GZA
GeoEnvironmental, Inc.

Engineers and Scientists

December 16, 2011
File No. 04.0029307.00

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

Re: Baseline Monitoring Analysis
October 1, 2011 through December 16, 2011
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 the attached Self-Monitoring Report (SMR) with the Baseline Monitoring Analysis (BMA) for the period October 1, 2011 through December 16, 2011 in accordance with the Interim Discharge Authorization (IDA) issued to PSNH by the Lowell Regional Wastewater Utility (Utility), dated September 28, 2011.

WASTEWATER ANALYTICAL RESULTS

A wastewater sampling program was conducted at Merrimack Station during the last month by GZA and the treatment system provider, Siemens Water Technologies. To satisfy the Baseline Monitoring Analysis requirements found on **Page 2** of the PSNH IDA, samples were collected at the end of the treatment process. Two complete sets of analytical data were compiled from representative samples obtained on four separate days. As referenced in the attached **SMR Summary Sheet**, only grab samples were obtained on three separate days and both a composite sample and a grab sample were collected on a fourth day. All four samples were representative of the wastewater generated on those days.

The wastewater samples were shipped under chain-of-custody protocol and analyzed by Eastern Analytical Inc. of Concord, New Hampshire, Frontier Global Sciences of Seattle, Washington, and Enviroscan Analytical Services of Rothschild, Wisconsin.

Analytical results are presented in the attached **Analytical Data Reports** and summarized in the attached **Tables**. The results indicate that pollutant concentrations were within the Local Sewer Discharge Limits.

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:rkl
P:\04Jobs\0029300s\04.0029307.00\Work\SAMPLING AND REPORTING\REPORTS\Lowell\BMA REPORT\FINAL 29307 LRWU CVR LTR 121611.docx

Attachments: SMR Summary Sheet
Tables
Analytical Data Reports

LOWELL REGIONAL WASTEWATER UTILITY
Industrial Sewer User Self-Monitoring Report Summary Sheet

Facility Information: Company Name Public Service of New Hampshire – Merrimack Station

Facility Address 97 River Road Permit No. IDA

Facility Contact Harold Keyes Telephone (603) 224-4081

Use A Separate Summary Sheet For Each Monitoring Point

Monitoring Report: Monitoring Point At the end of the treatment process Submittal Date December 16, 2011

Reporting Period (circle applicable): **Baseline** Annually Semi-Annually Quarterly Monthly Re-Sample

Reporting Period Start Date October 1, 2011 Reporting Period End Date December 16, 2011

Sample Analysis: Certified Analytical Lab Eastern Analytical, Inc, Enviroscan Analytical Services

Authorized Rep. Lorraine Olashaw, Bruce Schertz Certification No. 1012, 100317

Analytical Sub-Contractor Frontier Global Sciences, Certification No. E87575

Sample Collection: Sampler (Lab/Self/Other) Paul Pepler (GZA), Jeff Gagne (EAI), Jim Fish (Siemens)

Sample Type(s) (circle all that apply): **Grab** **Time Composite** Flow Composite

Grab Sampling: Sample Date (1) 11/17/11, (2) 11/30/11, (3) 12/07/11 Sample Time (1) 10:30am, (2) 10:30am, (3) 2pm

pH (Standard Units) (1) 6.16, (2) 6.96, (3) 7.13 Instantaneous Flow Rate (GPM) unknown

Composite Sampling: Start Date/Time 12/04/11, 12:00 pm Stop Date/Time 12/05/11, 12:00 pm

No. Aliquots 24 Aliquot Volume 800 mL Sample Volume 19.2 L

Flow Data: Sampling Interval Volume (Gal) unknown Daily Flow Rate (GPD) Variable, but < 70,000 gpd

Monitoring Period Industrial Wastewater Flow (Gal) 323,200 [ ] Meter [x] Estimate

Monitoring Period Start Date November 30, 2011 Monitoring Period End Date December 16, 2011

Refer to Self-Monitoring Report Instructions for details on completing this SMR Summary Sheet

TABLES

SUMMARY OF BASELINE MONITORING ANALYTICAL RESULTS
METALS
Public Service of New Hampshire
Merrimack Station
Bow, New Hampshire

PARAMETER	LOWELL SEWER DISCHARGE LIMITS	RESULTS (mg/L) 12/5/2011	RESULTS (mg/L) 12/7/2011
Aluminum	24.69	< 0.0140	< 0.20
Antimony	-	< 0.032	< 0.01
Arsenic	0.556	< 0.010	0.00403
Barium	-	0.154	0.22
Beryllium	-	< 0.90	< 0.01
Cadmium	0.056	< 0.0017	< 0.01
Chromium (T)	8.108	< 0.00160 (III)	< 0.01
Copper	3.124	0.0085	< 0.01
Lead	0.857	< 0.016	< 0.01
Mercury	0.004	0.0000067	0.0000056
Nickel	1.541	< 0.003	< 0.01
Selenium	-	0.089	0.120
Silver	0.053	< 0.006	< 0.01
Thallium	-	0.019	< 0.01
Zinc	4.959	< 0.005	< 0.01

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

Subject: Laboratory Report
Eastern Analytical, Inc. ID: 105347
Client Identification: Wastewater Analysis-***Weekly***
Date Received: 11/17/2011

Report revision/reissue: Revision, replaces report dated 11/29/11

Revision information: The parameter list on this report has been revised.

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 | 12.15.11 Date | 9 # of pages (excluding cover letter)

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

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

Sample ID:	Wastewater
Lab Sample ID:	105347.01
Matrix:	aqueous
Date Sampled:	11/17/11
Date Received:	11/17/11
Units:	ug/l
Date of Analysis:	11/18/11
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	3
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	4
Bromoform	< 2
1,1,2,2-Tetrachloroethane	< 2
1,3-Dichlorobenzene	< 1
1,4-Dichlorobenzene	< 1
1,2-Dichlorobenzene	< 1
4-Bromofluorobenzene (surr)	**92 %R**
1,2-Dichlorobenzene-d4 (surr)	**102 %R**
Toluene-d8 (surr)	**98 %R**

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

Sample ID:	Wastewater
Lab Sample ID:	105347.01
Matrix:	aqueous
Date Sampled:	11/17/11
Date Received:	11/17/11
Units:	ug/l
Date of Extraction/Preparation	11/17/11
Date of Analysis:	11/17/11
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)	**38 %R**
Phenol-d6 (surr)	**26 %R**
2,4,6-Tribromophenol (surr)	**59 %R**
Nitrobenzene-D5 (surr)	**69 %R**
2-Fluorobiphenyl (surr)	**66 %R**
p-Terphenyl-D14 (surr)	**69 %R**

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

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

Sample ID:	Wastewater
Lab Sample ID:	105347.01
Matrix:	aqueous
Date Sampled:	11/17/11
Date Received:	11/17/11
Units:	ug/l
Date of Extraction/Prep:	11/17/11
Date of Analysis:	11/17/11
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)	**88 %R**
DCB (surr)	**94 %R**

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

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

Sample ID: Wastewater

Lab Sample ID: 105347.01
Matrix: aqueous
Date Sampled: 11/17/11
Date Received: 11/17/11

		Analytical Matrix	Units	Date of Analysis	Method	Analyst
Molybdenum	< 0.005	AqTot	mg/L	11/17/11	200.8	DS

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

Subject: Laboratory Report
Eastern Analytical, Inc. ID: 105645
Client Identification: Merrimack Station Wastewater Analysis - Weekly
Date Received: 11/30/2011

Report revision/reissue: Revision, replaces report dated 11/29/11

Revision information: The parameter list on this report has been revised.

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.

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

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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 | 12.15.11 Date | 8 # of pages (excluding cover letter)

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

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

Sample ID:	Wastewater
Lab Sample ID:	105645.01
Matrix:	aqueous
Date Sampled:	11/30/11
Date Received:	11/30/11
Units:	ug/l
Date of Analysis:	11/30/11
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)	96 %R
1,2-Dichlorobenzene-d4 (surr)	102 %R
Toluene-d8 (surr)	97 %R

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

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

Sample ID:	Wastewater
Lab Sample ID:	105645.01
Matrix:	aqueous
Date Sampled:	11/30/11
Date Received:	11/30/11
Units:	ug/l
Date of Extraction/Preparation	11/30/11
Date of Analysis:	11/30/11
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)	**33 %R**
Phenol-d6 (surr)	**27 %R**
2,4,6-Tribromophenol (surr)	**53 %R**
Nitrobenzene-D5 (surr)	**65 %R**
2-Fluorobiphenyl (surr)	**55 %R**
p-Terphenyl-D14 (surr)	**79 %R**

LABORATORY REPORT

EAI ID#: 105645

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

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

Sample ID:	Wastewater
Lab Sample ID:	105645.01
Matrix:	aqueous
Date Sampled:	11/30/11
Date Received:	11/30/11

		Analysis			
		Units	Date	Time	Method	Analyst
Solids Suspended	< 5	mg/L	11/30/11	8:15	2540D	DLS
Fluoride	6	mg/L	12/01/11	2:45	300.0	KL
Cyanide Total	< 0.01	mg/L	12/01/11	8:45	4500CNE	KJR
Total Nitrogen	130	mg/L	12/01/11	12:30	4500NorgC	KL
BOD	< 6	mg/L	11/30/11	14:40	5210B	SKC
COD	110	mg/L	11/30/11	14:00	H8000	SKC
Total Phenols	< 0.3	mg/L	12/01/11	9:00	420.1	JCC
pH	7.1	SU	11/30/11	14:00	4500H+B	JL

Total Nitrogen is determined by a calculation derived from method EPA 353.2, and Standard Methods 4500orgC/NH3D.
Total Phenols: Reporting limit is elevated as a result of sample dilution due to matrix interference.

CHAIN-OF-CUSTODY RECORD

eastern analytical, inc.
professional laboratory services

105645

Sample IDs	Date/Time *Composites need start and stop dates/times*	Matrix	Parameters and Sample Notes	# of containers
Wastewater	11/30/11 10/30 am	aqueous (Grab) or Comp	AqTot/~~NH3~~/BOD/~~TSS~~/COD/CyanT/F/pH/TPhenols/~~SO4/NO3/TDS~~/TSS/V624A/E625/OG1664/ICPMets~~-Al-Sb-As-Ba-Be-Cd-Cr-Cu-Fe-Pb-Mn-Mo-Ni-Se-Ag-Tl-Zn-Ca-Na-Mg/HgCVChemservSub~~/TN/~~TKN/NO3NO2/AlkT/S2/SO3/ChlorineTR~~es ~~Hold Soon~~ 12/1/11	24

☒ 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 N/A ☐

SITE NAME: MERRIMACK STATION
97 RIVER ROAD
BOW, NH 03304

Number and type of containers listed on EAI Bottle order # 5377 11/28/11

1 additional bottle included (1 liter glass amber) for matrix interference troubleshooting (See Kathy Lane)

pH: 6.96
T: 25.58°C

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

EAI 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 ~~ASAP~~ Friday

Notes about project: (i.e. Special Limits, Billing Info if different...)
AT CUSTOMERS REQUEST:
SUB OUT ~~ARSENIC~~ & SELENIUM
REVISED REPORT -
PARAMETER LIST SHORTENED
AT CUSTOMERS REQUEST PM 12/13/11

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: 1009476
Temperature 23.5°C
Ice present Yes ☐ No ~~☒~~

Samples Collected by: Paul T. Pepler

Relinquished by	Date/Time	Received by
	11/30/11 1430	
	12/15/11	

SAMPLE CONDITIONS PAGE

EAI ID#: 105962

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

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)
105962.01	Treat Tank	12/7/11	12/7/11	aqueous		Adheres to Sample Acceptance Policy
105962.02	Treat Tank Field Blank	12/7/11	12/7/11	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

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	Laboratory ID	Matrix	Date Sampled	Date Received
Treat Tank	1112097-01	Water	07-Dec-11 14:00	08-Dec-11 06:40
T. T. Field Blank	1112097-02	Water	07-Dec-11 14:00	08-Dec-11 06:40
Treat Tank	1112097-03	Water	07-Dec-11 14:00	08-Dec-11 06:40
T. T. Field Blank	1112097-04	Water	07-Dec-11 14:00	08-Dec-11 06:40

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

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

FRONTIER GLOBAL SCIENCES

CHAIN OF CUSTODY FORMS

1112097

FRONTIER GLOBAL SCIENCES

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

Page 1 of 1

1112097

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.	Contact: Jeff Gagne		FGS PM: Liz Siska
Address: 25 Chenell Drive Concord NH 03301	Phone: (603) 520-5884 Fax: (603) 228-4571		Date: 12/7/11
	E-mail: jeffg@eailabs.com		TAT (business days): 20 (std) 15 10 5 4 3 (2) 24 hrs. (For TAT < 10 days, contact PM. Surcharges apply for expedited TAT)
Project Name: Merrimack Station	Contract/PO: PO# 27568		Saturday delivery? ☐ Y ☐ N (If yes, please contact PM)
Report To: Same	Invoice To:		EDD ☒ Y ☐ N
Address:	Address:		QA ☐ Standard ☐ High
Phone: (603) 228-0525 Fax: (603) 228-4571	Phone: Fax:		
E-mail: customerservice@eailabs.com	E-mail:		

No.	Engraved Bottle ID	Sample ID	# of Bottles	Matrix	Date & Time	Sampled By	Preservation (Y/N)	Field Preserved (Y/N)	Analyses Requested: As, Se - Calibrate Cell	Analyses Requested: H_g 1631	Comments
1	C-2923/1	Treat Tank	2	WW	12/7/11 1400	JG/DB	N	N		X	Results by 5 EST 12/9/11
2	C-2922	T.T. Field Blank	1	AQ	12/7/11 1400					X	
3											
4	C-581/C-594	Treat Tank	2	WW	12/7/11 1400	JG/DB	N	N	X		Job # 105962
5	C-573	T.T. Field Blank	1	AQ	12/7/11 1400				X		
6											
7											
8											
9											
10											
11											
12											

For Laboratory Use Only
COC Seals: NONE Comments:
Cooler Temp: 3.1°C ID: 0268
Carrier: UPS
VTSR: 06:40
# of Coolers: 1 (one)

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:	Received By:	Received By:
Name: Jeff Gagne	Name: Jennifer Lane	Name: UPS
Organization: Eastern Analytical	Organization: EAI	Organization: UPS
Date & Time: 12/7/11 1750	Date & Time: 12/7/11 1750	Date & Time: 12/7/11 1800
Tracking number: 1ZX465991594813763		

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: 12/7/11

RECD BY: Albl, Alexa Bahm, FGS 12-8-11 09:11

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.

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GLOBAL SCIENCES

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

Mercury Analytical Results

Matrix: Water **Preparation:** BrCl Oxidation

Sample Name	Result	MRL	Units	Batch	Prepared	Sequence	Analyzed	Method	Notes
T. T. Field Blank	ND	0.50	ng/L	F112077	12/08/11	1L09012	12/09/11	EPA 1631E	U
Treat Tank	**5.63**	2.02	ng/L	F112077	12/08/11	1L09012	12/09/11	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska

Liz Siska, Project Manager

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Seattle, WA 98109
Ph: 206-622-6960
Fx: 206-622-6870

Selenium Analytical Results

Matrix: Water **Preparation:** Closed Vessel Nitric Oven Digestion

Sample Name	Result	MRL	Units	Batch	Prepared	Sequence	Analyzed	Method	Notes
T. T. Field Blank	ND	0.60	µg/L	F112074	12/08/11	1L09004	12/09/11	FGS-054	U
Treat Tank	**120**	6.00	µg/L	F112074	12/08/11	1L09004	12/09/11	FGS-054	

Frontier Global Sciences, Inc.

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Liz Siska

Liz Siska, Project Manager

FRONTIER
GLOBAL SCIENCES

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

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1112097-03

Matrix: Water **Sequence:** 1L09004

Batch: F112074 **Lab Number:** F112074-MS/MSD1

Preparation: Closed Vessel Nitric Oven Digestion

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Arsenic	4.03	5.0030	8.93	98.0	85 - 115	FGS-054	
Selenium	119.6	4.9990	126.7	141	59 - 149	FGS-054	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Arsenic	5.0030	8.77	94.7	1.84	85 - 115	20	FGS-054	
Selenium	4.9990	122.6	58.7	3.29	59 - 149	20	FGS-054	QM-02

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Liz Siska, Project Manager

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Fx: 206-622-6870

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1112089-17

Matrix: Water
Batch: F112077
Preparation: BrCl Oxidation
Sequence: 1L09012
Lab Number: F112077-MS/MSD2

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	68.68	102.00	168.0	97.3	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	102.00	157.2	86.8	6.60	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska

Liz Siska, Project Manager

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LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE

RECOVERY AND RPD

Matrix: Water
Sequence: 1L09004
Batch: F112074
Lab Number: F112074-BS/BSD1
Preparation: Closed Vessel Nitric Oven Digestion
LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Arsenic	5.0030	4.84	96.8	85 - 115	FGS-054	
Selenium	4.9990	4.87	97.4	59 - 149	FGS-054	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Arsenic	5.0030	4.71	94.2	2.75	85 - 115	20	FGS-054	
Selenium	4.9990	5.43	109	10.9	59 - 149	20	FGS-054	

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Liz Siska, Project Manager

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Seattle, WA 98109
Ph: 206-622-6960
Fx: 206-622-6870

PREPARATION BLANKS

Matrix: Water
Instrument: ICPMS-6
Sequence: 1L09004
Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F112074-BLK1	Arsenic	-0.05	0.15	µg/L	F112074	FGS-054	U
F112074-BLK1	Selenium	-0.01	0.60	µg/L	F112074	FGS-054	U

Frontier Global Sciences, Inc.

Liz Siska

Liz Siska, Project Manager

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Notes and Definitions

U	Analyte included in the analysis, but not detected
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
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

Frontier Global Sciences, Inc.

Liz Siska

Liz Siska, Project Manager

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Arthur Auclair
Northeast Utilities
97 River Road
Bow , NH 03304

Subject: Laboratory Report

Eastern Analytical, Inc. ID: 105963
Client Identification: Merrimack Station
Date Received: 12/7/2011

Dear Mr. Auclair :

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

12.13.11
Date

11
# of pages (excluding cover letter)

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Parameter Name	Blank	LCS	LCSD	Units	Date of Analysis	Limits	RPD	Method
Aluminum	< 0.05	11 (103 %R)		mg/L	12/9/11	85 - 115	20	200.8
Antimony	< 0.001	1.1 (107 %R)		mg/L	12/9/11	85 - 115	20	200.8
Arsenic	< 0.001	1.0 (102 %R)		mg/L	12/9/11	85 - 115	20	200.8
Barium	< 0.001	1.0 (103 %R)		mg/L	12/9/11	85 - 115	20	200.8
Beryllium	< 0.001	1.1 (114 %R)		mg/L	12/9/11	85 - 115	20	200.8
Cadmium	< 0.001	0.97 (97 %R)		mg/L	12/9/11	85 - 115	20	200.8
Chromium	< 0.001	1.0 (100 %R)		mg/L	12/9/11	85 - 115	20	200.8
Copper	< 0.001	0.94 (94 %R)		mg/L	12/9/11	85 - 115	20	200.8
Lead	< 0.001	1.0 (101 %R)		mg/L	12/9/11	85 - 115	20	200.8
Mercury	< 0.0001	0.0010 (101 %R)		mg/L	12/9/11	85 - 115	20	200.8
Nickel	< 0.001	0.95 (95 %R)		mg/L	12/9/11	85 - 115	20	200.8
Selenium	< 0.001	0.90 (90 %R)		mg/L	12/9/11	85 - 115	20	200.8
Silver	< 0.001	0.11 (108 %R)		mg/L	12/9/11	85 - 115	20	200.8
Thallium	< 0.001	1.0 (102 %R)		mg/L	12/9/11	85 - 115	20	200.8
Zinc	< 0.005	0.95 (95 %R)		mg/L	12/9/11	85 - 115	20	200.8

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.

Page 1 of 1

CHAIN-OF-CUSTODY RECORD

For Li 105963

BOLD FIELDS REQUIRED. PLEASE CIRCLE REQUESTED ANALYSIS.

SAMPLE I.D.	SAMPLING DATE/TIME *IF COMPOSITE, INDICATE BOTH START & FINISH DATE/TIME	MATRIX (SEE BELOW)	GRAB/*COMPOSITE	VOC: 524.2 BTEX; 524.2 BTEX ONLY 524.2 MTBE ONLY; 8260B 624 VTICs EDB DBCP 1,4 DIOXANE; 8021B BTEX HALOS; 8015B GRO MEGRO MAVPH	SVOC: 8270D 625 SVTICs ABN A BN PAH; TPHM100 LI L2; 8015B DRO MEDRO MAEPH; PEST 608 PCB 608 PEST 8081A PCB 8082; OIL & GREASE 1664 TPH 1664	TCLP: TCLP 1311 ABN METALS VOC PEST HERB	METALS: DISSOLVED METALS (LIST BELOW); TOTAL METALS (LIST BELOW)	INORGANICS: TS TSS TDS SPEC. CON.; Ba Cl F SO_4 NO_2 NO_3 NO_2NO_3; BOD CBOD T. ALK.; TKN NH_3 T. PHOS. O. PHOS.; pH T. RES. CHLORINE; COD PHENOLS TOC DOC; TOTAL CYANIDE TOTAL SULFIDE; REACTIVE CYANIDE REACTIVE SULFIDE FLASHPOINT IGNITABILITY	MICRO: TOTAL COLIFORM E. COLI; FECAL COLIFORM; ENTEROCOCCI HETEROTROPHIC PLATE COUNT	OTHER	# OF CONTAINERS	NOTES MEOH VIAL #
WWT Influent	12/7/11 1500	WW	C										Table 1-1
WWT Effluent	12/7/11 1500	WW	C										Table 1-2

MATRIX: A-AIR; S-SOIL; GW-GROUND WATER; SW-SURFACE WATER; DW-DRINKING WATER; WW-WASTE WATER

PRESERVATIVE: H-HCL; N-HNO_3; S-H_2SO_4; Na-NaOH; M-MEOH

PROJECT MANAGER: Arthur Auclair

COMPANY: Northeast Utilities

ADDRESS: 97 River Rd

CITY: Bow STATE: NH ZIP: 03304

PHONE: (603) 224-4081 EXT.:

FAX: (603) 224-4071

E-MAIL:

SITE NAME: Merrimack Station

PROJECT #:

STATE: (NH) MA ME VT OTHER:

REGULATORY PROGRAM: NPDES: RGP POTW STORMWATER OR GWP, OIL FUND, BROWNFIELD OR OTHER:

QUOTE #: PO #:

DATE NEEDED: 12/9/11

QA/QC REPORTING LEVEL: A (B) C OR PRESUMPTIVE CERTAINTY

REPORTING OPTIONS: PRELIMS: YES OR NO; IF YES: FAX OR PDF

ELECTRONIC OPTIONS: NO FAX E-MAIL PDF EQUIS

TEMP. 4.5 °C ICE? (YES) NO

SAMPLER(S): JG, JB

RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:
[signature]	12/7/11	1750	[signature]
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:

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)

SITE HISTORY:

SUSPECTED CONTAMINATION:

FIELD READINGS:

eastern analytical, inc. professional laboratory services
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

(WHITE: ORIGINAL GREEN: PROJECT MANAGER)

SIEMENS

Siemens Industry Inc
181 Thorn Hill Road
Warrendale, PA 15086

Attn: Frank Sassaman

PROJECT NO. : PSNH Merrimack Station Performance
REPORT NO. : 1112078
DATE REC'D 12/06/11 11:24
REPORT DATE : 12/14/11 16:39
PREPARED BY : BMS

Sample ID: Effluent | Matrix: Waste Water | Sample Date/Time: 12/05/11 16:00 | Lab No. : 1112078-02

	Results	Units	LOD	LOQ	Dilution Factor	Qualifiers	Date Analyzed	Analyst
Calculated								
Trivalent Chromium	ND	mg/L	0.00400	0.00400	1		12/08/11	CKV
EPA 1664 A								
Hexane Extractable Material (HEM)	1.60	mg/L	1.40	4.66	1	J	12/08/11	KAM
EPA 200.7 - Total								
Total Aluminum	ND	mg/L	0.0140	0.0500	1	S1L, S2L	12/08/11	DJB
Total Antimony	ND	mg/L	0.032	0.110	1		12/08/11	DJB
Total Arsenic	ND	mg/L	0.010	0.050	1		12/08/11	DJB
Total Barium	0.154	mg/L	0.0030	0.0500	1		12/08/11	DJB
Total Beryllium	ND	ug/L	0.90	10.0	1	S1L	12/08/11	DJB
Total Cadmium	ND	mg/L	0.0017	0.0500	1		12/08/11	DJB
Total Chromium	ND	mg/L	0.00160	0.0500	1		12/08/11	DJB
Total Copper	0.0085	mg/L	0.0040	0.0500	1	S1L, J	12/08/11	DJB
Total Lead	ND	mg/L	0.016	0.053	1	S1L, S2L	12/08/11	DJB
Total Nickel	ND	mg/L	0.0030	0.0500	1	S1L, S2L	12/08/11	DJB
Total Selenium	0.089	mg/L	0.018	0.060	1		12/08/11	DJB
Total Silver	ND	mg/L	0.0060	0.0250	1	S1L, S2L	12/08/11	DJB
Total Thallium	0.019	mg/L	0.015	0.050	1	J	12/08/11	DJB
Total Zinc	ND	mg/L	0.0050	0.0500	1		12/08/11	DJB

SIEMENS

Company Name	Project
Siemens - Warrendale	PSNH Merrimack Station
Report Mailing Address	Contact Name, Phone, Fax, Email
181 Thorn Hill Rd	Frank Sassamen

Invoice Address	Purchase Order #	Invoice Contact and Phone No.

Matrix: Drinking Water Groundwater **(Wastewater)** Soil/Solid Other: ______

Wis. PECFA Project subject to U&C? Yes **(No)**

For Compliance Monitoring? Yes **(No)** State: ______
(If Yes, please specify Agency or Regulation) Agency/Reg.: ______

Turnaround Request: [ ] Normal (10 Bus. Days)
[✓] Rush (Must be pre-approved by Lab and is subject to surcharges)
Date Needed: ______

WO No. 1112078

Analyses Requested: See Attached list

Lab Use Only
Delivered by: Walk-in **(Courier)** FedEx
Ship. Cont. OK? (Y) N NA
Samples Leaking? Y (N) NA
Seals OK? (Y) N NA
Rec'd on Ice? (Y) N NA
Sample Receiving Comments: 3.2°C

Lab Use Only	Sample Date	Sample Time	No. of Containers Comp	No. of Containers Grab	Sample ID	Comments
-01	12/5	1600	5		Influent	
-03	12/5	1600		2	Cart Filt. Eff	
-04	12/5	1600		2	Hg Media 2	
-05	12/5	1600		2	AS Media 1	
-06	12/5	1600		2	AS Media 2	
-02	12/5	1600	5		Treated Effluent	"Effluent" are Treated Eff. Tank
-07	12/5	1600	2		Treat Eff Tank	

Chain of Custody Record

Relinquished By:	Date	Time	Received By:
Bill Blefonder	12/5	18:00	
	12/6	1:34	[illegible]

SIEMENS

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: CT PH-0224 , DE ID 11 , GA 914 , MA PA0102 , MD 128 , LA 04162 , VA 421 , WY EPA Region 8 , WV 343

ANALYTICAL RESULTS

Workorder: 9940856 Low Level Hg 12/06/11

Lab ID: **9940856002** Date Collected: 12/5/2011 17:00 Matrix: Waste Water

Sample ID: **Hg B Eff** Date Received: 12/6/2011 09:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Mercury, Dissolved	ND		ng/L	5.0	EPA 1631	12/8/11	MNP	12/8/11 11:09	MNP	A1
Mercury, Total	6.7		ng/L	5.0	EPA 1631	12/8/11	MNP	12/9/11 12:43	MNP	A2

Sample Comments:

Anna G Milliken
Technical Manager

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

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State Certifications: CT PH-0224 , DE ID 11 , GA 914 , MA PA0102 , MD 128 , LA 04162 , VA 421 , WY EPA Region 8 , WV 343

QUALITY CONTROL DATA

Workorder: 9940856 Low Level Hg 12/06/11

QC Batch: MDIG/34188 Analysis Method: EPA 1631

QC Batch Method: EPA 1631

Associated Lab Samples: 9940856001 9940856002 9940856004

METHOD BLANK: 924440

Parameter	Result	Qualifiers	Units	Reporting Limit
Mercury, Dissolved	ND		ng/L	0.50

LABORATORY CONTROL SAMPLE: 924441

Parameter	LCS Result	Qualifiers	Units	Spike Conc.	LCS % Rec	% Rec Limits
Mercury, Dissolved	4.5		ng/L	5	90.2	71-125

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 924442 924443 Original: 9940856002

*****NOTE - The Original Result shown below is a raw result and is only used for the purpose of calculating Matrix Spike percent recoveries. This result is not a final value and cannot be used as such.*

Parameter	Original Result	Qualifiers	Units	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD
Mercury, Dissolved	2.1		ng/L	250	219	224	86.7	88.7	71-125	2.26	24

ALS Environmental

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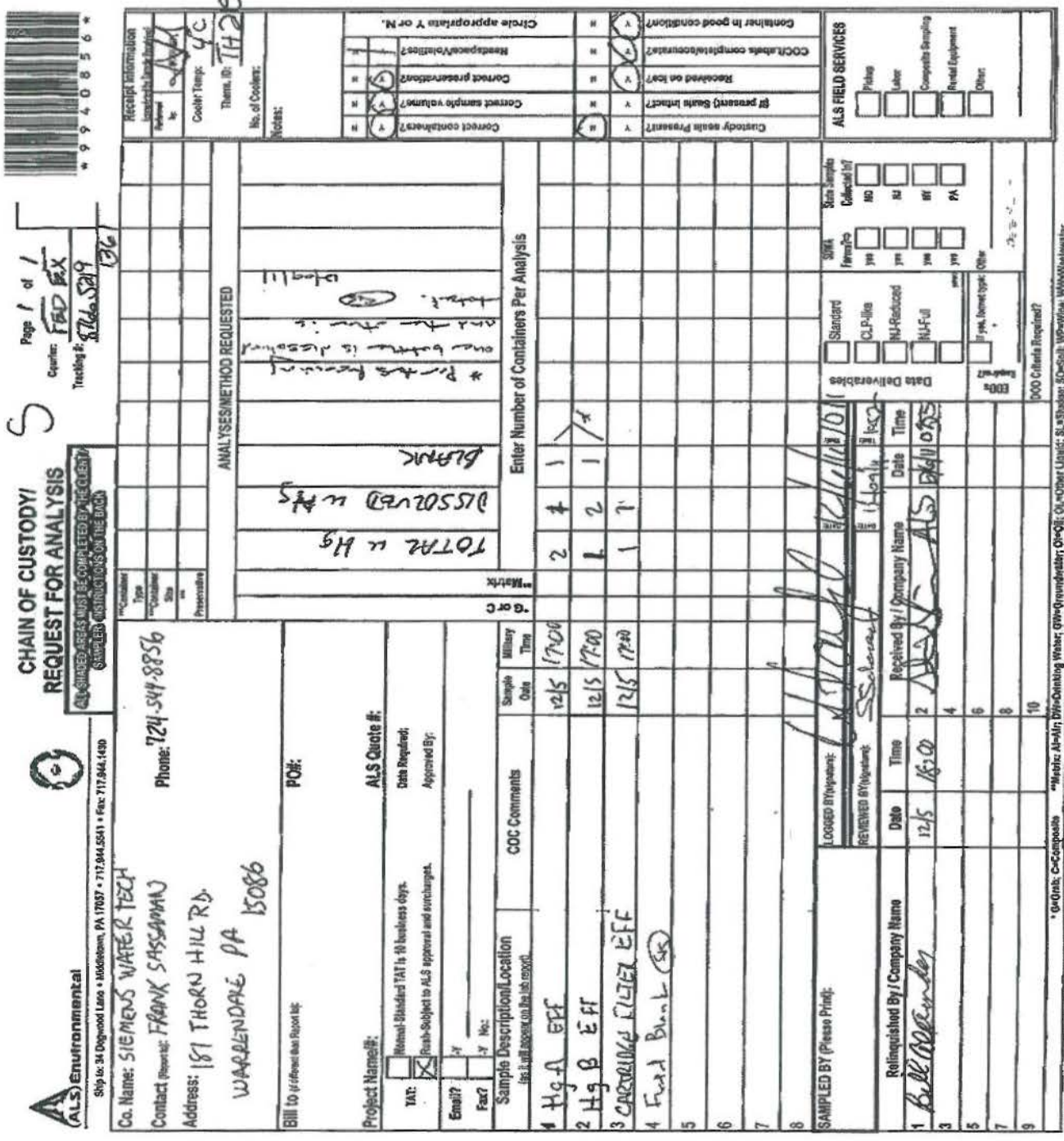
State Certifications: CT PH-0224 , DE ID 11 , GA 914 , MA PA0102 , MD 128 , LA 04162 , VA 421 , WY EPA Region 8 , WV 343



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State Certifications: CT PH-0224 , DE ID 11 , GA 914 , MA PA0102 , MD 128 , LA 04162 , VA 421 , WY EPA Region 8 , WV 343

QUALITY CONTROL DATA

Workorder: 9940856 Low Level Hg 12/06/11

QC Batch: MDIG/34189 Analysis Method: EPA 1631

QC Batch Method: EPA 1631

Associated Lab Samples: 9940856001 9940856002 9940856003 9940856004

METHOD BLANK: 924444

Parameter	Result	Qualifiers	Units	Reporting Limit
Mercury, Total	ND		ng/L	0.50

LABORATORY CONTROL SAMPLE: 924445

Parameter	LCS Result	Qualifiers	Units	Spike Conc.	LCS % Rec	% Rec Limits
Mercury, Total	4.7		ng/L	5	94.8	71-125

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 924446 924447 Original: 9940856001

*****NOTE - The Original Result shown below is a raw result and is only used for the purpose of calculating Matrix Spike percent recoveries. This result is not a final value and cannot be used as such.*

Parameter	Original Result	Qualifiers	Units	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD
Mercury, Total	10.7		ng/L	250	241	241	92.1	92.1	71-125	0	24

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: CT PH-0224 , DE ID 11 , GA 914 , MA PA0102 , MD 128 , LA 04162 , VA 421 , WY EPA Region 8 , WV 343

ANALYTICAL RESULTS

Workorder: 9940856 Low Level Hg 12/06/11

Lab ID: **9940856004** Date Collected: 12/5/2011 17:00 Matrix: Waste Water

Sample ID: **Field Blank** Date Received: 12/6/2011 09:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Mercury, Dissolved	0.54		ng/L	0.50	EPA 1631	12/8/11	MNP	12/8/11 11:32	MNP	A1
Mercury, Total	0.89		ng/L	0.50	EPA 1631	12/8/11	MNP	12/9/11 12:42	MNP	A2

Sample Comments:

Anna G Milliken
Technical Manager

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: CT PH-0224 , DE ID 11 , GA 914 , MA PA0102 , MD 128 , LA 04162 , VA 421 , WY EPA Region 8 , WV 343

December 9, 2011

Mr. Jim Fish
Siemens Water Technologies Corp.-PA
181 Thorn Hill Road
Warrendale, PA 15086

Certificate of Analysis

Project Name:	**PSNH Merrimack Station FGD**	Workorder:	**9940856**
Purchase Order:		Workorder ID:	**Low Level Hg 12/06/11**

Dear Mr. Fish,

Enclosed are the analytical results for samples received by the laboratory on Tuesday, December 06, 2011.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Susan Scherer (Project Coordinator) or Anna G Milliken (Technical Manager) at (717) 944-5541.

Please visit us at www.analyticallab.com for a listing of ALS' NELAP accreditations and Scope of Work, as well as other links to Water Quality documentation on the internet.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

CC: Mr. Michael Riffe, Mr. Frank Sassaman

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Anna G Milliken
Technical Manager

SIEMENS

Qualifier Descriptions

S2L	Second sample matrix spike recovery was low.
S1L	First sample matrix spike recovery was low.
J	Estimated concentration below laboratory quantitation level.
COMP	Completed

Definitions

LOD = Limit of Detection (Dilution Corrected)
LOQ = Limit of Quantitation (Dilution Corrected)
Reporting Limit = LOQ (Dilution Corrected)
ND = Not Detected
COMP = Complete
SUBCON = Subcontracted analysis
mv = millivolts
pci/L = picocuries per Liter
mL/L = milliliters per Liter
mg = milligram

When the word "dry" follows the units on the result page the sample results are dry weight corrected.

LODs and LOQs are dry weight corrected for all soils except WI GRO, EPA 8021 and WI DNR/EPA 8260B methanol and WI DNR methylene chloride preserved soils being reported to the State of Wisconsin.

(WNC) = The required Wisconsin DNR program certification is not held for this analyte.

ug/l = Micrograms per Liter = parts per billion (ppb)
ug/kg = Micrograms per kilogram = parts per billion (ppb)
mg/l = Milligrams per liter = parts per million (ppm)
mg/kg = Milligrams per kilogram = parts per million (ppm)
NOT PRES = Not Present
ppth = Parts per thousand
* = Result outside established limits.
mg/m3 = Milligrams per meter cubed
ng/L = Nanograms per Liter = Parts per trillion(ppt)
> = Greater Than

State of Wisconsin Methanol Soils for WI GRO, WI DNR/EPA 8260B and EPA 8021 are reported to the LOQ.

SIEMENS

December 14, 2011

Siemens Industry Inc
181 Thorn Hill Road
Warrendale, PA 15086

Attn: Frank Sassaman

REPORT NO.: 1112078 **PROJECT NO.: PSNH Merrimack Station Performance Test**

Please find enclosed the analytical report, including the Sample Summary, Sample Narrative and Chain of Custody for your sample set received December 6, 2011.

All analyses were performed in accordance with TNI Standards using approved methods as indicated on this report.

If you have any questions about the results, please call. Thank you for using Siemens Industry, Inc. for your analytical needs.

Sincerely,

Siemens Industry, Inc.

Bruce Schertz
Lab Manager
Enviroscan Analytical™ Services

I certify that the data contained in this report has been generated and reviewed in accordance with the Siemens Industry, Inc. Quality Assurance Manual. Exceptions, if any, are discussed in the sample narrative. Samples will be retained for 30 days from the date of this report, then disposed in an appropriate manner. Siemens Industry, Inc. reserves the right to return samples identified as hazardous. Release of this Final Report is authorized as verified by the following signature. The contents of this report apply to the sample(s) analyzed. No duplication of this report is allowed except in its entirety.

Reviewed by: _____

Certifications:
Wisconsin 737053130
Minnesota 055-999-302
Illinois 100317

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Parameter Name	MS/MSD Parent ID	MS/MSD Parent	Matrix Spike	MSD	Units	Date of Analysis	Limits	RPD	Method
Aluminum	105985.01	< 0.05	12 (108 %R)	12 (109 %R) (1 RPD)	mg/L	12/9/11	70-130	20	200.8
Antimony	105985.01	< 0.001	1.1 (109 %R)	1.1 (108 %R) (1 RPD)	mg/L	12/9/11	70-130	20	200.8
Arsenic	105985.01	< 0.001	1.0 (102 %R)	1.0 (102 %R) (0 RPD)	mg/L	12/9/11	70-130	20	200.8
Barium	105985.01	0.004	1.0 (101 %R)	1.0 (101 %R) (0 RPD)	mg/L	12/9/11	70-130	20	200.8
Beryllium	105985.01	< 0.001	1.0 (102 %R)	1.0 (102 %R) (0 RPD)	mg/L	12/9/11	70-130	20	200.8
Cadmium	105985.01	< 0.001	1.0 (100 %R)	1.0 (100 %R) (0 RPD)	mg/L	12/9/11	70-130	20	200.8
Chromium	105985.01	< 0.001	0.91 (91 %R)	0.90 (90 %R) (1 RPD)	mg/L	12/9/11	70-130	20	200.8
Copper	105985.01	0.002	0.91 (91 %R)	0.92 (91 %R) (0 RPD)	mg/L	12/9/11	70-130	20	200.8
Lead	105985.01	< 0.001	1.0 (101 %R)	1.0 (101 %R) (0 RPD)	mg/L	12/9/11	70-130	20	200.8
Mercury	105985.01	< 0.0001	0.0010 (97 %R)	0.0009 (94 %R) (3 RPD)	mg/L	12/9/11	70-130	20	200.8
Nickel	105985.01	< 0.001	0.81 (81 %R)	0.82 (82 %R) (1 RPD)	mg/L	12/9/11	70-130	20	200.8
Selenium	105985.01	< 0.001	0.89 (89 %R)	0.88 (88 %R) (1 RPD)	mg/L	12/9/11	70-130	20	200.8
Silver	105985.01	< 0.001	1.0 (100 %R)	0.98 (98 %R) (2 RPD)	mg/L	12/9/11	70-130	20	200.8
Thallium	105985.01	< 0.001	1.0 (102 %R)	1.0 (102 %R) (0 RPD)	mg/L	12/9/11	70-130	20	200.8
Zinc	105985.01	< 0.005	0.98 (98 %R)	0.98 (98 %R) (0 RPD)	mg/L	12/9/11	70-130	20	200.8

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.

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Sample ID: WWT Effulent

Lab Sample ID: 105963.02
Matrix: aqueous
Date Sampled: 12/7/11
Date Received: 12/7/11

		Analytical Matrix	Units	Date of Analysis	Method	Analyst
Aluminum	< 0.2	AqTot	mg/L	12/9/11	200.8	DS
Antimony	< 0.01	AqTot	mg/L	12/9/11	200.8	DS
Barium	**0.22**	AqTot	mg/L	12/9/11	200.8	DS
Beryllium	< 0.01	AqTot	mg/L	12/9/11	200.8	DS
Cadmium	< 0.01	AqTot	mg/L	12/9/11	200.8	DS
Chromium	< 0.01	AqTot	mg/L	12/9/11	200.8	DS
Copper	< 0.01	AqTot	mg/L	12/9/11	200.8	DS
Lead	< 0.01	AqTot	mg/L	12/9/11	200.8	DS
Nickel	< 0.01	AqTot	mg/L	12/9/11	200.8	DS
Silver	< 0.01	AqTot	mg/L	12/9/11	200.8	DS
Thallium	< 0.01	AqTot	mg/L	12/9/11	200.8	DS
Zinc	< 0.01	AqTot	mg/L	12/9/11	200.8	DS

Page 1 of 1

CHAIN-OF-CUSTODY RECORD

FOR 105962

BOLD FIELDS REQUIRED. PLEASE CIRCLE REQUESTED ANALYSIS.

SAMPLE I.D.	SAMPLING DATE/TIME *IF COMPOSITE, INDICATE BOTH START & FINISH DATE/TIME	MATRIX (SEE BELOW)	GRAB/*COMPOSITE	VOC: S24.2 BTEX; S24.2 MTBE ONLY; 8260B 624 VTICS; 1, 4 DIOXANE EDB DBCP; 8021B BTEX HALOS; 8015B GRO MEGRO MAVPH	SVOC: 8270C 625 SVTICS ABN A BN PAH; TPH8100 LI L2; 8015B DRO MEDRO MAEPH; 608 PEST/PCB PEST 8081A PCB 8082; OIL & GREASE 1664 TPH 1664	TCLP: TCLP 1311 ABN METALS VOC PEST HERB	METALS: DISSOLVED METALS (LIST BELOW); TOTAL METALS (LIST BELOW)	INORGANICS: TS TSS TDS SPEC. COND.; BR CL F SO4 NO2 NO3 NO2/NO3; BOD CBOD T. ALK.; TKN NH3 T. PHOS.; PH T. RES. CHLORINE; COD PHENOLS TOC; TOTAL CYANIDE TOTAL SULFIDE; REACTIVE CYANIDE REACTIVE SULFIDE FLASHPOINT IGNITABILITY	MICRO: T. COLIFORM E. COLI; E. COLIFORM ENTEROCOCCI HETEROTROPHIC PLATE COUNT	OTHER	# OF CONTAINERS	NOTES MEOH VIAL #
Treat Tank	12/7/11 1400	WW	G				X				4
Treat Tank Field Blk	12/7/11 1400	AQ	G				X				2

MATRIX: A-AIR; S-SOIL; GW-GROUND WATER; SW-SURFACE WATER; DW-DRINKING WATER; WW-WASTE WATER

PRESERVATIVE: H-HCL; N-HNO_3; S-H_2SO_4; Na-NaOH; M-MEOH

PROJECT MANAGER: Arthur Auclair

COMPANY: Northeast Utilities

ADDRESS: 97 River Rd

CITY: Bow STATE: NH ZIP: 03304

PHONE: (603) 224-4041 EXT.:

FAX: (603) 224-4041

E-MAIL:

SITE NAME: Merrimack Station

PROJECT #:

STATE: (NH) MA ME VT OTHER:

REGULATORY PROGRAM: NPDES: RGP POTW STORMWATER OR GWP, OIL FUND, BROWNFIELD OR OTHER:

QUOTE #: PO #:

DATE NEEDED: 12/9/11

QA/QC REPORTING LEVEL: A B C OR MA MCP PRESUMPTIVE CERTAINTY

REPORTING OPTIONS: PRELIMS: YES OR NO; IF YES: FAX OR PDF

ELECTRONIC OPTIONS: NO FAX E-MAIL PDF EQUIS

TEMP. 4.5 °C ICE? (YES) NO

SAMPLER(S): JG, JB / EAI

RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:
[signature]	12/7/11	1750	[signature]
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:

METALS: 8 RCRA 13 PP FE, MN PB, CU

OTHER METALS: As, Sb, Hg

DISSOLVED METALS FIELD FILTERED? YES NO

NOTES: (IE: SPECIAL DETECTION LIMITS, BILLING INFO, IF DIFFERENT)

Use collision cell for As/Sb, 1631 Hg

SITE HISTORY:

SUSPECTED CONTAMINATION:

FIELD READINGS:

eastern analytical, inc. professional laboratory services
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

(WHITE: ORIGINAL GREEN: PROJECT MANAGER)

FRONTIER
GLOBAL SCIENCES

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

PREPARATION BLANKS

Matrix: Water
Instrument: Hg-17
Sequence: 1L09012
Preparation: BrCl Oxidation

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F112077-BLK1	Mercury	0.05	0.50	ng/L	F112077	EPA 1631E	U
F112077-BLK2	Mercury	0.05	0.50	ng/L	F112077	EPA 1631E	U
F112077-BLK3	Mercury	0.05	0.50	ng/L	F112077	EPA 1631E	U
F112077-BLK4	Mercury	0.13	0.50	ng/L	F112077	EPA 1631E	QB-04, U

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

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

FRONTIER GLOBAL SCIENCES

LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE

RECOVERY AND RPD

Matrix: Water
Batch: F112077
Preparation: BrCl Oxidation
Sequence: 1L09012
Lab Number: F112077-BS/BSD1
LCS Source: Nist 1641d

Analyte	Spike Added (ng/L)	LCS Concentration (ng/L)	LCS % Recovery	Recovery Limits	Method	Notes
Mercury	15.679	15.14	96.6	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	15.34	97.8	1.31	80 - 120	24	EPA 1631E	

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1112097-01RE2

Matrix: Water
Sequence: 1L09012
Batch: F112077
Lab Number: F112077-MS/MSD3
Preparation: BrCl Oxidation

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	5.63	10.200	15.29	94.7	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	10.200	15.58	97.5	1.86	71 - 125	24	EPA 1631E	

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Liz Siska, Project Manager

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1112097-03

Matrix: Water
Sequence: 1L09004
Batch: F112074
Lab Number: F112074-MS/MSD2
Preparation: Closed Vessel Nitric Oven Digestion

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Arsenic	4.03	202.00	219.4	107	85 - 115	FGS-054	AS
Selenium	119.6	202.00	325.7	102	59 - 149	FGS-054	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Arsenic	202.00	231.9	113	5.53	85 - 115	20	FGS-054	AS
Selenium	202.00	348.1	113	6.63	59 - 149	20	FGS-054	AS

Frontier Global Sciences, Inc.

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Liz Siska

Liz Siska, Project Manager

FRONTIER
GLOBAL SCIENCES

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

MATRIX DUPLICATES/TRIPLICATES

SOURCE: 1112097-01RE2

Matrix: Water
Batch: F112077
Preparation: BrCl Oxidation

Sequence: 1L09012
Lab Number: F112077-DUP2

Analyte	Sample Concentration ng/L	Duplicate Concentration ng/L	MRL	% RPD	RPD Limit	Method	Notes
Mercury	5.63	5.44	2.02	3.49	24	EPA 1631E	

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.

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

Arsenic Analytical Results

Matrix: Water **Preparation:** Closed Vessel Nitric Oven Digestion

Sample Name	Result	MRL	Units	Batch	Prepared	Sequence	Analyzed	Method	Notes
T. T. Field Blank	ND	0.15	µg/L	F112074	12/08/11	1L09004	12/09/11	FGS-054	U
Treat Tank	**4.03**	1.50	µg/L	F112074	12/08/11	1L09004	12/09/11	FGS-054	

Frontier Global Sciences, Inc.

Liz Siska

Liz Siska, Project Manager

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CHAIN OF CUSTODY FORMS

1112097

FRONTIER GLOBAL SCIENCES

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

1112097

Page 1 of 1

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
Report To: Same
Address:
Phone (603) 228-0525 Fax: (603) 228-4591
E-mail: customerservice@eailabs.com

Contact: Jeff Gagne
Phone (603) 520-5881 Fax (603) 228-4591
E-mail: jeffg@eailabs.com
Contract/PO: PO# 27568
Invoice To:
Address:
Phone: Fax:
E-mail:

FGS PM: Liz Siska
Date: 12/7/11
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

Analyses Requested: As, Se - Collision Cell; Hg 1631

No.	Engraved Bottle ID	Sample ID	# of Bottles	Matrix	Date & Time	Sampled By	Field Filtered (Y/N)	Field Preserved HNO3, HCl, BrCl, Other (%)	As, Se - Collision Cell	Hg 1631						Comments
1	C-2923/1	Treat Tank	2	WW	12/7/11 1400	JG/SB	No	No		X						Results by 5EST 12/9/11
2	C-2922	T.T. Field Blank	1	AQ	12/7/11 1400	↓	↓	↓		X						
3																
4	C-581/C-594	Treat Tank	2	WW	12/7/11 1400	JG/SB	No	No	X							Job# 105962
5	C-573	T.T. Field Blank	1	AQ	12/7/11 1400	↓	↓	↓	X							
6																
7																
8																
9																
10																
11																
12																

For Laboratory Use Only:
COC Seals: NONE
Comments:
Cooler Temp: 3.1°C TID 0268
Carrier: UPS
VTSR: 12/8 09:40
# of Coolers: 1 (ONE)

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: [signature]	Received By: [signature]	Received By: UPS
Name: Jeff Gagne	Name: Jennifer Lane	Name: UPS
Organization: Eastern Analytical	Organization: EAI	Organization: UPS
Date & Time: 12/7/11 1750	Date & Time: 12/7/11 1750	Date & Time: 12/7/11 1900

Tracking number: 1ZX465991594813763 ✓

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: [signature] Date: 12/7/11

RECD BY: AlBl, Alexa Bahm, FGS 12-8-11 09:11

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

FRONTIER GLOBAL SCIENCES

CASE NARRATIVE

Work Order Number: 1112097:

SAMPLE RECEIPT

Samples were received at Frontier Global Sciences (FGS) on December 7th, 2011. The samples were received intact, on-ice with temperatures measured at 3.1 degrees Celsius.

SAMPLE PREPARATION AND ANALYSIS

Per FGS standard operating procedure FGS-054, aqueous samples should be preserved with acid to pH<2 for a minimum of 16 hours at room temperature before preparation and/or analysis to completely dissolve the metals adsorbed on the bottle walls. Due to the client's requirement for rush sample data, samples were preserved with acid to pH<2 for approximately 10 (ten) hours prior to preparation and analysis.

Samples were prepared and analyzed for total metals in accordance with FGS-054/EPA 1638 with the exception of the preparation deviation noted above.

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

ANALYTICAL AND QUALITY CONTROL ISSUES

There were no analytical difficulties experienced with analysis of these samples with the exceptions flagged in the report.

FRONTIER
GLOBAL SCIENCES

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

09 December 2011

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

Arthur Auclair
Northeast Utilities
97 River Road
Bow , NH 03304

ACCREDITED IN ACCORDANCE WITH nelac

Subject: Laboratory Report

Eastern Analytical, Inc. ID: 105962
Client Identification: Merrimack Station
Date Received: 12/7/2011

Dear Mr. Auclair :

Enclosed please find the report of analysis for the above identified project.
As discussed, analyses were subcontracted and are listed as follows:

Analysis: Subcontract - Metals, Low Level

Subcontractor Lab: Frontier Global Sciences, Inc

A complete copy of the report is attached. This report may not be reproduced except in full, without the written approval of the laboratory.

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

Sincerely,

Lorraine Olashaw, Lab Director | 12/13/11 Date | 20 # of pages (excluding cover letter)

LABORATORY REPORT

EAI ID#: 105645

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

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

Sample ID: Wastewater

Lab Sample ID: 105645.01
Matrix: aqueous
Date Sampled: 11/30/11
Date Received: 11/30/11

		Analytical Matrix	Units	Date of Analysis	Method	Analyst
Molybdenum	**0.010**	AqTot	mg/L	11/30/11	200.8	DS

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

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

Sample ID:	Wastewater
Lab Sample ID:	105645.01
Matrix:	aqueous
Date Sampled:	11/30/11
Date Received:	11/30/11
Units:	mg/L
Date of Extraction/Prep:	12/1/11
Date of Analysis:	12/1/11
Analyst:	LAS
Method:	1664A
Dilution Factor:	1
Oil & Grease (HEM)	< 5

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

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

Sample ID:	Wastewater
Lab Sample ID:	105645.01
Matrix:	aqueous
Date Sampled:	11/30/11
Date Received:	11/30/11
Units:	ug/l
Date of Extraction/Preparation	11/30/11
Date of Analysis:	11/30/11
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

SAMPLE CONDITIONS PAGE

EAI ID#: 105645

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

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

Temperature upon receipt (°C): 23.5 **Received on ice or cold packs (Yes/No): N**

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date Received	Date Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
105645.01	Wastewater	11/30/11	11/30/11	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

eastern analytical, inc.

professional laboratory services

CHAIN-OF-CUSTODY RECORD

105347

GZANH

9

Sample IDs	Date/Time Composites need start and stop dates/times	Matrix	Parameters and Sample Notes	# of containers
Wastewater	11/17/11	aqueous (Grab) or Comp	AqTot/~~NH3~~/BOD/~~Cl~~/COD/CyanT/F/pH/TPhenols/~~SO4/NO3/TDS~~/TSS/V624A/E625/E608PCB/OG1664/ICPMets-~~Al-Sb-As-Ba-Be-Cd-Cr-Cu-Fe-Pb-Mn~~-Mo-~~Ni-Se-Ag-Tl-Zn-Ca-Na-Mg/HgCVChemserveSub~~/TN/~~TKN~~/NO3NO2/~~AlkT/S2/SO3/ChlorineTRes~~	21

NA

Dissolved Sample Field Filtered ☐

☒ Sampler confirms ID and parameters are accurate

Circle preservative/s: HCL HNO_3 H_2SO_4 NaOH MEOH $Na_2S_2O_3$ ICE

SITE NAME: MERRIMACK STATION

SITE ADDRESS: 97 RIVER ROAD

BOW, NH 03304

Number and type of containers listed on EAI Bottle ORDER # 5186 11/14/2011

PH 6.16

T = 32.1°C

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

EAI 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 ASAP

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

Revised Report - Parameter List Shortened At Customers Request. PA 12/15/11

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: 1009476

Temperature 8 °C

Ice present Yes ☒ No ☐

Samples Collected by: Paul T. Pepler, GZA

Relinquished by	Date/Time	Received by
[signature]	11/17/11 1205	[signature]

Eastern Analytical, Inc. 25 Chenell Dr. Concord, NH 03301 Phone: (603)228-0525 1-800-287-0525 Fax: (603)228-4591

LABORATORY REPORT

EAI ID#: 105347

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

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

Sample ID: Wastewater

Lab Sample ID:	105347.01
Matrix:	aqueous
Date Sampled:	11/17/11
Date Received:	11/17/11

		Analysis			
		Units	**Date**	**Time**	**Method**	**Analyst**
Solids Suspended	< 5	mg/L	11/17/11	15:15	2540D	DLS
Fluoride	**4.4**	mg/L	11/17/11	13:59	300.0	KL
Cyanide Total	**0.45**	mg/L	11/21/11	9:00	4500CNE	KJR
Total Nitrogen	**151**	mg/L	11/18/11	14:30	4500NorgC	KL
BOD	< 6	mg/L	11/17/11	15:43	5210B	SKC
COD	**59**	mg/L	11/18/11	11:10	H8000	SKC
Total Phenols	< 0.05	mg/L	11/18/11	9:00	420.1	JCC
pH	**6.5**	SU	11/17/11	17:27	4500H+B	CJJ

Total Nitrogen is determined by a calculation derived from method EPA 353.2, and Standard Methods 4500orgC/NH3D.

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

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

Sample ID:	Wastewater
Lab Sample ID:	105347.01
Matrix:	aqueous
Date Sampled:	11/17/11
Date Received:	11/17/11
Units:	mg/L
Date of Extraction/Prep:	11/18/11
Date of Analysis:	11/18/11
Analyst:	LAS
Method:	1664A
Dilution Factor:	1
Oil & Grease (HEM)	< 5

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

Sample ID:	Wastewater
Lab Sample ID:	105347.01
Matrix:	aqueous
Date Sampled:	11/17/11
Date Received:	11/17/11
Units:	ug/l
Date of Extraction/Preparation	11/17/11
Date of Analysis:	11/17/11
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

SAMPLE CONDITIONS PAGE

EAI ID#: 105347

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

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

Temperature upon receipt (°C): 8

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)
105347.01	Wastewater	11/17/11	11/17/11	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:

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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

ANALYTICAL DATA REPORTS

SUMMARY OF BASELINE MONITORING ANALYTICAL RESULTS
WET CHEMISTRY, VOC, AND PCB
Public Service of New Hampshire
Merrimack Station
Bow, New Hampshire

PARAMETER	LOWELL SEWER DISCHARGE LIMITS	(4) RESULTS (mg/L) 11/17/2011	(4) RESULTS (mg/L) 11/30/2011
BOD	-	< 6	< 6
COD	-	59	110
Cyanide	1.895	(3)	< 0.01
Fluoride	-	4.4	6
Molybdenum	-	< 0.005	0.010
Nitrogen(T)	-	151	130
O&G	250	< 5	< 5
pH	5-9.5	6.5	7.1
TSS	-	< 5	< 5
VOC EPA 624	-	(1)	0.002 (1)
sVOC EPA 625	-	ND	ND
Phenolic Compounds	-	< 0.05	< 0.3
PCBs	-	ND (2)	No Data

Note:
1. Two compounds were detected on 11/17/2011 by Method 624: Toluene at 3µg/L and Styrene at 4 µg/L. One compound was detected by Method 624 on 11/30/11: Toluene. These low levels are likely the result of residual adhesive from the piping components.
2. PCB compounds analyzed by method 608 were not detected at concentrations greater than 0.3µg/L.
3. The cyanide value was inconclusive due to matrix interference.
4 Samples were collected after the treatment system had been operating for at least three weeks, had completed start-up procedures, and was operating under normal conditions.

LOWELL REGIONAL WASTEWATER UTILITY
Industrial Sewer User Self-Monitoring Report Summary Sheet

Submit All Chains of Custody and Laboratory Result Sheets With SMR Summary Sheet

Analytical Results:

Parameter	Analysis Date	Result (mg/L)	Parameter	Analysis Date	Result (mg/L)
BOD	SEE ATTACHED		Copper		
COD			Cyanide (Total)		
O & G 413.1 / 1664			Fluoride		
TSS			Lead		
TOC *			Mercury		
TTO ** 624 / 8260B – 625 / 8270			Molybdenum		
Aluminum			Nickel		
Antimony			Nitrogen (Kjeldahl)		
Arsenic			Phenols (Total)		
Barium			Selenium		
Beryllium			Silver		
Cadmium			Thallium		
Chromium (Hexavalent)			Zinc		
Chromium (Total)			Other		

BOD = Biochemical Oxygen Demand COD = Chemical Oxygen Demand O & G = Oil & Grease TSS = Total Suspended Solids TTO = Total Toxic Organics
**TOC (Total Organic Carbon) = is the amount of carbon bound in an organic compound and is often used as a non-specific indicator of water quality. TOC measures both the total carbon present as well as the inorganic carbon (IC). Subtracting the inorganic carbon from the total carbon yields TOC.*
***TTO's = Summation of all quantifiable values greater than 0.01 mg/L for toxic organics listed in 40 CFR 413.02(i). TTO's include PCB's (Poly-Chlorinated Biphenyls), VOC's (Volatile Organic Compounds), SVOC's (Semi-Volatile Organic Compounds). PCB's, VOC's and SVOC's shall be analyzed using EPA Methods 608, 624, and 625, respectively.*

Zero Discharge / Self-Monitoring (initial if applicable):

_____ No industrial wastewater from permitted processes has been discharged to sewer during the monitoring period

_____ No sampling has been conducted on permitted sewer discharges during the monitoring period

Certification Statement:

"I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Harold Keyes
Printed Name of Authorized Representative

Harold Keyes
Signature of Authorized Representative

Station Manager
Title

12/16/2011
Date

SMR SUMMARY SHEET

Wastewater flow data was estimated based on the actual number of tank trucks sent to the Utility and tanker capacity.

ANALYTICAL NOTATION

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 EPA's web site and a link to their draft procedure that contains further guidance.

LABORATORY ANALYSIS OF FLUE GAS DESULFURIZATION (FGD) WASTEWATER

Wastewater from FGD systems can contain constituents that may interfere with certain laboratory analyses, due to high concentrations of total dissolved solids (TDS) or the presence of elements 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, such as arsenic and selenium, 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)

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person(s) who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.