

**Attachment 5**  
**Sampling Data**



Paul Pepler  
GZA GeoEnvironmental, Inc. (NH)  
380 Harvey Road  
Manchester, NH 03103



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 118261  
Client Identification: PSNH-MK  
Date Received: 2/7/2013

Dear Mr. Pepler:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at [www.eailabs.com](http://www.eailabs.com) for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

- Solid samples are reported on a dry weight basis, unless otherwise noted
- < : "less than" followed by the reporting limit
- > : "greater than" followed by the reporting limit
- %R : % Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

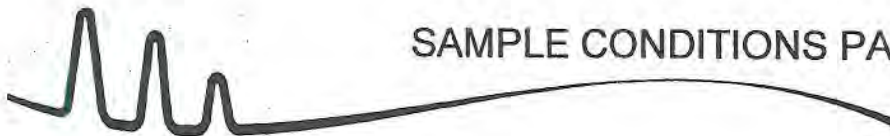
Sincerely,

Lorraine Olashaw, Lab Director

2.14.13  
Date

4  
# of pages (excluding cover letter)

# SAMPLE CONDITIONS PAGE



EAI ID#: 118261

Client: **GZA GeoEnvironmental, Inc. (NH)**

Client Designation: **PSNH-MK**

Temperature upon receipt (°C): **16.3**

Received on ice or cold packs (Yes/No): **Y**

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date Received	Date Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
118261.01	Softened Stream A WW	2/7/13	2/7/13	aqueous		Adheres to Sample Acceptance Policy

*Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitibility, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.*

*All results contained in this report relate only to the above listed samples.*

*References include:*

- 1) EPA 600/4-79-020, 1983*
- 2) Standard Methods for Examination of Water and Wastewater : Inorganics, 19th Edition, 1995; Microbiology, 20th Edition, 1998*
- 3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB*
- 4) Hach Water Analysis Handbook, 2nd edition, 1992*

03-11-13



# LABORATORY REPORT

EAI ID#: 118261

Client: GZA GeoEnvironmental, Inc. (NH)

Client Designation: PSNH-MK

Sample ID: Softened Stream A  
WW

Lab Sample ID: 118261.01

Matrix: aqueous

Date Sampled: 2/7/13

Date Received: 2/7/13

BOD < 6

Units	Analysis		Method	Analyst
	Date	Time		
mg/L	2/08/13	12:05	5210B	SCW



# QC REPORT

EAI ID#: 118261

Client: GZA GeoEnvironmental, Inc. (NH)

Client Designation: PSNH-MK

Parameter Name	Blank	LCS	LCSD	Units	Date of Analysis	Limits	RPD	Method
BOD	< 6	390 (98 %R)	410 (103 %R) (5 RPD)	mg/L	2/8/13	84 - 115	20	5210B

Samples were analyzed within holding times unless noted on the sample results page.

Instrumentation was calibrated in accordance with the method requirements.

The method blanks were free of contamination at the reporting limits.

The associated matrix spikes and/or Laboratory Control Samples met the above stated criteria.

Exceptions to the above statements are flagged or noted above or on the QC Narrative page.

\*! Flagged analyte recoveries deviated from the QA/QC limits.

CHAIN-OF-CUSTODY RECORD

For Lab

118261

BOLD FIELDS REQUIRED. PLEASE CIRCLE REQUESTED ANALYSIS.

Table with columns: SAMPLE I.D., SAMPLING DATE/TIME, MATRIX, VOC, SVOC, METALS, INORGANICS, MICRO, OTHER, NOTES. Includes handwritten entries for 'Stream A WW' and '2/7/13 4:00pm'.

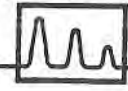
MATRIX: A-AIR; S-SOIL; GW-GROUND WATER; SW-SURFACE WATER; DW-DRINKING WATER; WW-WASTE WATER
PRESERVATIVE: H-HCL; N-HNO3; S-H2SO4; Na-NAOH; M-MEOH

PROJECT MANAGER: Paul Pepler
COMPANY: GZA GeoEnvironmental, Inc.
ADDRESS: 380 Harvey Road
CITY: Manchester STATE: NH ZIP: 03103
PHONE: 603-232-8717
E-MAIL: paul.pepler@gza.com
SITE NAME: PSNH- MK

DATE NEEDED: Standard TAT
QA/QC REPORTING LEVEL: A B C
REPORTING OPTIONS: PRELIMS: YES OR NO
ELECTRONIC OPTIONS: NO FAX E-MAIL PDF EQUIS
SAMPLER(S): Paul Pepler, GZA
RELINQUISHED BY: DATE: TIME: RECEIVED BY:

TEMP. 16.3 °C
ICE? YES NO

METALS: 8 RCRA 13 PP FE, MN PB, CU
OTHER METALS:
DISSOLVED METALS FIELD FILTERED? YES NO
NOTES: (IE: SPECIAL DETECTION LIMITS, BILLING INFO, IF DIFFERENT)



eastern analytical, inc. 25 CHENELL DRIVE | CONCORD, NH 03301 | TEL: 603.228.0525 | 1.800.287.0525 | FAX: 603.228.4591 | E-MAIL: CUSTOMER\_SERVICE@EAILABS.COM | WWW.EAILABS.COM
professional laboratory services (WHITE: ORIGINAL GREEN: PROJECT MANAGER)



Paul Pepler  
GZA GeoEnvironmental, Inc. (NH)  
380 Harvey Road  
Manchester, NH 03103



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 117908  
Client Identification: PSNH-MK  
Date Received: 1/28/2013

Dear Mr. Pepler:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at [www.eailabs.com](http://www.eailabs.com) for a copy of our NELAP certificate and accredited parameters.

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- > : "greater than" followed by the reporting limit
- %R : % Recovery


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We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

  
Lorraine Olashaw, Lab Director

2.14.13  
Date

37  
# of pages (excluding cover letter)



# SAMPLE CONDITIONS PAGE

EAI ID#: 117908

Client: **GZA GeoEnvironmental, Inc. (NH)**

Client Designation: **PSNH-MK**

Temperature upon receipt (°C): **4.4**

Received on ice or cold packs (Yes/No): **Y**

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date Received	Date Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
117908.01	Softened Stream A WW	1/28/13	1/26/13	aqueous		Adheres to Sample Acceptance Policy

*Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitibility, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.*

*All results contained in this report relate only to the above listed samples.*

*References include:*

- 1) EPA 600/4-79-020, 1983*
- 2) Standard Methods for Examination of Water and Wastewater : Inorganics, 19th Edition, 1995; Microbiology, 20th Edition, 1998*
- 3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB*
- 4) Hach Water Analysis Handbook, 2nd edition, 1992*





# LABORATORY REPORT

EAI ID#: 117908

Client: **GZA GeoEnvironmental, Inc. (NH)**

Client Designation: **PSNH-MK**

Sample ID: Softened Stream A  
WW

Lab Sample ID: 117908.01

Matrix: aqueous

Date Sampled: 1/26/13

Date Received: 1/28/13

Solids Suspended < 5

Solids Dissolved 23000

BOD < 60

COD 170

Units	Analysis		Method	Analyst
	Date	Time		
mg/L	1/29/13	10:10	2540D	SCW
mg/L	1/30/13	15:50	2540C	SCW
mg/L	1/28/13	10:45	5210B	SKC
mg/L	1/31/13	8:35	H8000	SCW

BOD: Although several dilutions were run on sample "Softened", oxygen depletion was not great enough to calculate a valid BOD result. An elevated detection limit has been reported.



# QC REPORT

EAI ID#: 117908

Client: **GZA GeoEnvironmental, Inc. (NH)**

Client Designation: **PSNH-MK**

Parameter Name	Blank	LCS	LCSD	Units	Date of Analysis	Limits	RPD	Method
Solids Suspended	< 5	96 (96 %R)	93 (93 %R) (3 RPD)	mg/L	1/29/13	90 - 110	20	2540D
Solids Dissolved	< 5	990 (99 %R)	NA	mg/L	1/30/13	85 - 115		2540C
BOD	< 6	410 (102 %R)	420 (106 %R) (4 RPD)	mg/L	1/28/13	84 - 115	20	5210B
COD	< 10	100 (101 %R)	95 (95 %R) (6 RPD)	mg/L	1/31/13	85 - 115	20	H8000

Samples were analyzed within holding times unless noted on the sample results page.

Instrumentation was calibrated in accordance with the method requirements.

The method blanks were free of contamination at the reporting limits.

The associated matrix spikes and/or Laboratory Control Samples met the above stated criteria.

Exceptions to the above statements are flagged or noted above or on the QC Narrative page.

\*! Flagged analyte recoveries deviated from the QA/QC limits.



11720 North Creek Parkway North, Suite 400  
Bothell, WA 98011  
Ph: 425-686-1996  
Fx: 425-686-3096

12 February 2013

Jeff Gagne  
Eastern Analytical, Inc  
25 Chenell Drive  
Concord, NH 03301  
RE: Merrimack Station 200.8

Enclosed are the analytical results for samples received by Frontier Global Sciences. All quality control measurements are within established control limits and there were no analytical difficulties encountered with the exception of those listed in the case narrative section of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in cursive script that reads "Liz Siska".

Liz Siska  
Project Manager



11720 North Creek Parkway North, Suite 400  
Bothell, WA 98011  
Ph: 425-686-1996  
Fx: 425-686-3096

### ANALYTICAL REPORT FOR SAMPLES

Laboratory: Eurofins Frontier Global Sciences, Inc.

SDG:

Client: Eastern Analytical, Inc

Project: Merrimack Station 200.8

Sample ID	Lab ID	Matrix	Date Sampled	Date Received
Softened Stream A WW	1301407-01	Water	26-Jan-13 11:50	29-Jan-13 09:25
Field Blank Hg	1301407-02	Water	26-Jan-13 11:50	29-Jan-13 09:25

Eurofins Frontier Global Sciences, Inc.

Liz Siska, Project Manager

*The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



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Bothell, WA 98011  
Ph: 425-686-1996  
Fx: 425-686-3096

## CASE NARRATIVE

### SAMPLE RECEIPT

Two (2) water samples were received January 29th, 2013 at Eurofins Frontier Global Sciences (EFGS). The samples were received intact, on-ice within a cooler at 6.0 degrees Celsius.

### SAMPLE PREPARATION AND ANALYSIS

Sample preparation and analysis for trace metals was performed in accordance with EPA Method 200.8 with the use of a collision cell.

Sample preparation and analysis for total mercury was performed in accordance with EPA Method 1631E.

### ANALYTICAL ISSUES

Liquid spikes were prepared for every preparation as a measure of accuracy. All liquid spikes and certified reference material (if applicable) were within the control limits.

As an additional measure of the accuracy of the methods used and to check for matrix interference, matrix spikes (MS) and matrix spike duplicates (MSD) were digested and analyzed. All of the matrix spike recoveries were within the control limits.

A reasonable measure of the precision of the analytical methods is the relative percent difference (RPD) between a matrix spike recovery and a matrix spike duplicate recovery and between laboratory control sample recovery and laboratory control sample duplicate recoveries. All of the relative percent differences were within the control limits.

Eurofins Frontier Global Sciences, Inc.

A handwritten signature in cursive script that reads "Liz Siska".

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Liz Siska, Project Manager

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02/12/2013



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 Ph: 425-686-1996  
 Ex: 425-686-3096

### CHAIN OF CUSTODY FORMS

FGS Work Order: 1301407 **Sample Receipt Checklist** Frontier Global Sciences

Client: Eastern Analytical Date & Time Received: 1/29/13 0925 Date Logged In: 1/29/13 Date Labeled: 1/29/13

Project: \_\_\_\_\_ Received By: CD Logged By: AMB Labeled By: AMB

# of Coolers Received: 1 Samples Arrived By: X Shipping Service \_\_\_\_\_ Courier \_\_\_\_\_ Hand \_\_\_\_\_ Other (Specify: \_\_\_\_\_)

Tracking/Airbill Number(s): LDS 12 X46 599 01 9726 7464

Thermal Preservation: \_\_\_\_\_ None (Ambient) X Loose Ice \_\_\_\_\_ Gel/Blue Ice \_\_\_\_\_ Other (Specify: \_\_\_\_\_) Thermal Preservation Required: Y/N

Cooler Information:	Y/N	Comments	Thermometer ID:	CF:
The coolers do not appear to be tampered with:	<u>Y</u>		<u>3150</u>	<u>-0.1°C</u>
Custody Seals are present and intact:	<u>N</u>	<u>None used</u>	Cooler 1: °C	Cooler 4: °C
Custody seals signed by:	<u>AMB</u>		Cooler 2: °C	Cooler 5: °C
			Cooler 3: °C	Cooler 6: °C
			Cooler 7: °C	Cooler 8: °C
			Cooler 9: °C	Cooler 10: °C
			Cooler 11: °C	Cooler 12: °C

Chain of Custody:	Y/N	Comments	Sample Condition/Integrity:	Y/N	Comments
Sample ID/Description:	<u>Y</u>		Sample containers intact:	<u>Y</u>	
Date/Time of collection:	<u>Y</u>		Sample labels are present and legible:	<u>Y</u>	
Sampled by:	<u>Y</u>		Sample ID on container matches COC:	<u>Y</u>	
Preservation type:	<u>N/A</u>		Correct sample containers used:	<u>Y</u>	
Requested analyses:	<u>Y</u>		Samples received within holding times:	<u>Y</u>	
Required signatures:	<u>Y</u>		Sample volume sufficient for requested analyses:	<u>Y</u>	
Internal COC required:	<u>N</u>		Correct preservative used for requested analyses:	<u>N/A</u>	
			pH of preserved samples verified and recorded:	<u>N/A</u>	

Client Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Method: \_\_\_\_\_

Anomalies/Non-conformances (attach additional pages if needed): \_\_\_\_\_ Discussion/Resolution: \_\_\_\_\_

\*Ice was completely melted prior to arrival at FGS. - CD 1/29/13

Sample bags all had a small bright pink sticker on them that reads: "117908.01 Softened" AMB 1/29/13

FGS Sample Receipt Checklist Revision 2; 07/09/2012

Eurofins Frontier Global Sciences, Inc.

*Liz Siska*

Liz Siska, Project Manager

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 Ph: 425-686-1996  
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### CHAIN OF CUSTODY FORMS



Chain of Custody Record & Laboratory Analysis Request:  
 Air, Water, Sediments, Plant and Animal Tissue,  
 Hydrocarbon & Other Samples

11720 North Creek Parkway N  
 Bothell, WA 98011  
 Phone: 425-686-1996  
 Fax: 425-686-3096  
 info@FrontierGS.com  
 http://www.FrontierGS.com

Page \_\_\_ of \_\_\_

Client: <u>Eastern Analytical, Inc.</u>		Contact: <u>Jeff Siska</u>		FGS PM: <u>Liz Siska</u>						
Address: <u>25 Chenell Drive</u> <u>Concord, NH 03301</u>		Phone: <u>603/228-5525</u> Fax: <u>603/228-4501</u>		Date: <u>1/28/2013</u>						
Project Name		E-mail: <u>jeff@eastanal.com</u>		TAT (business days): <u>20</u> (std) <u>15</u> (10) <u>5</u> <u>4</u> <u>3</u> <u>2</u> <u>24</u> hrs. (For TAT < 10 days, contact PM. Surcharges apply for expedited TAT)						
Report To: <u>Same as above</u>		Contract/PO: <u>39862</u>		Saturday delivery? <input type="checkbox"/> Y <input type="checkbox"/> N (If yes, please contact PM)						
Address: <u>603/ 603/</u>		Invoice To:		EDD <input checked="" type="checkbox"/> Y <input type="checkbox"/> N						
Phone: <u>228-0525</u> Fax: <u>228-4501</u>		Address: <u>Same</u>		QA <input type="checkbox"/> Standard <input type="checkbox"/> High						
E-mail: <u>customer.service@eastanal.com</u>		Phone: Fax:		Comments						
E-mail:		E-mail:								
No.	Engraved Bottle ID	Sample ID	# of Bottles	Matrix	Date & Time	Sampled By	Field Filtered (Y/N)	Field Preserved: HNO <sub>3</sub> HCl BCl Other (%)	Analyses Requested	Total Metals
1	C-6502/6504	Softened Stream A WW	2	AQ	1/26/13 1150	PTP	N	-		
2	C-7604	Field Blank Hg	1	AQ	1/26/13 1150	PTP	N	-		Hg
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
For Laboratory Use Only		Matrix Codes:		Relinquished By:		Received By:		Received By:		
COC Seal: <u>Done</u>	Comments:	FW: Fresh Water		<u>Chris Johnson</u>		<u>UPS</u>		<u>[Signature]</u>		
Cooler Temp: <u>6.0 °C</u>		WW: Waste Water		Name: <u>Chris Johnson</u>		Name:		Name: <u>[Signature]</u>		
Carrier: <u>LPS</u>		SB: Sea and Brackish Water		Organization: <u>Eastern Analytical</u>		Organization:		Organization: <u>EFAS</u>		
VTSR: <u>CRS</u>	<u>TID 3100</u>	SS: Soil and Sediment		Date & Time: <u>1/28/13 1530</u>		Date & Time:		Date & Time: <u>1/29/13 0905</u>		
# of Coolers:		TS: Plant and Animal Tissue		Tracking number: <u>1E X46 599 01 9726 7464</u>						
Sample Disposal:		HC: Hydrocarbons		By signing, you declare that you agree with FGS' terms and conditions, and that you authorize FGS to perform the specified analyses.						
<input type="checkbox"/> Return (shipping fees may apply)		TR: Trap		Customer Approval: _____ Date: _____						
<input type="checkbox"/> Standard Disposal - 30 Days after report		OT: Other								
<input type="checkbox"/> Retain for ___ weeks after report (storage fees may apply)										

Eurofins Frontier Global Sciences, Inc.

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*Liz Siska*

Liz Siska, Project Manager

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 02/12/2013



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## ANALYTICAL RESULTS

### Softened Stream A WW

Matrix: Water

Laboratory ID: 1301407-01

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Arsenic	ND	0.43	1.50	µg/L	10	F302022	3B08012	02/08/13	EPA 200.8	U
Cadmium	0.548	0.032	0.200	µg/L	10	F302022	3B08012	02/08/13	EPA 200.8	
Copper	6.32	0.10	1.00	µg/L	10	F301262	3B04004	02/03/13	EPA 200.8	
Lead	ND	0.032	0.400	µg/L	10	F301262	3B04004	02/03/13	EPA 200.8	U
Mercury	41.3	0.84	5.05	ng/L	10	F302012	3B05007	02/04/13	EPA 1631E	
Molybdenum	120	0.077	1.20	µg/L	10	F301262	3B11008	02/08/13	EPA 200.8	
Nickel	ND	0.12	1.00	µg/L	10	F301262	3B04004	02/03/13	EPA 200.8	U
Selenium	44.5	3.15	6.00	µg/L	10	F302063	3B12002	02/12/13	EPA 200.8	
Silver	ND	0.020	0.200	µg/L	10	F302022	3B11007	02/09/13	EPA 200.8	U
Sodium	7190000	4990	2500000	µg/L	5000	F301262	3B11001	02/08/13	EPA 200.8	

Eurofins Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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### ANALYTICAL RESULTS

#### Field Blank Hg

Matrix: Water

Laboratory ID: 1301407-02

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Mercury	ND	0.08	0.50	ng/L	1	F302012	3B05007	02/04/13	EPA 1631E	U

Eurofins Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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### MATRIX DUPLICATES/TRIPPLICATES

SOURCE: 1301386-02

Batch: F302012

Sequence: 3B05007

Preparation: BrCl Oxidation

Lab Number: F302012-DUP1

Analyte	Sample Concentration ng/L	Duplicate Concentration ng/L	MRL	% RPD	RPD Limit	Method	Notes
Mercury	66.24	66.08	5.05	0.247	24	EPA 1631E	

Eurofins Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1301407-01**

Batch: F301262

Sequence: 3B04004

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F301262-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Nickel	0.39	4.0600	2.53	52.7	70 - 130	EPA 200.8	QM-07
Copper	6.32	4.0600	8.90	63.5	70 - 130	EPA 200.8	QM-02
Lead	ND	1.5225	1.294	85.0	70 - 130	EPA 200.8	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Nickel	4.0600	2.30	47.0	9.54	70 - 130	20	EPA 200.8	QM-07
Copper	4.0600	8.40	51.3	5.75	70 - 130	20	EPA 200.8	QM-02
Lead	1.5225	1.335	87.7	3.15	70 - 130	20	EPA 200.8	

Eurofins Frontier Global Sciences, Inc.

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Liz Siska, Project Manager



**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1301407-01**

Batch: F301262

Sequence: 3B04004

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F301262-MS/MSD3

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Nickel	0.39	253.75	198.2	77.9	70 - 130	EPA 200.8	AS
Copper	6.32	253.75	200.9	76.7	70 - 130	EPA 200.8	AS
Lead	ND	50.750	43.61	85.9	70 - 130	EPA 200.8	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Nickel	253.75	196.9	77.4	0.662	70 - 130	20	EPA 200.8	AS
Copper	253.75	204.3	78.0	1.70	70 - 130	20	EPA 200.8	AS
Lead	50.750	44.57	87.8	2.16	70 - 130	20	EPA 200.8	AS

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**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1301407-01RE2**

Batch: F301262

Sequence: 3B11001

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F301262-MS/MSD7

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Sodium	7186000	507.50	7311000	24700	70 - 130	EPA 200.8	QM-02

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Sodium	507.50	6370000	-161000	13.7	70 - 130	20	EPA 200.8	QM-02

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**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1301407-01RE2**

Batch: F301262

Sequence: 3B11001

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F301262-MS/MSD8

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Sodium	7186000	10150000	17430000	101	70 - 130	EPA 200.8	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Sodium	10150000	17090000	97.6	1.98	70 - 130	20	EPA 200.8	AS

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**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1301407-01RE3**

Batch: F301262

Sequence: 3B11008

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F301262-MS/MSD9

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Molybdenum	119.9	2.0300	121.2	67.0	70 - 130	EPA 200.8	QM-02

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Molybdenum	2.0300	121.8	96.5	0.494	70 - 130	20	EPA 200.8	

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**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1301407-01RE3**

Batch: F301262

Sequence: 3B11008

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F301262-MS/MSDA

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Molybdenum	119.9	101.50	236.7	115	70 - 130	EPA 200.8	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Molybdenum	101.50	232.7	111	1.69	70 - 130	20	EPA 200.8	AS

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**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1301386-02**

Batch: F302012

Sequence: 3B05007

Preparation: BrCl Oxidation

Lab Number: F302012-MS/MSD1

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	66.24	204.00	261.8	95.8	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	204.00	265.6	97.7	1.44	71 - 125	24	EPA 1631E	

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**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1302024-04**

Batch: F302012

Sequence: 3B05007

Preparation: BrCl Oxidation

Lab Number: F302012-MS/MSD2

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	2.43	5.1000	8.19	113	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	5.1000	8.15	112	0.497	71 - 125	24	EPA 1631E	

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**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1301407-01RE2**

Batch: F302022

Sequence: 3B08012

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F302022-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Arsenic	1.21	15.225	17.80	109	70 - 130	EPA 200.8	
Cadmium	0.548	0.81200	1.278	89.9	70 - 130	EPA 200.8	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Arsenic	15.225	18.30	112	2.74	70 - 130	20	EPA 200.8	
Cadmium	0.81200	1.366	101	6.73	70 - 130	20	EPA 200.8	

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**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1301407-01RE2**

Batch: F302022

Sequence: 3B08012

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F302022-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Arsenic	1.21	203.00	230.1	113	70 - 130	EPA 200.8	AS
Cadmium	0.548	20.300	21.38	103	70 - 130	EPA 200.8	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Arsenic	203.00	232.6	114	1.05	70 - 130	20	EPA 200.8	AS
Cadmium	20.300	20.90	100	2.29	70 - 130	20	EPA 200.8	AS

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**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1301407-01RE2**

Batch: F302022

Sequence: 3B11007

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F302022-MS/MSD3

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Silver	ND	1.5225	1.134	74.5	70 - 130	EPA 200.8	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	1.5225	1.176	77.3	3.66	70 - 130	20	EPA 200.8	

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**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1301407-01RE2**

Batch: F302022

Sequence: 3B11007

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F302022-MS/MSD4

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Silver	ND	10.150	7.578	74.7	70 - 130	EPA 200.8	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	10.150	7.607	75.0	0.382	70 - 130	20	EPA 200.8	AS

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**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1301407-01RE3**

Batch: F302063

Sequence: 3B12002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F302063-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Selenium	44.47	30.450	55.00	34.6	70 - 130	EPA 200.8	QM-02

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Selenium	30.450	63.41	62.2	14.2	70 - 130	20	EPA 200.8	QM-02

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**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1301407-01RE3**

Batch: F302063

Sequence: 3B12002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F302063-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Selenium	44.47	203.00	220.1	86.5	70 - 130	EPA 200.8	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Selenium	203.00	228.8	90.8	3.89	70 - 130	20	EPA 200.8	

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**LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE**

**RECOVERY AND RPD**

Batch: F301262

Sequence: 3B04004

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F301262-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Sodium	500.00	473	94.6	85 - 115	EPA 200.8	
Nickel	4.0000	3.63	90.7	85 - 115	EPA 200.8	
Copper	4.0000	3.70	92.5	85 - 115	EPA 200.8	
Molybdenum	2.0000	1.778	88.9	85 - 115	EPA 200.8	
Lead	1.5000	1.317	87.8	85 - 115	EPA 200.8	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Sodium	500.00	471	94.2	0.449	85 - 115	20	EPA 200.8	
Nickel	4.0000	3.60	90.0	0.776	85 - 115	20	EPA 200.8	
Copper	4.0000	3.85	96.2	3.89	85 - 115	20	EPA 200.8	
Molybdenum	2.0000	1.723	86.1	3.14	85 - 115	20	EPA 200.8	
Lead	1.5000	1.361	90.7	3.28	85 - 115	20	EPA 200.8	

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**LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE**

**RECOVERY AND RPD**

Batch: F302012

Sequence: 3B05007

Preparation: BrCl Oxidation

Lab Number: F302012-BS/BSD1

LCS Source: NIST

Analyte	Spike Added (ng/L)	LCS Concentration (ng/L)	LCS % Recovery	Recovery Limits	Method	Notes
Mercury	15.679	16.00	102	77 - 123	EPA 1631E	

Analyte	Spike Added (ng/L)	LCSD Concentration (ng/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	15.679	16.19	103	1.17	77 - 123	24	EPA 1631E	

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**LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE**

**RECOVERY AND RPD**

Batch: F302022

Sequence: 3B08012

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F302022-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Arsenic	15.000	17.06	114	85 - 115	EPA 200.8	
Cadmium	0.80000	0.811	101	85 - 115	EPA 200.8	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Arsenic	15.000	17.25	115	1.09	85 - 115	20	EPA 200.8	
Cadmium	0.80000	0.844	105	3.93	85 - 115	20	EPA 200.8	

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**LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE**

**RECOVERY AND RPD**

Batch: F302022

Sequence: 3B11007

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F302022-BS/BSD2

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Silver	1.5000	1.493	99.5	85 - 115	EPA 200.8	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	1.5000	1.522	101	1.89	85 - 115	20	EPA 200.8	

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**LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE**

**RECOVERY AND RPD**

Batch: F302063

Sequence: 3B12002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F302063-BS/BSD1

LCS Source: Blk Spk

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Selenium	30.000	28.08	93.6	85 - 115	EPA 200.8	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Selenium	30.000	28.15	93.8	0.226	85 - 115	20	EPA 200.8	

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### PREPARATION BLANKS

Instrument: ICPMS-5

Sequence: 3B04004

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F301262-BLK1	Sodium	9	20	µg/L	F301262	EPA 200.8	U
F301262-BLK1	Nickel	0.04	0.10	µg/L	F301262	EPA 200.8	U
F301262-BLK1	Copper	0.03	0.10	µg/L	F301262	EPA 200.8	U
F301262-BLK1	Molybdenum	0.017	0.060	µg/L	F301262	EPA 200.8	U
F301262-BLK1	Lead	0.001	0.040	µg/L	F301262	EPA 200.8	U

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### PREPARATION BLANKS

Instrument: Hg2600-2

Sequence: 3B05007

Preparation: BrCl Oxidation

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F302012-BLK1	Mercury	0.007	0.50	ng/L	F302012	EPA 1631E	U
F302012-BLK2	Mercury	-0.01	0.50	ng/L	F302012	EPA 1631E	U
F302012-BLK3	Mercury	-0.003	0.50	ng/L	F302012	EPA 1631E	U
F302012-BLK4	Mercury	0.02	0.50	ng/L	F302012	EPA 1631E	U, QB-04

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### PREPARATION BLANKS

Instrument: ICPMS-3

Sequence: 3B08012

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F302022-BLK1	Arsenic	0.05	0.15	µg/L	F302022	EPA 200.8	U
F302022-BLK1	Cadmium	0.0003	0.020	µg/L	F302022	EPA 200.8	U

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### PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 3B11007

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F302022-BLK2	Silver	-0.0008	0.020	µg/L	F302022	EPA 200.8	U

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### PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 3B12002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F302063-BLK1	Selenium	0.11	0.60	µg/L	F302063	EPA 200.8	U

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## Notes and Definitions

- U Analyte included in the analysis, but not detected
- QM-07 The spike recovery was outside control limits for the MS and/or MSD. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
- QM-02 The MS and/or MSD recoveries outside acceptance limits, due to spike concentration less than 1 times the sample concentration. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
- QB-04 The blank was preserved to 2% BrCl rather than 1%. The control limit for blanks preserved to greater than 1% BrCl is the preservation percentage multiplied by the MRL.
- AS This MS and/or MSD is an analytical spike and/or an analytical spike duplicate.
- DET Analyte Detected
- MDL Minimum Detection Limit
- MRL Minimum Reporting Limit
- ND Analyte Not Detected at or above the reporting limit
- wet Sample results reported on a wet weight basis
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- RSD Relative Standard Deviation

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