AR-1335

GZA
GeoEnvironmental, Inc.

Engineers and
Scientists

VIA EMAIL

February 3, 2012
File No. 04.0029307.00

Ms. Amy Daigneault
Pretreatment Coordinator
Lowell Regional Wastewater Utility
451 First St Blvd (Rte-110)
Lowell, Massachusetts 01850

Re: Analytical Results
January 2012
Merrimack Station
Public Service of New Hampshire
Bow, New Hampshire

380 Harvey Road
Manchester
New Hampshire
03103-3347
603-623-3600
FAX 603-624-9463
www.gza.com

Dear Ms. Daigneault:

On behalf of Public Service of New Hampshire (PSNH), GZA GeoEnvironmental, Inc. (GZA) is pleased to submit this report in response to your email dated January 27, 2012. We understand the Lowell Regional Wastewater Utility (Utility) conducts weekly monitoring of the hauled waste stream generated at Merrimack Station. Two samples which were collected and analyzed by the Utility in January 2012 included results for silver which exceed the Local Limit of 0.053 milligrams per liter.

We have reviewed the data collected to date and have the following comments.

- The attached table summarizes historical silver concentrations from analyses conducted by the Utility's contract laboratory, and under the direction of GZA by and Eastern Analytical, Inc. (EAI) and Frontier Global Sciences (Frontier). The analytical results demonstrate an inconsistency between the analytical programs. Concentrations as detected by the Utility are greater than those detected by EAI and Frontier. Silver has not been detected in any analysis conducted under the direction of GZA to date.
- As discussed in the two data reports submitted to the Utility on behalf of PSNH by GZA, Flue Gas Desulfurization (FGD) wastewater requires specialized analytical techniques to overcome matrix interference on certain trace metals analyses. The United States Environmental Protection Agency (EPA) developed a draft procedure that contains further guidance and is applicable to the analysis of 13 metals, including silver. The draft procedure specifies the use of EPA Method 200.8 or Method 1638, ICP-MS modified for Dynamic Reaction Cell (DRC) or Collision Cell (CC).

- The samples collected for the analysis of metals by the Utility to date have utilized EPA Method 200.7—Inductively Coupled Plasma - Atomic Emission Spectroscopy (ICP - AES) while the monitoring program conducted under the direction of GZA has utilized analytical laboratories with the capability of analyzing metals in accordance with the draft EPA procedure to overcome matrix interference. The inconsistency between the GZA and Utility data sets appear to support EPA's findings and recommendations for the use of DRC or CC methods of analyzing metals in FGD wastewater.

ANALYTICAL DISCUSSION

FGD wastewater requires specialized analytical techniques to overcome matrix interference on some trace metals analysis. Many analytical laboratories may be unaware of this. We offer an excerpt below from the EPA's web site and a link to their draft procedure that contains further guidance.

LABORATORY ANALYSIS OF FGD WASTEWATER

Wastewater from FGD systems can contain constituents known to cause matrix interferences. EPA has observed that, during inductively coupled plasma – mass spectrometry (ICP-MS) analysis of FGD wastewater, certain elements commonly present in the wastewater may cause polyatomic interferences that bias the detection and/or quantization of certain elements of interest. These potential interferences may become significant when measuring trace elements at concentrations in the low parts-per-billion range.

As part of a recent sampling effort for the steam electric power generating effluent guidelines rulemaking, EPA developed a standard operating procedure (SOP) that was used in conjunction with EPA Method 200.8 to conduct ICP-MS analyses of FGD wastewater. The SOP describes critical technical and quality assurance procedures that were implemented to mitigate anticipated interferences and generate reliable data for FGD wastewater. EPA regulations at 40 CFR 136.6 already allow the analytical community flexibility to modify approved methods to lower the costs of measurements, overcome matrix interferences, or otherwise improve the analysis. The draft SOP developed for FGD wastewater takes a proactive approach toward looking for and taking steps to mitigate matrix interferences, including using specialized interference check solutions (i.e., a synthetic FGD wastewater matrix). EPA's draft SOP is being made available to laboratories contemplating ICP-MS analysis of FGD wastewater, either for adoption as currently written or to serve as a framework for developing their own laboratory-specific SOPs. For further information, see:

> Standard Operating Procedure: Inductively Coupled Plasma/Mass Spectrometry for Trace Element Analysis in Flue Gas Desulfurization Wastewaters (30 pp, 174K) http://water.epa.gov/scitech/wastetech/guide/upload/steam_draft_sop.pdf, EPA May 2011.

Based on the available regulatory guidance pertaining to metals analysis of FGD wastewater and the silver monitoring results collected to date, it is GZA's opinion that the analytical results obtained using the EPA draft SOP are most representative of the metals concentrations in this wastewater and that each analytical result obtained in accordance with the EPA draft SOP has demonstrated compliance with the Utility's Local Limit for silver.

Should you have any questions concerning this report, please do not hesitate to contact me at (603) 232-8744.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

Ronald A. Breton

Ronald A. Breton, P.E.
Principal

RAB:mm
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Attachment: Table

TABLE

SUMMARY OF HISTORICAL SILVER CONCENTRATIONS

Public Service Company of New Hampshire
Merrimack Station
Bow, New Hampshire

PARAMETER	RESULTS (mg/L) 12/05/2012 by Lowell	RESULTS (mg/L) 12/12/2012 by Lowell	RESULTS (mg/L) 12/16/2011 EAI/Frontier	RESULTS (mg/L) 12/19/2012 by Lowell	RESULTS (mg/L) 12/27/2012 by Lowell	RESULTS (mg/L) 1/05/2012 EAI/Frontier	RESULTS (mg/L) 01/16/2012 by Lowell	RESULTS (mg/L) 01/20/2012 by Lowell	RESULTS (mg/L) 1/26/2012 EAI/Frontier
Silver	0.021	0.001	< 0.000100	0.004	0.004	< 0.000100	0.058	0.087	< 0.000400
Analysis in accordance with EPA Draft SOP?[1]	NO	NO	YES	NO	NO	YES	NO	NO	YES

NOTES:

1. FGD wastewater requires specialized analytical techniques to overcome matrix interference on some trace metals analysis. We offer an excerpt below from the Environmental Protection Agency's (EPA's) web site and a link to the draft EPA SOP that contains further guidance.

Laboratory Analysis of FGD Wastewater

Wastewater from FGD systems can contain constituents known to cause matrix interferences. EPA has observed that, during inductively coupled plasma – mass spectrometry (ICP-MS) analysis of FGD wastewater, certain elements commonly present in the wastewater may cause polyatomic interferences that bias the detection and/or quantization of certain elements of interest. These potential interferences may become significant when measuring trace elements at concentrations in the low parts-per-billion range.

As part of a recent sampling effort for the steam electric power generating effluent guidelines rulemaking, EPA developed a standard operating procedure (SOP) that was used in conjunction with EPA Method 200.8 to conduct ICP-MS analyses of FGD wastewater. The SOP describes critical technical and quality assurance procedures that were implemented to mitigate anticipated interferences and generate reliable data for FGD wastewater. EPA regulations at 40 CFR 136.6 already allow the analytical community flexibility to modify approved methods to lower the costs of measurements, overcome matrix interferences, or otherwise improve the analysis. The draft SOP developed for FGD wastewater takes a proactive approach toward looking for and taking steps to mitigate matrix interferences, including using specialized interference check solutions (i.e., a synthetic FGD wastewater matrix). EPA's draft SOP is being made available to laboratories contemplating ICP-MS analysis of FGD wastewater, either for adoption as currently written or to serve as a framework for developing their own laboratory-specific SOPs. Standard Operating Procedure: Inductively Coupled Plasma/Mass Spectrometry for Trace Element Analysis in Flue Gas Desulfurization Wastewaters (30 pp, 174K), http://water.epa.gov/scitech/wastetech/guide/upload/steam_draft_sop.pdf, EPA, May 2011

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

ACCREDITED IN ACCORDANCE WITH nelac

Subject: Laboratory Report

Eastern Analytical, Inc. ID: 107170
Client Identification: Wastewater Analysis - ***Weekly***
Date Received: 1/26/2012

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 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 — 2-8-12 Date — 35 # of pages (excluding cover letter)

SAMPLE CONDITIONS PAGE

EAI ID#: 107170

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

Client Designation: Wastewater Analysis - ***Weekly***

Temperature upon receipt (°C): 4.5 **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)
107170.01	Effluent Field Blank	1/26/12	1/26/12	aqueous		Adheres to Sample Acceptance Policy
107170.02	Treat Tank Effluent	1/26/12	1/26/12	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

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

Client Designation: Wastewater Analysis - ***Weekly***

Sample ID: Treat Tank Effluent

Lab Sample ID:	107170.02
Matrix:	aqueous
Date Sampled:	1/26/12
Date Received:	1/26/12
Units:	ug/l
Date of Analysis:	1/27/12
Analyst:	KJP
Method:	624
Dilution Factor:	1
Chloromethane	< 5
Vinyl chloride	< 2
Bromomethane	< 2
Chloroethane	< 5
Trichlorofluoromethane	< 5
Acrolein	< 50
Acetone	< 50
1,1-Dichloroethene	< 1
Methylene chloride	< 5
Carbon disulfide	< 5
Acrylonitrile	< 50
Methyl-t-butyl ether(MTBE)	< 10
trans-1,2-Dichloroethene	< 2
Vinyl acetate	< 10
1,1-Dichloroethane	< 2
cis-1,2-Dichloroethene	< 2
2-Butanone(MEK)	< 10
Chloroform	< 2
1,1,1-Trichloroethane	< 2
Carbon tetrachloride	< 2
Benzene	< 1
1,2-Dichloroethane	< 2
Trichloroethene	< 2
1,2-Dichloropropane	< 2
Bromodichloromethane	< 2
2-Chloroethylvinylether	< 2
4-Methyl-2-pentanone(MIBK)	< 10
cis-1,3-Dichloropropene	< 2
Toluene	2
trans-1,3-Dichloropropene	< 2
1,1,2-Trichloroethane	< 2
2-Hexanone	< 10
Tetrachloroethene	< 2
Dibromochloromethane	< 2
Chlorobenzene	< 2
Ethylbenzene	< 1
mp-Xylene	< 1
o-Xylene	< 1
Styrene	< 1
Bromoform	< 2
1,1,2,2-Tetrachloroethane	< 2
1,3-Dichlorobenzene	< 1
1,4-Dichlorobenzene	< 1
1,2-Dichlorobenzene	< 1
4-Bromofluorobenzene (surr)	**93 %R**
1,2-Dichlorobenzene-d4 (surr)	**106 %R**
Toluene-d8 (surr)	**99 %R**

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

Client Designation: Wastewater Analysis - ***Weekly***

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Chloromethane	< 5	22 (110 %R)	22 (108 %R) (2 RPD)	1/27/2012	ug/l	0 - 273	20	624
Vinyl chloride	< 2	20 (99 %R)	19 (94 %R) (5 RPD)	1/27/2012	ug/l	0 - 251	20	624
Bromomethane	< 2	21 (106 %R)	21 (103 %R) (3 RPD)	1/27/2012	ug/l	0 - 242	20	624
Chloroethane	< 5	26 (129 %R)	25 (123 %R) (5 RPD)	1/27/2012	ug/l	14 - 230	20	624
Trichlorofluoromethane	< 5	25 (124 %R)	23 (116 %R) (7 RPD)	1/27/2012	ug/l	17 - 181	20	624
Acrolein	< 50	< 50 (%R N/A)	< 50 (%R N/A) (RPD N/A)	1/27/2012	ug/l			624
Acetone	< 50	< 50 (100 %R)	< 50 (97 %R) (3 RPD)	1/27/2012	ug/l			624
1,1-Dichloroethene	< 1	24 (122 %R)	23 (115 %R) (6 RPD)	1/27/2012	ug/l	0 - 234	20	624
Methylene chloride	< 5	26 (129 %R)	25 (126 %R) (2 RPD)	1/27/2012	ug/l	0 - 221	20	624
Carbon disulfide	< 5	22 (%R)	22 (%R) (RPD)	1/27/2012	ug/l			624
Acrylonitrile	< 50	< 50 (%R)	< 50 (%R) (RPD)	1/27/2012	ug/l			624
Methyl-t-butyl ether(MTBE)	< 10	20 (%R)	20 (%R) (RPD)	1/27/2012	ug/l			624
trans-1,2-Dichloroethene	< 2	25 (124 %R)	24 (121 %R) (2 RPD)	1/27/2012	ug/l	54 - 156	20	624
Vinyl acetate	< 10	30 (%R)	30 (%R) (RPD)	1/27/2012	ug/l			624
1,1-Dichloroethane	< 2	24 (118 %R)	23 (113 %R) (4 RPD)	1/27/2012	ug/l	59 - 155	20	624
cis-1,2-Dichloroethene	< 2	22 (%R)	21 (%R) (RPD)	1/27/2012	ug/l			624
2-Butanone(MEK)	< 10	20 (%R)	20 (%R) (RPD)	1/27/2012	ug/l			624
Chloroform	< 2	22 (109 %R)	21 (106 %R) (3 RPD)	1/27/2012	ug/l	51 - 138	20	624
1,1,1-Trichloroethane	< 2	23 (115 %R)	22 (110 %R) (4 RPD)	1/27/2012	ug/l	52 - 162	20	624
Carbon tetrachloride	< 2	26 (132 %R)	26 (129 %R) (2 RPD)	1/27/2012	ug/l	70 - 140	20	624
Benzene	< 1	22 (110 %R)	21 (107 %R) (3 RPD)	1/27/2012	ug/l	37 - 151	20	624
1,2-Dichloroethane	< 2	21 (103 %R)	20 (99 %R) (4 RPD)	1/27/2012	ug/l	49 - 155	20	624
Trichloroethene	< 2	21 (105 %R)	20 (101 %R) (4 RPD)	1/27/2012	ug/l	71 - 157	20	624
1,2-Dichloropropane	< 2	21 (105 %R)	21 (103 %R) (2 RPD)	1/27/2012	ug/l	0 - 210	20	624
Bromodichloromethane	< 2	21 (104 %R)	20 (101 %R) (3 RPD)	1/27/2012	ug/l	35 - 155	20	624
2-Chloroethylvinylether	< 2	< 2 (%R N/A)	< 2 (%R N/A) (RPD N/A)	1/27/2012	ug/l	0 - 305	20	624
4-Methyl-2-pentanone(MIBK)	< 10	20 (%R)	20 (%R) (RPD)	1/27/2012	ug/l			624
cis-1,3-Dichloropropene	< 2	20 (102 %R)	20 (102 %R) (0 RPD)	1/27/2012	ug/l	0 - 227	20	624
Toluene	< 1	22 (109 %R)	21 (106 %R) (3 RPD)	1/27/2012	ug/l	47 - 150	20	624
trans-1,3-Dichloropropene	< 2	21 (103 %R)	20 (101 %R) (2 RPD)	1/27/2012	ug/l	17 - 183	20	624
1,1,2-Trichloroethane	< 2	23 (113 %R)	22 (109 %R) (4 RPD)	1/27/2012	ug/l	52 - 150	20	624
2-Hexanone	< 10	20 (%R)	20 (%R) (RPD)	1/27/2012	ug/l			624
Tetrachloroethene	< 2	24 (120 %R)	23 (116 %R) (3 RPD)	1/27/2012	ug/l	64 - 148	20	624
Dibromochloromethane	< 2	24 (118 %R)	23 (115 %R) (3 RPD)	1/27/2012	ug/l	53 - 149	20	624
Chlorobenzene	< 2	22 (111 %R)	22 (108 %R) (3 RPD)	1/27/2012	ug/l	37 - 160	20	624
Ethylbenzene	< 1	23 (113 %R)	22 (110 %R) (3 RPD)	1/27/2012	ug/l	37 - 162	20	624
mp-Xylene	< 1	47 (117 %R)	45 (112 %R) (4 RPD)	1/27/2012	ug/l	70 - 130	20	624
o-Xylene	< 1	23 (115 %R)	22 (109 %R) (5 RPD)	1/27/2012	ug/l	70 - 130	20	624
Styrene	< 1	23 (%R)	22 (%R) (RPD)	1/27/2012	ug/l			624
Bromoform	< 2	25 (125 %R)	25 (123 %R) (2 RPD)	1/27/2012	ug/l	45 - 169	20	624
1,1,2,2-Tetrachloroethane	< 2	20 (101 %R)	20 (100 %R) (1 RPD)	1/27/2012	ug/l	46 - 157	20	624
1,3-Dichlorobenzene	< 1	22 (110 %R)	21 (106 %R) (4 RPD)	1/27/2012	ug/l	59 - 156	20	624
1,4-Dichlorobenzene	< 1	22 (108 %R)	21 (107 %R) (1 RPD)	1/27/2012	ug/l	18 - 190	20	624
1,2-Dichlorobenzene	< 1	21 (105 %R)	21 (104 %R) (1 RPD)	1/27/2012	ug/l	18 - 190	20	624
4-Bromofluorobenzene (surr)	93 %R	99 %R	102 %R	1/27/2012	% Rec	70 - 130		624

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

Client Designation: Wastewater Analysis - ***Weekly***

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
1,2-Dichlorobenzene-d4 (surr)	103 %R	99 %R	99 %R	1/27/2012	% Rec	70 - 130		624
Toluene-d8 (surr)	99 %R	101 %R	100 %R	1/27/2012	% Rec	70 - 130		624

Samples were extracted and analyzed within holding time limits.
Instrumentation was calibrated in accordance with the method requirements.
The method blanks were free of contamination at the reporting limits.
Sample surrogate recoveries met the above stated criteria.
The associated matrix spikes and/or Laboratory Control Samples met acceptance criteria.
There were no exceptions in the analyses, unless noted.
*/I Flagged analyte recoveries deviated from the QA/QC limits. Any impact to data is addressed below.

Client: **GZA GeoEnvironmental, Inc. (NH)**
Client Designation: Wastewater Analysis - ***Weekly***

Sample ID: Treat Tank Effluent

Lab Sample ID:	107170.02
Matrix:	aqueous
Date Sampled:	1/26/12
Date Received:	1/26/12
Units:	ug/l
Date of Extraction/Preparation	1/27/12
Date of Analysis:	1/30/12
Analyst:	JMR
Method:	625mod
Dilution Factor:	1
Phenol	< 1
2-Chlorophenol	< 1
2,4-Dichlorophenol	< 1
2,4,5-Trichlorophenol	< 1
2,4,6-Trichlorophenol	< 1
Pentachlorophenol	< 5
2-Nitrophenol	< 1
4-Nitrophenol	< 5
2,4-Dinitrophenol	< 5
2-Methylphenol	< 1
3/4-Methylphenol	< 1
2,4-Dimethylphenol	< 1
4-Chloro-3-methylphenol	< 1
4,6-Dinitro-2-methylphenol	< 5
Benzoic Acid	< 50
N-Nitrosodimethylamine	< 1
n-Nitroso-di-n-propylamine	< 1
n-Nitrosodiphenylamine	< 1
bis(2-Chloroethyl)ether	< 1
bis(2-chloroisopropyl)ether	< 1
bis(2-Chloroethoxy)methane	< 1
1,3-Dichlorobenzene	< 1
1,4-Dichlorobenzene	< 1
1,2-Dichlorobenzene	< 1
1,2,4-Trichlorobenzene	< 1
2-Chloronaphthalene	< 1
4-Chlorophenyl-phenylether	< 1
4-Bromophenyl-phenylether	< 1
Hexachloroethane	< 1
Hexachlorobutadiene	< 1
Hexachlorocyclopentadiene	< 5
Hexachlorobenzene	< 1
4-Chloroaniline	< 1
2-Nitroaniline	< 5
3-Nitroaniline	< 1
4-Nitroaniline	< 1
Benzyl alcohol	< 5
Nitrobenzene	< 1
Isophorone	< 1
2,4-Dinitrotoluene	< 1
2,6-Dinitrotoluene	< 1
Benzidine (estimated)	< 5
3,3'-Dichlorobenzidine	< 1
Pyridine	< 5
Azobenzene	< 1

Client: **GZA GeoEnvironmental, Inc. (NH)**
Client Designation: Wastewater Analysis - ***Weekly***

Sample ID: Treat Tank Effluent

Lab Sample ID:	107170.02
Matrix:	aqueous
Date Sampled:	1/26/12
Date Received:	1/26/12
Units:	ug/l
Date of Extraction/Preparation	1/27/12
Date of Analysis:	1/30/12
Analyst:	JMR
Method:	625mod
Dilution Factor:	1
Carbazole	< 1
Dimethylphthalate	< 1
Diethylphthalate	< 1
Di-n-butylphthalate	< 5
Butylbenzylphthalate	< 1
bis(2-Ethylhexyl)phthalate	< 5
Di-n-octylphthalate	< 1
Dibenzofuran	< 1
Naphthalene	< 1
2-Methylnaphthalene	< 1
Acenaphthylene	< 1
Acenaphthene	< 1
Fluorene	< 1
Phenanthrene	< 1
Anthracene	< 1
Fluoranthene	< 1
Pyrene	< 1
Benzo[a]anthracene	< 1
Chrysene	< 1
Benzo[b]fluoranthene	< 1
Benzo[k]fluoranthene	< 1
Benzo[a]pyrene	< 1
Indeno[1,2,3-cd]pyrene	< 1
Dibenz[a,h]anthracene	< 1
Benzo[g,h,i]perylene	< 1
2-Fluorophenol (surr)	**40 %R**
Phenol-d6 (surr)	**29 %R**
2,4,6-Tribromophenol (surr)	**79 %R**
Nitrobenzene-D5 (surr)	**81 %R**
2-Fluorobiphenyl (surr)	**81 %R**
p-Terphenyl-D14 (surr)	**92 %R**

Client: **GZA GeoEnvironmental, Inc. (NH)** **Batch ID:** 734529-39483/A012712ABN1

Client Designation: Wastewater Analysis - ***Weekly***

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Phenol	< 1	15 (30 %R)	15 (30 %R) (0 RPD)	1/30/2012	ug/l	15 - 130	20	625mod
2-Chlorophenol	< 1	30 (61 %R)	31 (61 %R) (0 RPD)	1/30/2012	ug/l	30 - 130	20	625mod
2,4-Dichlorophenol	< 1	36 (72 %R)	36 (73 %R) (1 RPD)	1/30/2012	ug/l	30 - 130	20	625mod
2,4,5-Trichlorophenol	< 1	21 (85 %R)	21 (84 %R) (1 RPD)	1/30/2012	ug/l	30 - 130	20	625mod
2,4,6-Trichlorophenol	< 1	38 (76 %R)	37 (75 %R) (1 RPD)	1/30/2012	ug/l	30 - 130	20	625mod
Pentachlorophenol	< 5	49 (97 %R)	46 (93 %R) (4 RPD)	1/30/2012	ug/l	30 - 130	20	625mod
2-Nitrophenol	< 1	36 (73 %R)	36 (72 %R) (1 RPD)	1/30/2012	ug/l	30 - 130	20	625mod
4-Nitrophenol	< 5	16 (33 %R)	18 (36 %R) (9 RPD)	1/30/2012	ug/l	15 - 130	20	625mod
2,4-Dinitrophenol	< 5	38 (76 %R)	41 (83 %R) (9 RPD)	1/30/2012	ug/l	15 - 130	20	625mod
2-Methylphenol	< 1	16 (64 %R)	16 (65 %R) (2 RPD)	1/30/2012	ug/l	30 - 130	20	625mod
3/4-Methylphenol	< 1	14 (55 %R)	14 (56 %R) (2 RPD)	1/30/2012	ug/l	30 - 130	20	625mod
2,4-Dimethylphenol	< 1	34 (67 %R)	33 (67 %R) (0 RPD)	1/30/2012	ug/l	30 - 130	20	625mod
4-Chloro-3-methylphenol	< 1	39 (77 %R)	40 (79 %R) (3 RPD)	1/30/2012	ug/l	30 - 130	20	625mod
4,6-Dinitro-2-methylphenol	< 5	44 (89 %R)	48 (95 %R) (7 RPD)	1/30/2012	ug/l	30 - 130	20	625mod
Benzoic Acid	< 50	< 50 (33 %R)	< 50 (35 %R) (6 RPD)	1/30/2012	ug/l	15 - 140	20	625mod
N-Nitrosodimethylamine	< 1	14 (55 %R)	13 (51 %R) (8 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
n-Nitroso-di-n-propylamine	< 1	19 (76 %R)	18 (73 %R) (4 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
n-Nitrosodiphenylamine	< 1	25 (101 %R)	25 (100 %R) (1 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
bis(2-Chloroethyl)ether	< 1	17 (67 %R)	17 (67 %R) (0 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
bis(2-chloroisopropyl)ether	< 1	17 (70 %R)	17 (69 %R) (1 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
bis(2-Chloroethoxy)methane	< 1	18 (72 %R)	17 (70 %R) (3 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
1,3-Dichlorobenzene	< 1	15 (59 %R)	14 (54 %R) (9 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
1,4-Dichlorobenzene	< 1	15 (59 %R)	14 (55 %R) (7 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
1,2-Dichlorobenzene	< 1	15 (60 %R)	14 (56 %R) (7 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
1,2,4-Trichlorobenzene	< 1	16 (65 %R)	15 (61 %R) (6 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
2-Chloronaphthalene	< 1	18 (73 %R)	18 (71 %R) (3 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
4-Chlorophenyl-phenylether	< 1	20 (79 %R)	20 (80 %R) (1 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
4-Bromophenyl-phenylether	< 1	21 (84 %R)	21 (84 %R) (0 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Hexachloroethane	< 1	13 (54 %R)	13 (51 %R) (6 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Hexachlorobutadiene	< 1	15 (61 %R)	14 (56 %R) (9 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Hexachlorocyclopentadiene	< 5	12 (49 %R)	11 (45 %R) (9 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Hexachlorobenzene	< 1	22 (88 %R)	20 (82 %R) (7 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
4-Chloroaniline	< 1	20 (82 %R)	20 (81 %R) (1 RPD)	1/30/2012	ug/l	15 - 140	20	625mod
2-Nitroaniline	< 5	19 (77 %R)	20 (79 %R) (3 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
3-Nitroaniline	< 1	20 (79 %R)	20 (82 %R) (4 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
4-Nitroaniline	< 1	19 (74 %R)	22 (88 %R) (17 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Benzyl alcohol	< 5	17 (70 %R)	17 (69 %R) (1 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Nitrobenzene	< 1	18 (71 %R)	18 (71 %R) (0 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Isophorone	< 1	22 (86 %R)	21 (84 %R) (2 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
2,4-Dinitrotoluene	< 1	22 (88 %R)	23 (92 %R) (4 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
2,6-Dinitrotoluene	< 1	21 (82 %R)	21 (85 %R) (4 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Benzidine (estimated)	< 5	19 (76 %R)	10 (39 %R) (64 RPD) !	1/30/2012	ug/l	15 - 168	20	625mod
3,3'-Dichlorobenzidine	< 1	22 (87 %R)	22 (88 %R) (1 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Pyridine	< 5	14 (54 %R)	12 (48 %R) (12 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Azobenzene	< 1	21 (82 %R)	20 (82 %R) (0 RPD)	1/30/2012	ug/l	40 - 140	20	625mod

Client: **GZA GeoEnvironmental, Inc. (NH)** **Batch ID:** 734529-39483/A012712ABN1

Client Designation: Wastewater Analysis - ***Weekly***

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Carbazole	< 1	22 (87 %R)	22 (90 %R) (3 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Dimethylphthalate	< 1	20 (80 %R)	20 (82 %R) (2 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Diethylphthalate	< 1	21 (82 %R)	21 (85 %R) (4 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Di-n-butylphthalate	< 5	22 (87 %R)	22 (89 %R) (2 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Butylbenzylphthalate	< 1	21 (85 %R)	22 (88 %R) (3 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
bis(2-Ethylhexyl)phthalate	< 5	21 (86 %R)	22 (89 %R) (3 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Di-n-octylphthalate	< 1	21 (85 %R)	22 (89 %R) (5 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Dibenzofuran	< 1	19 (75 %R)	19 (74 %R) (1 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Naphthalene	< 1	19 (77 %R)	18 (74 %R) (4 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
2-Methylnaphthalene	< 1	18 (71 %R)	17 (69 %R) (3 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Acenaphthylene	< 1	19 (76 %R)	19 (74 %R) (3 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Acenaphthene	< 1	20 (81 %R)	20 (80 %R) (1 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Fluorene	< 1	21 (83 %R)	21 (83 %R) (0 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Phenanthrene	< 1	22 (86 %R)	22 (86 %R) (0 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Anthracene	< 1	21 (85 %R)	22 (87 %R) (2 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Fluoranthene	< 1	22 (86 %R)	22 (88 %R) (2 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Pyrene	< 1	20 (82 %R)	21 (83 %R) (1 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Benzo[a]anthracene	< 1	21 (84 %R)	22 (86 %R) (2 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Chrysene	< 1	22 (87 %R)	22 (87 %R) (0 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Benzo[b]fluoranthene	< 1	20 (81 %R)	21 (83 %R) (2 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Benzo[k]fluoranthene	< 1	22 (90 %R)	22 (89 %R) (1 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Benzo[a]pyrene	< 1	21 (83 %R)	21 (84 %R) (1 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Indeno[1,2,3-cd]pyrene	< 1	21 (86 %R)	22 (87 %R) (1 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Dibenz[a,h]anthracene	< 1	23 (91 %R)	23 (92 %R) (1 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
Benzo[g,h,i]perylene	< 1	22 (89 %R)	22 (88 %R) (1 RPD)	1/30/2012	ug/l	40 - 140	20	625mod
2-Fluorophenol (surr)	42 %R	41 %R	40 %R	1/30/2012	% Rec	21 - 110	20	625mod
Phenol-d6 (surr)	29 %R	30 %R	30 %R	1/30/2012	% Rec	15 - 94	20	625mod
2,4,6-Tribromophenol (surr)	76 %R	93 %R	95 %R	1/30/2012	% Rec	15 - 110	20	625mod
Nitrobenzene-D5 (surr)	80 %R	79 %R	78 %R	1/30/2012	% Rec	35 - 114	20	625mod
2-Fluorobiphenyl (surr)	86 %R	81 %R	77 %R	1/30/2012	% Rec	43 - 116	20	625mod
p-Terphenyl-D14 (surr)	92 %R	97 %R	95 %R	1/30/2012	% Rec	33 - 130	20	625mod

Samples were extracted and analyzed within holding time limits.
Instrumentation was calibrated in accordance with the method requirements.
The method blanks were free of contamination at the reporting limits.
Sample surrogate recoveries met the above stated criteria.
The associated matrix spikes and/or Laboratory Control Samples met acceptance criteria.
There were no exceptions in the analyses, unless noted.
*/!Flagged analyte recoveries deviated from the QA/QC limits.

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

Client Designation: Wastewater Analysis - ***Weekly***

Sample ID:	Treat Tank Effluent
Lab Sample ID:	107170.02
Matrix:	aqueous
Date Sampled:	1/26/12
Date Received:	1/26/12
Units:	mg/L
Date of Extraction/Prep:	1/30/12
Date of Analysis:	1/30/12
Analyst:	LAS
Method:	1664A
Dilution Factor:	1
Oil & Grease (HEM)	< 5

QC REPORT

EAI ID#: 107170

Client: **GZA GeoEnvironmental, Inc. (NH)** **Batch ID:** 734532-40799/A013012OG1661

Client Designation: Wastewater Analysis - ***Weekly***

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Oil & Grease (HEM)	< 5	37 (92 %R)	36 (90 %R) (2 RPD)	1/30/2012	mg/L	78 - 114	18	1664A

Samples were extracted and analyzed within holding time limits.
Instrumentation was calibrated in accordance with the method requirements.
The method blanks were free of contamination at the reporting limits.
Sample surrogate recoveries met the above stated criteria.
The associated matrix spikes and/or Laboratory Control Samples met acceptance criteria.
There were no exceptions in the analyses, unless noted.
*/! Flagged analyte recoveries deviated from the QA/QC limits.

LABORATORY REPORT

EAI ID#: 107170

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

Client Designation: Wastewater Analysis - ***Weekly***

Sample ID:	Treat Tank Effluent
Lab Sample ID:	107170.02
Matrix:	aqueous
Date Sampled:	1/26/12
Date Received:	1/26/12
Units:	ug/l
Date of Extraction/Prep:	1/27/12
Date of Analysis:	1/27/12
Analyst:	JW
Method:	608
Dilution Factor:	1
PCB-1016	< 0.3
PCB-1221	< 0.3
PCB-1232	< 0.3
PCB-1242	< 0.3
PCB-1248	< 0.3
PCB-1254	< 0.3
PCB-1260	< 0.3
TMX (surr)	**87 %R**
DCB (surr)	**86 %R**

Client: **GZA GeoEnvironmental, Inc. (NH)** **Batch ID:** 734529-35119/A012712E608P2

Client Designation: Wastewater Analysis - ***Weekly***

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
PCB-1016	< 0.3	2.0 (101 %R)	2.0 (99 %R) (2 RPD)	1/27/2012	ug/l	50 - 114	20	608
PCB-1221	< 0.3	< 0.3 (%R N/A)	< 0.3 (%R N/A) (RPD N/A)	1/27/2012	ug/l			608
PCB-1232	< 0.3	< 0.3 (%R N/A)	< 0.3 (%R N/A) (RPD N/A)	1/27/2012	ug/l			608
PCB-1242	< 0.3	< 0.3 (%R N/A)	< 0.3 (%R N/A) (RPD N/A)	1/27/2012	ug/l			608
PCB-1248	< 0.3	< 0.3 (%R N/A)	< 0.3 (%R N/A) (RPD N/A)	1/27/2012	ug/l			608
PCB-1254	< 0.3	< 0.3 (%R N/A)	< 0.3 (%R N/A) (RPD N/A)	1/27/2012	ug/l			608
PCB-1260	< 0.3	1.9 (95 %R)	1.9 (93 %R) (2 RPD)	1/27/2012	ug/l	8 - 127	20	608
TMX (surr)	93 %R	92 %R	89 %R	1/27/2012	% Rec	30 - 150		608
DCB (surr)	104 %R	103 %R	96 %R	1/27/2012	% Rec	30 - 150		608

Samples were extracted and analyzed within holding time limits.
Instrumentation was calibrated in accordance with the method requirements.
The method blanks were free of contamination at the reporting limits.
Sample surrogate recoveries met the above stated criteria.
The associated matrix spikes and/or Laboratory Control Samples met acceptance criteria.
There were no exceptions in the analyses, unless noted.
*/! Flagged analyte recoveries deviated from the QA/QC limits.

LABORATORY REPORT

EAI ID#: 107170

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

Client Designation: Wastewater Analysis - ***Weekly***

Sample ID: Treat Tank Effluent

Lab Sample ID:	107170.02
Matrix:	aqueous
Date Sampled:	1/26/12
Date Received:	1/26/12

			Analysis			
		Units	**Date**	**Time**	**Method**	**Analyst**
Fluoride	**6.2**	mg/L	2/01/12	13:35	300.0	KL
Chloride	**9500**	mg/L	1/30/12	13:33	4500ClE	DLS
Nitrate-N	**68**	mg/L	1/27/12	9:15	353.2	DLS
Cyanide Total	**0.01**	mg/L	1/31/12	9:15	4500CNE	KJR
Ammonia-N	**1.2**	mg/L	1/30/12	15:15	4500NH3D	SEL
BOD	**< 6**	mg/L	1/27/12	17:30	5210B	SKC
COD	**180**	mg/L	2/02/12	16:15	H8000	SKC
Total Phenols	**< 0.5**	mg/L	1/31/12	9:00	420.1	JCC
pH	**7.6**	SU	1/27/12	15:56	4500H+B	SEL

Total Phenols: The reporting limit has been elevated due to matrix interference.

Cyanide: Cyanide was re-analyzed on 2/8/20121 per client request. The re-analysis confirmed the cyanide hit. A matrix spike/matrix spike duplicate performed on this sample had acceptable recoveries.

QC REPORT

EAI ID#: 107170

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

Client Designation: Wastewater Analysis - ***Weekly***

Parameter Name	Blank	LCS	LCSD	Units	Date of Analysis	Limits	RPD	Method
Fluoride	< 0.1	2.0 (101 %R)	2.0 (101 %R) (0 RPD)	mg/L	1/31/12	90 - 110	20	300.0
Chloride	< 1	26 (102 %R)	25 (101 %R) (1 RPD)	mg/L	1/30/12	90 - 110	20	4500CIE
Nitrate-N	< 0.5	5.1 (103 %R)	5.2 (103 %R) (0 RPD)	mg/L	1/27/12	90 - 110	20	353.2
Cyanide Total	< 0.01	0.22 (89 %R)		mg/L	1/31/12	85 - 115	20	4500CNE
Ammonia-N	< 0.05	2.1 (104 %R)	2.2 (109 %R) (5 RPD)	mg/L	1/30/12	90 - 110	20	4500NH3DN
BOD	< 6	330 (84 %R)	360 (89 %R) (6 RPD)	mg/L	1/27/12	84 - 115	20	5210B
COD	< 10	100 (102 %R)	100 (100 %R) (2 RPD)	mg/L	2/2/12	85 - 115	20	H8000
Total Phenols	< 0.05	0.24 (94 %R)	0.27 (106 %R) (12 RPD)	mg/L	1/31/12	85 - 115	20	420.1
pH		7.99	7.97	SU	1/27/12	7.95 - 8.07	10	4500H+B

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.

FRONTIER
GLOBAL SCIENCES

414 Pontius Ave North
Seattle, WA 98109
Ph: 206-622-6960
Fx: 206-622-6870

03 February 2012

Jeff Gagne
Eastern Analytical, Inc
25 Chenell Drive
Concord, NH 03301

RE: Merrimack Station

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,

Liz Siska

Liz Siska
Project Manager

FRONTIER GLOBAL SCIENCES

414 Pontius Ave North
Seattle, WA 98109
Ph: 206-622-6960
Fx: 206-622-6870

ANALYTICAL REPORT FOR SAMPLES

Laboratory: Frontier Global Sciences, Inc.
SDG:
Client: Eastern Analytical, Inc
Project: Merrimack Station

Sample ID	Lab ID	Matrix	Date Sampled	Date Received
C-3024 Effluent Field Blank	1201361-01	Water	26-Jan-12 09:15	27-Jan-12 09:42
Treat Tank Effluent	1201361-02	Water	26-Jan-12 09:20	27-Jan-12 09:42

Frontier Global Sciences, Inc.

Liz Siska

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.

FRONTIER
GLOBAL SCIENCES

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CASE NARRATIVE

SAMPLE RECEIPT

Samples were received at Frontier Global Sciences (FGS) on January 27th, 2012. The samples were received intact, on-ice with temperatures measured at 2.9 degrees Celsius.

SAMPLE PREPARATION AND ANALYSIS

Samples were prepared and analyzed for total metals in accordance with FGS-054/EPA 1638.

Samples were prepared and analyzed for total mercury in accordance with EPA Method 1631E.

ANALYTICAL ISSUES

The Effluent Field Blank was greater than the PQL, however the because the associated sample was a non-detect, re-analysis was not required.

All analytes pass according to the QC parameters of EPA Method 200.8.

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

As an additional measure of the accuracy of the methods utilized for analysis 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 with the exception of any QC flagged and described in the notes and definitions section of the following report.

A reasonable measure of the precision of the analytical methods utilized for analysis is the relative percent difference (RPD) between matrix spike and matrix spike duplicate recoveries and between laboratory control sample and laboratory control sample duplicate recoveries. All of the relative percent differences were within the control limits with the exception of any QC flagged and described in the notes and definitions section of the following report.

Frontier Global Sciences, Inc.

Liz Siska

Liz Siska, Project Manager

FRONTIER GLOBAL SCIENCES

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Seattle, WA 98109
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CHAIN OF CUSTODY FORMS

1201361

FRONTIER GLOBAL SCIENCES

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

Page 1 of 1

1201361

414 Pontius Ave. N. Seattle WA 98109
Phone: 206-622-6960
Fax: 206-622-6870
info@FrontierGS.com
http://www.FrontierGS.com

Client: Eastern Analytical, Inc.
Address: 25 Chenell Drive
Concord NH 03301
Project Name: Merrimack Station

Contact: Jeff Gagne
Phone: 603-228-0525 Fax: 603-228-4571
E-mail: jeffg@easternlabs.com
Contract/PO: 27732

Report To: Same
Address: same
Phone: 603-228-0525 Fax: 603-228-4571
E-mail: customerservice@easternlabs.com

Invoice To: Same
Address: Same
Phone: Fax:
E-mail: customerservice@easternlabs.com

FGS PM: Liz Siska
Date: 1/26/2012
TAT (business days): 20 (std) 15 10 5 4 3 2 24 hrs.
(For TAT < 10 days, contact PM. Surcharges apply for expedited TAT)
Saturday delivery? ☐ Y ☐ N (If yes, please contact PM)
EDD ☒ Y ☐ N
QA ☐ Standard ☐ High

No.	Engraved Bottle ID	Sample ID	# of Bottles	Matrix	Date & Time	Sampled By	Field Filtered (Y/N)	Field Preserved: HNO_3 ☐ HCl ☐ Other (%)	Analyses Requested: Total Metals	Comments
1	C-3024	Effluent Field Blank	1	AQ	1/26/2012 09:15	JG/SK	N	—	X	1) Metals Include: Al, Sb, As, Ba, Be, Cd, Cr, Cu, Fe, Pb, Mn, Hg, Mo, Ni, Se, Ag, Tl, Zn
2	C-3025 C-3026	Treat Tone Effluent	3	WW	1/26/2012 09:20	JG/SK	N	—	X	2) Please use Eastern Lab FGS effluent
3										3) Project - Specific matrix and sample volume provided.
4										
5										
6										
7										
8										
9										
10										
11										
12										

For Laboratory Use Only
COC Seal: N/O
Cooler Temp: 2.9°C
Carrier: UPS
VTSR: 1/27
# of Coolers: 1 (one)
Comments: TID 4422

Matrix Codes:
FW: Fresh Water
WW: Waste Water
SB: Sea and Brackish Water
SS: Soil and Sediment
TS: Plant and Animal Tissue
HC: Hydrocarbons
TR: Trap
OT: Other

Relinquished By:
Name: Jeff Gagne
Organization: Eastern Analytical
Date & Time: 1/26/2012 1045

Received By:
Name: Jennifer Lowe
Organization: EAI
Date & Time: 1/26/12 1045

Received By:
Name: UPS
Organization: UPS
Date & Time: 1/26/12 1530

Tracking number: 1Z X46 5A9 13 9427 4534

Sample Disposal:
☐ Return (shipping fees may apply)
☐ Standard Disposal - 30 Days after report
☐ Retain for ___ weeks after report (storage fees may apply)

By signing, you declare that you agree with FGS' terms and conditions, and that you authorize FGS to perform the specified analyses.
Customer Approval: Date: 01/26/12

Rec'd @ FGS + COC, ALEXA M BAHM, FGS 1-27-12
VTSR: ~~1/26~~ 1/27 via UPS

Frontier Global Sciences, Inc.

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.

Liz Siska, Project Manager

FRONTIER
GLOBAL SCIENCES

414 Pontius Ave North
Seattle, WA 98109
Ph: 206-622-6960
Fx: 206-622-6870

ANALYTICAL RESULTS

C-3024 Effluent Field Blank

Matrix: Water **Laboratory ID:** 1201361-01

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Aluminum	ND	0.4	4.0	µg/L	1	F201252	2B02001	02/01/12	FGS-054	U
Antimony	ND	0.005	0.020	µg/L	1	F201252	2B02001	02/01/12	FGS-054	U
Arsenic	ND	0.05	0.15	µg/L	1	F201252	2B02001	02/01/12	FGS-054	U
Barium	ND	0.03	0.20	µg/L	1	F201252	2B02001	02/01/12	FGS-054	U
Beryllium	ND	0.023	0.060	µg/L	1	F201252	2B02001	02/01/12	FGS-054	U
Cadmium	ND	0.004	0.020	µg/L	1	F201252	2B02001	02/01/12	FGS-054	U
Chromium	ND	0.009	0.10	µg/L	1	F201252	2B02001	02/01/12	FGS-054	U
Copper	ND	0.01	0.10	µg/L	1	F201252	2B02001	02/01/12	FGS-054	U
Iron	ND	1.3	10.0	µg/L	1	F201252	2B02001	02/01/12	FGS-054	U
Lead	ND	0.004	0.040	µg/L	1	F201252	2B02001	02/01/12	FGS-054	U
Manganese	ND	0.007	0.10	µg/L	1	F201252	2B02001	02/01/12	FGS-054	U
Mercury	ND	0.08	0.50	ng/L	1	F202015	2B03001	02/02/12	EPA 1631E	U
Molybdenum	ND	0.006	0.06	µg/L	1	F201252	2B02001	02/01/12	FGS-054	U
Nickel	ND	0.008	0.10	µg/L	1	F201252	2B02001	02/01/12	FGS-054	U
Selenium	ND	0.19	0.60	µg/L	1	F201252	2B02001	02/01/12	FGS-054	U
Silver	ND	0.006	0.020	µg/L	1	F201252	2B02001	02/01/12	FGS-054	U
Thallium	ND	0.001	0.005	µg/L	1	F201252	2B02001	02/01/12	FGS-054	QB-02, U
Zinc	**0.25**	0.02	0.20	µg/L	1	F201252	2B02001	02/01/12	FGS-054	

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ANALYTICAL RESULTS

Treat Tank Effluent

Matrix: Water **Laboratory ID:** 1201361-02

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Aluminum	ND	8.9	80.0	µg/L	20	F201252	2B02001	02/01/12	FGS-054	U
Antimony	**0.758**	0.092	0.400	µg/L	20	F201252	2B02001	02/01/12	FGS-054	
Arsenic	**9.56**	1.02	3.00	µg/L	20	F201252	2B02001	02/01/12	FGS-054	
Barium	**208**	0.54	4.00	µg/L	20	F201252	2B02001	02/01/12	FGS-054	
Beryllium	ND	0.454	1.20	µg/L	20	F201252	2B02001	02/01/12	FGS-054	U
Cadmium	**0.587**	0.083	0.400	µg/L	20	F201252	2B02001	02/01/12	FGS-054	
Chromium	ND	0.18	2.00	µg/L	20	F201252	2B02001	02/01/12	FGS-054	U
Copper	**2.61**	0.20	2.00	µg/L	20	F201252	2B02001	02/01/12	FGS-054	
Iron	ND	26.0	200	µg/L	20	F201252	2B02001	02/01/12	FGS-054	U
Lead	ND	0.078	0.800	µg/L	20	F201252	2B02001	02/01/12	FGS-054	U
Manganese	**349**	0.15	2.00	µg/L	20	F201252	2B02001	02/01/12	FGS-054	
Mercury	**12.2**	0.34	2.02	ng/L	4	F202015	2B03001	02/02/12	EPA 1631E	
Molybdenum	**373**	0.12	1.20	µg/L	20	F201252	2B02001	02/01/12	FGS-054	
Nickel	**7.76**	0.16	2.00	µg/L	20	F201252	2B02001	02/01/12	FGS-054	
Selenium	**104**	3.88	12.0	µg/L	20	F201252	2B02001	02/01/12	FGS-054	
Silver	ND	0.120	0.400	µg/L	20	F201252	2B02001	02/01/12	FGS-054	U
Thallium	**5.65**	0.022	0.100	µg/L	20	F201252	2B02001	02/01/12	FGS-054	QB-01
Zinc	ND	0.33	4.00	µg/L	20	F201252	2B02001	02/01/12	FGS-054	QB-02, U

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MATRIX DUPLICATES/TRIPLICATES

SOURCE: 1201316-03

Batch: F202015 **Sequence:** 2B03001

Preparation: BrCl Oxidation **Lab Number:** F202015-DUP1

Analyte	Sample Concentration ng/L	Duplicate Concentration ng/L	MRL	% RPD	RPD Limit	Method	Notes
Mercury	6.99	5.98	1.00	15.6	24	EPA 1631E	

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1201361-02

Batch: F201252 **Sequence:** 2B02001

Preparation: Closed Vessel Nitric Oven Digestion **Lab Number:** F201252-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Beryllium	ND	2.0200	2.214	110	75 - 125	FGS-054	
Aluminum	66.2	151.50	213.7	97.4	80 - 115	FGS-054	
Chromium	0.57	7.0700	7.92	104	85 - 115	FGS-054	
Manganese	348.7	6.0600	353.9	86.1	80 - 120	FGS-054	
Iron	ND	505.00	494.7	98.0	75 - 125	FGS-054	
Nickel	7.76	4.0400	11.66	96.7	68 - 134	FGS-054	
Copper	2.61	4.0400	6.22	89.4	51 - 145	FGS-054	
Zinc	ND	10.100	9.96	98.6	46 - 146	FGS-054	
Arsenic	9.56	15.150	24.20	96.6	85 - 115	FGS-054	
Selenium	104.4	30.300	127.8	77.1	59 - 149	FGS-054	
Molybdenum	373.5	2.0200	375.9	119	80 - 115	FGS-054	QM-02
Silver	ND	1.5150	1.289	85.1	74 - 119	FGS-054	
Cadmium	0.587	0.80800	1.229	79.5	84 - 113	FGS-054	QM-07
Antimony	0.758	0.80800	1.539	96.7	79 - 122	FGS-054	
Barium	208.4	10.100	214.5	60.3	80 - 120	FGS-054	QM-02
Thallium	5.650	0.40400	5.907	63.6	64 - 137	FGS-054	QB-01, QM-02
Lead	ND	1.5150	1.488	98.2	72 - 143	FGS-054	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	2.0200	2.256	112	1.88	75 - 125	20	FGS-054	
Aluminum	151.50	213.6	97.3	0.0484	80 - 115	20	FGS-054	
Chromium	7.0700	7.58	99.1	4.45	85 - 115	20	FGS-054	
Manganese	6.0600	355.8	118	0.544	80 - 120	20	FGS-054	
Iron	505.00	489.5	96.9	1.06	75 - 125	20	FGS-054	
Nickel	4.0400	11.39	89.9	2.39	68 - 134	20	FGS-054	
Copper	4.0400	6.23	89.5	0.117	51 - 145	20	FGS-054	
Zinc	10.100	9.23	91.4	7.53	46 - 146	20	FGS-054	
Arsenic	15.150	25.81	107	6.44	85 - 115	20	FGS-054	
Selenium	30.300	130.8	86.9	2.28	59 - 149	20	FGS-054	
Molybdenum	2.0200	377.7	210	0.491	80 - 115	20	FGS-054	QM-02

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1201361-02

Batch: F201252 **Sequence:** 2B02001

Preparation: Closed Vessel Nitric Oven Digestion **Lab Number:** F201252-MS/MSD1

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	1.5150	1.273	84.0	1.28	74 - 119	20	FGS-054	
Cadmium	0.80800	1.102	63.8	10.8	84 - 113	20	FGS-054	QM-07
Antimony	0.80800	1.618	107	5.02	79 - 122	20	FGS-054	
Barium	10.100	219.6	110	2.32	80 - 120	20	FGS-054	
Thallium	0.40400	6.127	118	3.66	64 - 137	20	FGS-054	QB-01
Lead	1.5150	1.502	99.1	0.946	72 - 143	20	FGS-054	

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1201361-02

Batch: F201252 **Sequence:** 2B02001

Preparation: Closed Vessel Nitric Oven Digestion **Lab Number:** F201252-MS/MSD3

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Beryllium	ND	20.200	18.23	90.2	75 - 125	FGS-054	AS
Aluminum	66.2	4040.0	3986	97.0	80 - 115	FGS-054	AS
Chromium	0.57	404.00	411.3	102	85 - 115	FGS-054	AS
Manganese	348.7	404.00	755.7	101	80 - 120	FGS-054	AS
Iron	ND	2020.0	2012	99.6	75 - 125	FGS-054	AS
Nickel	7.76	505.00	488.7	95.2	68 - 134	FGS-054	AS
Copper	2.61	505.00	459.9	90.6	51 - 145	FGS-054	AS
Zinc	ND	1010.0	870.1	86.1	46 - 146	FGS-054	AS
Arsenic	9.56	404.00	408.2	98.7	85 - 115	FGS-054	AS
Selenium	104.4	404.00	480.3	93.0	59 - 149	FGS-054	AS
Molybdenum	373.5	202.00	574.9	99.7	80 - 115	FGS-054	AS
Silver	ND	20.200	17.43	86.3	74 - 119	FGS-054	AS
Cadmium	0.587	40.400	37.52	91.4	84 - 113	FGS-054	AS
Antimony	0.758	20.200	20.06	95.5	79 - 122	FGS-054	AS
Barium	208.4	808.00	987.1	96.4	80 - 120	FGS-054	AS
Thallium	5.650	20.200	25.86	100	64 - 137	FGS-054	AS, QB-01
Lead	ND	101.00	97.63	96.7	72 - 143	FGS-054	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	20.200	18.26	90.4	0.151	75 - 125	20	FGS-054	AS
Aluminum	4040.0	3956	96.3	0.751	80 - 115	20	FGS-054	AS
Chromium	404.00	408.1	101	0.780	85 - 115	20	FGS-054	AS
Manganese	404.00	752.0	99.8	0.487	80 - 120	20	FGS-054	AS
Iron	2020.0	1989	98.5	1.13	75 - 125	20	FGS-054	AS
Nickel	505.00	485.4	94.6	0.681	68 - 134	20	FGS-054	AS
Copper	505.00	459.2	90.4	0.161	51 - 145	20	FGS-054	AS
Zinc	1010.0	870.5	86.2	0.0542	46 - 146	20	FGS-054	AS
Arsenic	404.00	412.0	99.6	0.916	85 - 115	20	FGS-054	AS
Selenium	404.00	470.1	90.5	2.15	59 - 149	20	FGS-054	AS
Molybdenum	202.00	574.5	99.5	0.0697	80 - 115	20	FGS-054	AS
Silver	20.200	17.50	86.6	0.385	74 - 119	20	FGS-054	AS

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1201361-02

Batch: F201252 **Sequence:** 2B02001

Preparation: Closed Vessel Nitric Oven Digestion **Lab Number:** F201252-MS/MSD3

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Cadmium	40.400	38.59	94.1	2.81	84 - 113	20	FGS-054	AS
Antimony	20.200	20.14	95.9	0.386	79 - 122	20	FGS-054	AS
Barium	808.00	994.4	97.3	0.729	80 - 120	20	FGS-054	AS
Thallium	20.200	25.85	100	0.0375	64 - 137	20	FGS-054	AS, QB-01
Lead	101.00	97.56	96.6	0.0774	72 - 143	20	FGS-054	AS

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1201316-03

Batch: F202015 **Sequence:** 2B03001

Preparation: BrCl Oxidation **Lab Number:** F202015-MS/MSD1

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	6.99	20.200	22.10	74.8	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	20.200	20.97	69.2	5.22	71 - 125	24	EPA 1631E	QM-05

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1201361-02

Batch: F202015 **Sequence:** 2B03001

Preparation: BrCl Oxidation **Lab Number:** F202015-MS/MSD2

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	12.20	40.800	52.32	98.3	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	40.800	52.12	97.8	0.379	71 - 125	24	EPA 1631E	

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1201359-01

Batch: F202015 **Sequence:** 2B03001

Preparation: BrCl Oxidation **Lab Number:** F202015-MS/MSD4

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	1171	1530.0	2618	94.6	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	1530.0	2594	93.1	0.888	71 - 125	24	EPA 1631E	

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LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE

RECOVERY AND RPD

Batch: F201252 **Sequence:** 2B02001

Preparation: Closed Vessel Nitric Oven Digestion **Lab Number:** F201252-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Beryllium	2.0000	1.962	98.1	75 - 125	FGS-054	
Aluminum	150.00	146.0	97.3	85 - 115	FGS-054	
Chromium	7.0000	6.47	92.5	85 - 115	FGS-054	
Manganese	6.0000	5.83	97.1	85 - 115	FGS-054	
Iron	500.00	459.4	91.9	80 - 120	FGS-054	
Nickel	4.0000	3.92	98.0	68 - 134	FGS-054	
Copper	4.0000	4.17	104	51 - 145	FGS-054	
Zinc	10.000	10.48	105	46 - 146	FGS-054	
Arsenic	15.000	14.27	95.1	85 - 115	FGS-054	
Selenium	30.000	28.04	93.5	59 - 149	FGS-054	
Molybdenum	2.0000	1.88	93.8	85 - 115	FGS-054	
Silver	1.5000	1.490	99.3	74 - 119	FGS-054	
Cadmium	0.80000	0.825	103	84 - 113	FGS-054	
Antimony	0.80000	0.780	97.5	79 - 122	FGS-054	
Barium	10.000	9.78	97.8	85 - 115	FGS-054	
Thallium	0.40000	0.417	104	64 - 134	FGS-054	QB-01
Lead	1.5000	1.517	101	72 - 143	FGS-054	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	2.0000	1.944	97.2	0.928	75 - 125	20	FGS-054	
Aluminum	150.00	145.9	97.2	0.0872	85 - 115	20	FGS-054	
Chromium	7.0000	6.46	92.2	0.275	85 - 115	20	FGS-054	
Manganese	6.0000	5.74	95.6	1.55	85 - 115	20	FGS-054	
Iron	500.00	458.2	91.6	0.251	80 - 120	20	FGS-054	
Nickel	4.0000	3.96	99.0	1.01	68 - 134	20	FGS-054	
Copper	4.0000	4.16	104	0.0881	51 - 145	20	FGS-054	
Zinc	10.000	10.39	104	0.846	46 - 146	20	FGS-054	
Arsenic	15.000	14.17	94.4	0.731	85 - 115	20	FGS-054	

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LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE

RECOVERY AND RPD

Batch: F201252 **Sequence:** 2B02001

Preparation: Closed Vessel Nitric Oven Digestion **Lab Number:** F201252-BS/BSD1

LCS Source: Blank Spike Dup

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Selenium	30.000	27.98	93.3	0.184	59 - 149	20	FGS-054	
Molybdenum	2.0000	1.86	92.8	1.11	85 - 115	20	FGS-054	
Silver	1.5000	1.501	100	0.752	74 - 119	20	FGS-054	
Cadmium	0.80000	0.757	94.7	8.56	84 - 113	20	FGS-054	
Antimony	0.80000	0.797	99.6	2.18	79 - 122	20	FGS-054	
Barium	10.000	9.76	97.6	0.247	85 - 115	20	FGS-054	
Thallium	0.40000	0.410	103	1.51	64 - 134	20	FGS-054	QB-01
Lead	1.5000	1.524	102	0.433	72 - 143	20	FGS-054	

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LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE

RECOVERY AND RPD

Batch: F202015 **Sequence:** 2B03001

Preparation: BrCl Oxidation **Lab Number:** F202015-BS/BSD1

LCS Source: Nist 1641d

Analyte	Spike Added (ng/L)	LCS Concentration (ng/L)	LCS % Recovery	Recovery Limits	Method	Notes
Mercury	15.679	15.11	96.4	80 - 120	EPA 1631E	

Analyte	Spike Added (ng/L)	LCSD Concentration (ng/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	15.679	14.79	94.3	2.16	80 - 120	24	EPA 1631E	

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PREPARATION BLANKS

Instrument: ICPMS-6 **Sequence:** 2B02001

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F201252-BLK1	Beryllium	-0.0003	0.060	µg/L	F201252	FGS-054	U
F201252-BLK1	Aluminum	0.01	4.0	µg/L	F201252	FGS-054	U
F201252-BLK1	Chromium	-0.04	0.10	µg/L	F201252	FGS-054	U
F201252-BLK1	Manganese	-0.0007	0.10	µg/L	F201252	FGS-054	U
F201252-BLK1	Iron	-0.4	10.0	µg/L	F201252	FGS-054	U
F201252-BLK1	Nickel	0.004	0.10	µg/L	F201252	FGS-054	U
F201252-BLK1	Copper	0.02	0.10	µg/L	F201252	FGS-054	U
F201252-BLK1	Zinc	0.32	0.20	µg/L	F201252	FGS-054	QB-10
F201252-BLK1	Arsenic	-0.15	0.15	µg/L	F201252	FGS-054	U
F201252-BLK1	Selenium	0.14	0.60	µg/L	F201252	FGS-054	U
F201252-BLK1	Molybdenum	0.004	0.06	µg/L	F201252	FGS-054	U
F201252-BLK1	Silver	-0.001	0.020	µg/L	F201252	FGS-054	U
F201252-BLK1	Cadmium	-0.010	0.020	µg/L	F201252	FGS-054	U
F201252-BLK1	Antimony	-0.0003	0.020	µg/L	F201252	FGS-054	U
F201252-BLK1	Barium	0.07	0.20	µg/L	F201252	FGS-054	U
F201252-BLK1	Thallium	0.002	0.005	µg/L	F201252	FGS-054	QB-02, U
F201252-BLK1	Lead	0.0003	0.040	µg/L	F201252	FGS-054	U

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PREPARATION BLANKS

Instrument: Hg-17

Sequence: 2B03001

Preparation: BrCl Oxidation

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F202015-BLK1	Mercury	0.06	0.50	ng/L	F202015	EPA 1631E	U
F202015-BLK2	Mercury	0.03	0.50	ng/L	F202015	EPA 1631E	U
F202015-BLK3	Mercury	0.05	0.50	ng/L	F202015	EPA 1631E	U
F202015-BLK4	Mercury	0.06	0.50	ng/L	F202015	EPA 1631E	QB-04, 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-05	The spike recovery was outside acceptance limits for the MS/MSD and or AS/ASD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
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-10	The method blank and/or initial/continuing calibration blank contains analyte at a concentration above the MRL. Only report sample results greater than 10 times the contamination value (QB-01), or samples less than the MRL (QB-02).
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.
QB-02	The method blank and/or initial/continuing calibration blank contains analyte at a concentration above the MRL. However, the sample concentrations are less than the MRL.
QB-01	The method blank and/or initial/continuing calibration blank contains analyte at a concentration above the MRL. However, the blank concentration(s) are less than 10% of the sample result.
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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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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professional laboratory services

CHAIN-OF-CUSTODY RECORD

107170 35

Sample IDs	Date/Time Composites need start and stop dates/times	Matrix	Parameters and Sample Notes	# of containers
Effluent Field Blank	1/26/12 9:15	aqueous (Grab or Comp)	AqTot/SWLLMetalsSub	1
☑ Sampler confirms ID and parameters are accurate			*Circle preservative/s:* HCL HNO_3 H_2SO_4 NaOH MEOH $Na_2S_2O_3$ (ICE)	Dissolved Sample Field Filtered ☐
Treat Tank Effluent	1/26/12 9:20	aqueous (Grab or Comp)	AqTot/SWLLMetalsSub/NH3/BOD/Cl/COD/CyanT/F/NO3/OG1664/V624A/E625/E608PCB/TPhenols / pH *	17
			* AT CUSTOMERS REQUEST	
☑ Sampler confirms ID and parameters are accurate			*Circle preservative/s:* (HCL) HNO_3 (H_2SO_4) (NaOH) MEOH $Na_2S_2O_3$ (ICE)	Dissolved Sample Field Filtered ☐

Please ensure this auto COC is accurate, adheres to permit or sampling requirements for this sampling event, and modify as necessary.

EA! Project ID 3902
Project Name Wastewater Analysis - *Weekly*
State NH
Client (Pro Mgr) Paul Pepler
Customer GZA GeoEnvironmental, Inc. (NH)
Address 380 Harvey Road
City Manchester NH 03103
Phone 623-3600 Fax 624-9463 (37)
EmailAddress: paul.pepler@gza.com

Results Needed by: Preferred date PIR 2/8/12

Notes about project: (i.e. Special Limits, Billing Info if different...)

Subcontract ALL metals to Frontier Global Sciences. Metals include Total Al,Sb,As,Ba,Be,Cd,Cr,Cu,Fe,Pb,Mn,Hg,Mo,Ni,Se,Ag,Tl, Zn. Metals analyses require project-specific MS/MSD.

624, 625, 608 results needed
~~2/1/2012~~
2/1/2012 JG

QC deliverables
☒ A ☐ A+ ☒ B ☐ B+ ☐ C ☐ PC

ReportingOptions
☒ HC
☒ EDD PDF
☒ EDD email
☒ PDF prelim, NO FAX
☐ e-mail Login Confirmation
☐ NO FAX

PONumber: 02259252
Quote No:
Temperature 4.5 °C
Ice present Yes ☒ No ☐

Samples Collected by: JB JG 1/26/12 10:45

Relinquished by	Date/Time	Received by
Relinquished by	Date/Time	Received by