-506-17</b>	Ice Chest No. <b>ERC-02-101</b>	Temp.
Shipped To (Lab) <b>Waste Sampling &amp; Characterization</b>	Method of Shipment Govt. Vehicle	Bill of Lading/Air Bill No.	
Protocol SURV	Priority: 45 Days	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  
 200 Area Generator Knowledge Information Form applies.  
 Total Activity Exemption: Yes  No   
**ICED**

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B1VKY5 (F)	3412	W	7/10/08	0830	1x500-mL G/P	200.8_METALS_ICPMS: Arsenic (1); 200.8_METALS_ICPMS: Lead (1)	HNO3 to pH <2
B1VKY5 (F)	↓	W			1x500-mL G/P	200.8_METALS_ICPMS: Mercury (1)	HNO3 to pH <2
B1VKY5 (F)	↓	W			1x500-mL G/P	6010_METALS_ICP: List-1 + Lithium (20)	HNO3 to pH <2
B1VKY6	3413	W			4x40-mL aGs*	8260_VOA_GCMS: List-2 (25)	HCl or H2SO4 to pH <2 Cool-4C
B1VKY6	↓	W			1x500-mL G/P	200.8_METALS_ICPMS: Uranium (1)	HNO3 to pH <2
B1VKY6	↓	W			1x500-mL P	300.0_ANIONS_IC: List-1 (5)	Cool-4C
B1VKY6	↓	W			1x1000-mL G/P	TC99_3MDSK_LSC: Tc-99 (1)	HCl to pH <2
B1VKY6	↓	W			1x1-L G/P	Strontium-89,90 -- Total Sr	HNO3 to pH <2
B1VKY6	↓	W			1x250-mL G	TRITIUM_EIE_LSC: Tritium (1)	None
B1VKY6	↓	W			3x40-mL aGs*	Alcohols, Glycols, & Ketones - 8015	Cool-4C
B1VKY6	↓	W			4x1000-mL aG	8270_SVOA_GCMS: List-1 + Cresol (14)	Cool-4C
B1VKY6	↓	W			1x500-mL G/P	200.8_METALS_ICPMS: Arsenic (1); 200.8_METALS_ICPMS: Lead (1)	HNO3 to pH <2
B1VKY6	↓	W			1x500-mL G/P	200.8_METALS_ICPMS: Mercury (1)	HNO3 to pH <2
B1VKY6	↓	W			1x500-mL G/P	6010_METALS_ICP: List-1 + Lithium (20)	HNO3 to pH <2
B1VKY6	↓	W			1x250-mL G/P	300.7_CATIONS_IC: Ammonia (1)	H2SO4 to pH <2
B1VKY6	↓	W			1x250-mL G/P	335.2_CYANIDE: Cyanide (1)	NaOH to pH >= 12 Cool-4C

Relinquished By <b>F. M. Hall</b>	Print  Sign	Date/Time <b>JUL 10 2008 1250</b>	Received By 	Print Sign	Date/Time <b>JUL 10 2008 1250</b>	<b>Matrix *</b> S = Soil DS = Drum Solid SF = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wine W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By	Date/Time	Received By	Date/Time			
Relinquished By	Date/Time	Received By	Date/Time			
Relinquished By	Date/Time	Received By	Date/Time			
<b>FINAL SAMPLE DISPOSITION</b>	Disposal Method (e.g., Return to customer, per lab procedure, used in process)		Disposed By		Date/Time	

68 of 70



