



**Public Service  
of New Hampshire**

780 N. Commercial Street, Manchester, NH 03101

Public Service Company of New Hampshire  
P. O. Box 330  
Manchester, NH 03105-0330  
(603) 634-2700  
Fax (603) 634-2438

landilt@psnh.com

The Northeast Utilities System

**Linda T. Landis**  
Senior Counsel

May 7, 2012

Mr. John Paul King  
U.S. Environmental Protection Agency  
Office of Ecosystem Protection  
Industrial Permits Branch, OEP06-01  
5 Post Office Square, Suite 100  
Boston, MA 02109-3912

**Response of Public Service Company of New Hampshire  
to EPA Information Request Related to Merrimack Station  
Flue Gas Desulfurization Wastewater Treatment System Effluent**

Dear Mr. King:

Enclosed please find the responses of Public Service Company of New Hampshire ("PSNH") to the Information Request received from the United States Environmental Protection Agency ("EPA") on March 26, 2012, related to the Merrimack Station flue gas desulfurization wastewater treatment system effluent. PSNH is filing this letter in accordance with correspondence from EPA dated April 6, 2012, extending the due date for the response to May 7, 2012.

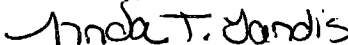
We have made a diligent effort to provide complete responses to the queries posed by EPA. Please let us know if there is any area of the inquiry which requires additional information or clarification. Any questions regarding this information should be addressed to:

Linda T. Landis, Esq.  
Senior Counsel  
Public Service Company of New Hampshire  
780 No. Commercial Street  
P.O. Box 330  
Manchester, New Hampshire 03105-0330

E-Mail: [Linda.Landis@psnh.com](mailto:Linda.Landis@psnh.com)  
Phone: 603-634-2700

Robert P. Fowler, Esq.  
Attorney  
Balch & Bingham LLP  
1901 Sixth Avenue North  
Suite 1500  
Birmingham, Alabama 35203-4642

E-Mail: [rfowler@balch.com](mailto:rfowler@balch.com)  
Phone: 205-226-8733

Sincerely,  


Linda T. Landis  
Senior Counsel



## PRELIMINARY STATEMENT

As a preliminary statement, PSNH objects to the March 22, 2012 information request as unreasonable in certain respects. Specifically, it is overly broad, unduly burdensome, including the limited time period within which PSNH must respond, and disturbingly vague in its scope. In addition, PSNH believes that the request for monthly reports going forward exceeds EPA's authority under Section 308 of the Clean Water Act ("CWA") and Section 3007 of the Resource Conservation and Recovery Act ("RCRA").

Despite these objections, PSNH has made a good-faith effort to provide the information requested and believes the information contained herein to be fully responsive. The response provided today is based on a review of documents that could be readily located and reviewed in the limited time allowed. PSNH reserves the right to correct and/or supplement these responses if additional information or documents are determined to be responsive.

In a number of instances, the information provided is responsive to more than one question but is provided only once. Thus, while a response to one section may at first appear to be incomplete, there will most likely be other responsive documents provided but grouped under a different heading.

Raw data are provided but not tabulated or interpreted since PSNH is not required under the above cited statutory authorities to produce interpretative documents. The one exception is in PSNH's first response (Question 1(a), (b)(1), and (b)(2), with some data responsive to (b)(3)) which has been provided in a spreadsheet format that PSNH has created to facilitate review.

PSNH would welcome the opportunity to meet with EPA to discuss the information provided and to answer any further questions.



- 1) Please provide the following information with regard to the offsite disposal of FGD WWTS effluent from Merrimack Station:**
  - a) Each date on which any FGD WWTS effluent has been transported offsite from Merrimack Station for disposal.**
  - b) For each of the dates on which FGD WWTS effluent was transported offsite for disposal, please provide:**
    - (1) The location and identity of the recipient of the FGD WWTS effluent;**
    - (2) The total volume of FGD WWTS effluent transported to each location/recipient. This volume shall be further broken down to show the volume of FGD WWTS effluent transported by each tanker truck dispatched from Merrimack Station.**

1. PSNH objects to this information request to the extent it calls for PSNH to create documents not otherwise in its possession, custody, and/or control as of March 26, 2012, the date PSNH received EPA's March 22, 2012 correspondence. Neither Section 308(a) of the Clean Water Act ("CWA") nor Section 3007 of the Resource Conservation and Recovery Act ("RCRA") requires the recipient of any information request issued pursuant to these statutory authorities to create documents not otherwise in its possession, custody, and/or control, nor do the aforementioned statutory authorities empower EPA to require a recipient of any such information requests to create documents not otherwise in its possession, custody, and/or control. Subject to and without waiving the foregoing objections, PSNH has created spreadsheets, attached as PSNH's response to Question 1, subpart (a), as well as parts (1) and (2) of subpart (b) of this information request. There is also some information included (pH data) responsive to Question 1(b)(3). In addition to the spreadsheets compiled by PSNH which are directly responsive to this request, PSNH also includes an Exhibit provided to the New Hampshire Public Utilities Commission (as indicated by the cover sheet), dated March 12, 2012, which is a compilation of all POTW approvals; the approvals, which were not requested elsewhere in this information request, demonstrate that PSNH is in full compliance with the law.



























Merrimack Station Waste Water Disposal 2011

POTW Location		Enpro (S. Portland, ME)	Concord (NH)	Lowell (Mass.)	New Stream (Attleboro, Mass.)	Franklin (NH)	Allenstown (NH)	Hooksett (NH)	Manchester (NH)
Ticket#	Gallons	Ticket#	Gallons	Ticket#	Gallons	Ticket#	Gallons	Ticket#	Gallons
Date	Day								
12/01/2011	Thursday			8447	8,000				
				8448	8,000				
				8449	8,000				
				7924	8,000				
		21452	8,000						
		21453	8,000						
		16180	8,000						
		16181	8,000						
		21451	8,000						
		21455	6,000			1815480	7,200		
12/02/2011	Friday	18043	7,000						
		5383	7,000						
		21461	7,000						
				8450	7,000				
				3007	8,000				
				3002	7,200				
				3003	8,000				
12/03/2011	Saturday	16182	7,000			1815505	8,000		
		21462	7,000						
		21463	7,000						
		21468	7,000						
				3004	6,500				
				3025	7,000				
				3026	7,500				
				3034	8,000				
				3027	8,000				
						1818469	8,000		
12/04/2011	Sunday			3006	8,000				
				3005	8,000				
				3028	8,000				
				3029	8,000				
				3030	8,000				
		16186	7,000						
		16187	7,000						
		21464	8,000						
						1818475	8,000		
12/05/2011	Monday			3008	8,000				
				3024	8,000				
				3009	8,000				
				3010	8,000				
				3011	8,000				
		21465	8,000						
		21467	8,000						
		21466	8,000						

























Merrimack Station Waste Water Disposal 2012

POTW		Enpro		Concord		Lowell		New Stream		Franklin			Allenstown			Weight	Gallons	Hooksett			Manchester	
Location		(S.Portland, ME)		(NH)		(Mass.)		(Attleboro, MA)		(NH)			(NH)			Tons	from	(NH)			(NH)	
		Ticket#	Gallons	Ticket#	Gallons	Ticket#	Gallons	Ticket#	Gallons	Ticket#	pH	Gallons	Ticket#	pH	Gallons			Ticket#	pH	Gallons	Ticket#	Gallons
01/17/2012	Tuesday	16256	6,954																			
		19949	8,000																			
						1208	8000															
						1209	8000															
						1210	8000															
						1211	8000															
						1153	8000															
						1154	8000															
						1155	8000															
01/18/2012	Wednesday	19950	8,000					1836625	8,000													
		21530	7,000																			
						1156	8000															
						1157	8000															
						1158	8000															
						1159	8000															
						1160	8000															
						1161	8000															
						1097	8000															
01/19/2012	Thursday	21531	7,000					1836626	8,000													
						1162	8000					21547	7.07	8,000	32.95	7,911						
						1163	8000										0					
						1164	8000										0					
						1165	8000										0					
						1166	8000										0					
						1167	8000										0					
						1212	8000										0					
01/20/2012	Friday							1836627	8,000													
												16277	7.25	8,000	33.22	7,976						
												16276	7.23	7,000	29.04	6,972						
						1213	8000										0					
						1214	8000										0					
						1215	8000										0					
						1216	8000										0					
						1217	8000										0					
						1168	8000										0					
						1169	8000										0					
01/21/2012	Saturday							1836628	8,000													
												21554	7.33	8000	33.36	8,010						
												21555	7.26	8000	33.69	8,089						
						1218	8000										0					
						1219	8000										0					
						1220	8000										0					
						1221	8000										0					
						1222	8000										0					
						1223	8000										0					
						1226	8000										0					
01/22/2012	Sunday							1836630	8,000													
												21557	7.27	8000	33.48	8,038						



Merrimack Station Waste Water Disposal 2012

POTW		Enpro		Concord		Lowell		New Stream		Franklin			Allenstown			Weight	Gallons	Hooksett			Manchester	
Location		(S.Portland, ME)		(NH)		(Mass.)		(Attleboro, MA)		(NH)			(NH)			Tons	from	(NH)			(NH)	
		Ticket#	Gallons	Ticket#	Gallons	Ticket#	Gallons	Ticket#	Gallons	Ticket#	pH	Gallons	Ticket#	pH	Gallons			Ticket#	pH	Gallons	Ticket#	Gallons
						1107	8000						21556	7.11	8000	33.22	7,976					
						1108	8000										0					
						1224	8000										0					
						1225	8000										0					
						1227	8000										0					
						1228	8000										0					
						1229	8000										0					
01/23/2012	Monday							1836631	8,000								0					
													21559	7.33	8000	33.58	8,062					
													21561	7.33	8000	33.56	8,058					
													21558	7.29	8000	33.16	7,962					
						1230	8000										0					
						1231	8000										0					
						1232	8000										0					
						1233	8000										0					
						1234	8000										0					
01/24/2012	Tuesday							1836632	8,000								0					
													16278	7.21	8000	33.17	7,964					
													16279	7.41	8000	33.24	7,981					
						1235	8000										0	21560	7.33	8000		
						1236	8000										0					
								1836633	8,000								0					
01/25/2012	Wednesday												21577	7.63	7949	33.00	7,923					
																	0	21573	7.5	8000		
																	0	21575	7.59	8000		
								1836634	8,000								0					
01/26/2012	Thursday												21578	7.65	8018	33.27	7,988					
																	0	21576	7.63	8017		
						1109	8000										0					
01/27/2012	Friday							1836635	8,000								0	21580	7.59	8024		
																	0	21581	7.63	8025		
						1237	8000										0					
								1836636	8,000								0					
01/28/2012	Saturday												21582	7.58	8038	33.21	7,974					
																	0	21584	7.55	8031		
																	0	21583	7.58	8028		
						1110	8000										0					
								1836638	8,000								0					
01/29/2012	Sunday																0	21585	7.49	8024		
																	0	21586	7.47	8014		
						1170	8000										0					
								1836639	8,000								0					
01/30/2012	Monday												21593	7.55	8040	33.34	8,005					
																	0	21588	7.55	8000		
																	0	21587	7.51	8017		
									21591	7.54	8000						0					
						1238	8000										0					





Merrimack Station Waste Water Disposal 2012

POTW	Enpro		Concord		Lowell		New Stream		Franklin			Allenstown			Weight	Gallons	Hooksett			Manchester	
Location	(S. Portland, ME)		(NH)		(Mass.)		(Attleboro, MA)		(NH)			(NH)			Tons	from	(NH)			(NH)	
	Ticket#	Gallons	Ticket#	Gallons	Ticket#	Gallons	Ticket#	Gallons	Ticket#	pH	Gallons	Ticket#	pH	Gallons			Ticket#	pH	Gallons	Ticket#	Gallons
01/31/2012												21594	7.56	8018	33.25	7,983					
												21599	7.31	8000	33.16	7,962					
																0	21596	7.34	8000		
																0	21595	7.52	8000		
					1171	8000			21597	7.4	8000					0					
							1836641	8,000								0					







Merrimack Station Waste Water Disposal 2012

POTW Location	Enpro (S. Portland, ME)		Concord (NH)		Lowell (Mass.)		New Stream (Attleboro, MA)		Franklin (NH)			Allenstown (NH)			Weight Tons	Gallons from	Hooksett (NH)			Manchester (NH)		
	Ticket#	Gallons	Ticket#	Gallons	Ticket#	Gallons	Ticket#	Gallons	Ticket#	PH	Gallons	Ticket#	PH	Gallons			Ticket#	PH	Gallons	Ticket#	Gallons	
												21666	7.27	8002	33.1	7947.18						
												21668	6.94	8000	33.26	7985.59						
												21669	7.27	8288	34.33	8242.50						
02/16/2012	Thursday															0.00	21675	7.4	8057			
																0.00	21676	7.37	4013			
02/17/2012	Friday											21670	7.39	8000	33.44	8028.81						
																0.00	21681	7.34	8007			
												21672	7.36	8015	33.36	8009.60						
												21671	7.36	8025	33.47	8036.01						
												21678	7.34	8004	33.18	7966.39						
02/18/2012	Saturday															0.00	21682	7.34	8017			
																0.00	21683	7.35	8047			
																0.00	21685	7.32	8008			
02/19/2012	Sunday															0.00	21686	7.41	8020			
02/20/2012	Monday															0.00	21687	7.37	8005			
																0.00	21688	7.42	8004			
02/21/2012	Tuesday															0.00	21690	7.43	8008			
																0.00	21689	7.43	7909			
02/22/2012	Wednesday					1182	6900									0.00	21695	7.4	8013			
						1183	8000									0.00	21696	7.39	8004			
																0.00	21697	7.43	8011			
												21698	7.38	8008	33.24	7980.79						
02/23/2012	Thursday								21700	7.32	8015	21699	7.25	8007	33.3	7995.20	21703	7.22	8005			
												21702	7.18	8005	33.11	7949.58						
02/24/2012	Friday	16328	7042			1185	8000					21693	7.33	8002	33.11	7949.58	21704	7.22	8005			
												21701	7.34	8025	33.14	7956.78	21705	7.29	8012			
												21716	7.27	8001	33.27	7988.00	21707	7.31	7975			
02/25/2012	Saturday					1186	8000					21717	7.22	7985	33.23	7978.39	21708	7.28	7997			
												21720	7.36	8000	33.64	8076.83	21709	7.28	7978			
												21721	7.27	8010	33.25	7983.19	21710	7.27	8005			
												21722	7.35	8000	32.78	7870.35						
02/26/2012	Sunday					1187	8000	1855291	8006			21718	7.22	7997	33.13	7954.38	21711	7.25	7988			
												21723	7.2	8019	33.35	8007.20	21712	7.25	8004			
												21724	7.23	8009	33.22	7975.99	21713	7.31	7996			
												21725	7.2	8000	33.2	7971.19						
												21726	7.21	7996	33.16	7961.58						
02/27/2012	Monday											21680	7.6	8017	33.16	7961.58	21714	7.31	8010			
												21719	7.28	7995	33.12	7951.98	21715	7.31	8005			
												21727	7.31	7997	33.2	7971.19	21730	7.32	8017			
02/28/2012	Tuesday	21733	7042									21728	7.3	8000	33.3	7995.20	21731	7.37	7985			
												21729	7.3	7994	33.11	7949.58	21732	7.34	8000			
																0.00	21734	7.3	8005			
02/29/2012	Wednesday											21738	7.26	7994	33.22	7975.99	21735	7.3	8000			
												21739	7.24	8014	33.2	7971.19	21736	7.29	8006			
												21740	7.26	7999	33.1	7947.18						



Merrimack Station Waste Water Disposal 2012

POTW Location		Enpro (S.Portland, ME)		Concord (NH)		Lowell (Mass.)		New Stream (Attleboro, Mass.)		Franklin (NH)			Allenstown (NH)			Weight Tons	Gallons From	Hooksett (NH)			Manchester (NH)		
Date	Day	Ticket#	Gallons	Ticket#	Gallons	Ticket#	Gallons	Ticket#	Gallons	Ticket#	PH	Gallons	Ticket#	PH	Gallons			Ticket#	PH	Gallons	Ticket#	Gallons	
03/01/2012	Thursday												21741	7.27	8003	32.91	7901.56						
													21572	7.25	8010	33.18	7966.39						
													16280	7.3	7996	33.14	7956.78						
													21679	7.1	7744	32.32	7759.90						
													21745	7.11	8009	33.33	8002.40						
													21742	7.25	8001	33.15	7959.18						
03/02/2012	Friday												21743	7.16	8009	33.2	7971.19	21752	7.21	8046			
													21744	7.19	8015	33.25	7983.19						
													21746	7.12	8009	33.27	7988.00						
													21756	7.19	8011	33.21	7973.59						
													21757	7.22	8025	33.21	7973.59						
		21750	7,042			21751	7,042																
03/03/2012	Saturday					1242	8000						21758	7.26	8007	33.25	7983.19	21747	7.28	8076			
						1243	8000						21759	7.26	7999	33.06	7937.58	21764	7.25	8000			
													21760	7.33	7997	33.14	7956.78	21765	7.31	8000			
													21761	7.31	8014	33.26	7985.59						
													21766	7.23	8000	33.21	7973.59						
03/04/2012	Sunday					1188	8000	1857847	8,000				21767	7.43	8000	32.78	7870.35	21648	7.4	6521			
													21768	7.42	8000	33.48	8038.42	21770	7.34	8000			
													21769	7.4	8000	33.47	8036.01						
													21771	7.3	8000	33.53	8050.42						
													21772	7.36	8000	33.44	8028.81						
03/05/2012	Monday												21780	7.35	8016	33.2	7971.19	21691	7.42	7028			
																		21692	7.44	7008			
																		21694	7.41	8007			
																		21777	7.33	8029			
03/06/2012	Tuesday	21781	7,042										21776	7.35	8004	33.8	8115.25	21778	7.36	8013			
																		21779	7.34	8081			
03/07/2012	Wednesday																	21782	7.37	8003			
03/08/2012	Thursday												21783	7.49	8015	33.18	7966.39	21748	7.56	8011			
03/09/2012	Friday																						
03/10/2012	Saturday																	21737	7.61	8009			
03/11/2012	Sunday												21786	7.65	7999	33	7923.17						
03/12/2012	Monday																	21749	7.66	8003			
03/13/2012	Tuesday					1099	8000																
03/18/2012	Sunday																	21762	7.41	8020			
03/19/2012	Monday					1189	8000																
03/21/2012	Wednesday					1190	8000																
03/26/2012	Monday																	21803	7.63	8035			













**Witness:**

**Request from:** New Hampshire Public Utilities Commission Staff

**Question:**

(Exhibit PSNH-10): Has PSNH sought or obtained any industrial wastewater indirect discharge permits from the New Hampshire Department of Environmental Services?

**Response:**

On May 11, 2011, PSNH submitted to the New Hampshire Department of Environmental Services (NHDES) an Industrial Wastewater Indirect Discharge Request Application requesting that the municipal POTWs (publically owned treatment works) in Allenstown, Concord, Hooksett and Manchester accept treated wastewater from PSNH's wet flue gas desulfurization system.

Attached to this response is PSNH's May 11, 2011 letter to NHDES, and the approvals issued by NHDES and the various POTWs allowing disposal at each of these POTWs.

On August 23, 2011, PSNH further requested that the state-owned NHDES wastewater treatment plant in Franklin, New Hampshire (Winnepesaukee River Basin Program) accept such wastewater. The NHDES approval of this request is also attached to this response.

In addition, PSNH has received approval from the City of Lowell, Massachusetts to accept treated wastewater (see attached approval) and has agreements with two out-of-state privately operated wastewater disposal facilities.

The Parties to this docket were all aware that PSNH had received necessary approval for disposal of scrubber wastewater at the Hooksett and Concord POTW facilities, as those approval documents were provided to the Parties on January 31, 2012 in response to a technical session data request (Q-TECH-008).

Similarly, on or around October 17, 2011, in response to an RSA 91-A "Right to Know Request," the New Hampshire Department of Environmental Services provided the Conservation Law Foundation with copies of PSNH's application and the NHDES approvals for the disposal of scrubber wastewater to the Allenstown, Concord, and Hooksett POTW facilities.





**Public Service  
of New Hampshire**

The Northeast Utilities System

Record Request HD-01  
ID# 1031062  
Q-RR-01

PSNH Energy Park  
780 North Commercial Street, Manchester, NH 03101

Public Service Company of New Hampshire  
P.O. Box 330  
Manchester, NH 03105-0330  
(603) 669-4000  
[www.psnh.com](http://www.psnh.com)

The Northeast Utilities System

May 11, 2011

Mr. George Carlson, P.E.  
Supervisor, Industrial Pretreatment Program  
N.H. Department of Environmental Services  
Water Division  
29 Hazen Drive, P.O. Box 95  
Concord, New Hampshire 03301-0095

**RECEIVED**  
MAY 12 2011  
**DES-WEB**

Re: NHDES Industrial Wastewater Indirect Discharge Request Application  
Public Service of New Hampshire (PSNH)

Dear Mr. Carlson:

Based on your recent meeting with Allan Palmer (PSNH) and Ron Breton (GZA GeoEnvironmental, Inc. [GZA]), our consulting engineer, PSNH is requesting that four separate municipalities (Allenstown, Concord, Hooksett, and Manchester) consider our request to accept treated wastewater from our wet flue gas desulfurization system that is scheduled to become operational in the fourth quarter of this year. With the State and local approvals and issuance of permits, it is our intention to transport treated wastewater by tanker truck from our power station in Bow to discharge points as designated by the individual municipalities.


As presented in our attached application, we are installing a technologically advanced wastewater treatment system. In addition, we are including post-treatment systems that can be used to reduce the volume of the treated wastestream from roughly 100,000 gallons per day (gpd) to as small a volume as 5,000 gpd. With these post-treatment systems, we will have the ability to reduce the volume of wastewater while maintaining concentrations of pollutants that are compatible with each treatment system. While our goal is to gain approval to discharge all the wastewater we generate at all four municipal facilities, we recognize that there may be restrictions at certain facilities and that only a portion of the total discharge may be accepted. This scenario has been considered in our overall wastewater management strategy.

This application has been provided to the Town of Hooksett and we have also prepared and submitted local permit applications directly to the wastewater treatment facilities of Allenstown, Concord, and Manchester. Please find attached GZA GeoEnvironmental Check No. 220959 in the amount of \$1,000.00 to cover the cost of design review.

During the course of performing your evaluation process, GZA and PSNH will be available to provide additional information and technical support.

We trust that this submittal adequately addresses your informational needs. Should you have any questions, please contact Ron Breton at 232-8744 or me at 224-4081.

Sincerely,

  
Harold Keyes, Station Manager  
PUBLIC SERVICE OF NEW HAMPSHIRE

Attachment(s)







The State of New Hampshire  
**DEPARTMENT OF ENVIRONMENTAL SERVICES**



*Winnepesaukee River Basin Program*

*Wastewater Treatment Plant*

*P.O. Box 68 - Franklin, NH- 03235*

*603-934-4032*

9/28/11

Mr. Harold Keyes  
Station Manager  
PSNH  
97 River Road  
Bow, NH 03304

Re: Status of PSNH Industrial Wastewater Indirect Discharge Request  
*Special Agreement – PSNH and WRBP Wastewater Treatment Plant*

Dear Mr. Keyes:

Please be advised that the Winnepesaukee River Basin Program (WRBP) has reviewed your Industrial Wastewater Discharge Request received on August 24<sup>th</sup>, 2011. Based upon document review and discussions with Mr. Ron Breton, GZA Inc, Mr. George Carlson, NHDES, and the WRBP staff we would like to inform you that approval has been granted for indirect discharge from your facility. This letter serves as an agreement to discharge treated wastewater from your flue gas desulfurization system that is currently scheduled for discharge in November of 2011. Acceptance is based upon compliance with the terms listed below. These terms reflect the hours of operation of our facility, process concerns and staffing. The WRBP reserves the right to cancel the agreement at any time due to staffing concerns, logistics, non-payment or the identification of any negative impact on the operation of the plant or the existing land application program.

We understand that we will serve as one of several outlets for this discharge. Any testing results on the proposed discharge after start up at your facility will need to be forwarded to us for our review and files. We also reserve the right to require additional testing as needed.

The terms of the Special Agreement are as follows:

- The WRBP will accept up to 25,000 gallons per day of treated wastewater from PSNH's flue gas desulfurization system
- The cost shall be based upon a set charge of \$30.00 per 1000 gallons (\$.03 / gallon)
- Monthly invoices generated from the WRBP will be payable upon receipt
- Discharge haulers shall follow established procedures at the WRBP
- The discharge will be accepted between the hours of 7:15 am and 2:30 pm Monday through Friday
- The discharge will also be accepted on Saturdays between the hours of 7:30 am and 2:30 pm

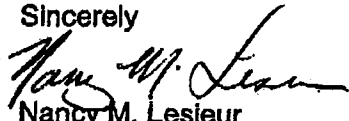


Contact N. Lesieur  
Date: 9/29/11  
Page 2 of 2

- No discharge will be accepted on Saturdays during January, February, March and April
- No discharge will be accepted on days designated as Holidays by the State of NH
- Prior notification of the loads and volumes shall take place between the PSNH staff (or designated haulers) and the WRBP Operations Staff.
- During PSNH's initial start up (within the first 30 days) a representative sample shall be analyzed for Aluminum, Arsenic, Cadmium, Chloride, Chromium, Copper, Cyanide, Iron, Lead, Manganese, Mercury, Molybdenum, Nickel, Selenium, Silver, and Zinc
- WRBP reserves the right to terminate the agreement based upon any negative impact of the discharge on Local limits or Biosolids Land Application limits as evidenced by analyses performed

If you have any further questions regarding the agreement please feel free to contact me at 603 934-4032. We look forward to working with you during your facility start up.

Sincerely



Nancy M. Lesieur  
Industrial Pretreatment Coordinator  
NH-DES WRBP  
Franklin WTF  
528 River Street  
Franklin, NH, 03235

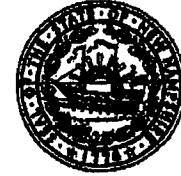
NML

CC: Kenneth Noyes, Chief Operator, NHDES/WD/WRBP/-Franklin  
Steven C. Dolloff, Superintendent, NHDES/WD/WRBP/-Franklin  
Sharon McMillin, PhD, Administrator, NHDES/WD/WRBP/-Franklin  
File  
g:\group\common\lab\SpDischarges\PSNH





The State of New Hampshire  
**DEPARTMENT OF ENVIRONMENTAL SERVICES**



Thomas S. Burack, Commissioner

**INDUSTRIAL WASTEWATER INDIRECT DISCHARGE REQUEST (IDR) APPROVAL**

**APPLICANT**

Indirect Discharger **PSNH**  
Address **97 River Rd., Bow, NH**  
Authorized Signature **Harold Keyes** Station Manager  
Engineer **Ronald Breton, GZA GeoEnvironmental**

**MUNICIPALITY**

Municipality/POTW **Winnepesaukee River Basin Program, WWTF**  
Approval Signature **Nancy M. Lesieur** IPP Coordinator  
Date of IDR **January 18, 2012**

**APPROVAL**

PERMIT/REQUEST NUMBER **IDR 11-016 W**  
FLOW **25000** gallons/day DATE: **January 19, 2012**

The Department of Environmental Services has reviewed and hereby approves the request as follows: Approval of the discharge to the applicant's wastewater facilities is based on review of the supporting information submitted and is subject to the conditions indicated below and the standard Conditions of Approval on the second page.

**CONDITIONS:**

Approval is for acceptance of highly treated wastewater from the wet flue gas desulfurization system. The wastewater will be hauled by tanker truck to the POTW. Weekly sampling and analysis shall be performed until pollutant concentrations are determined to be consistent, at which time testing may be reduced to at least monthly.

George F. Carlson, Jr., P.E.

Telephone (603) 271-2052



**NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES  
INDUSTRIAL WASTEWATER INDIRECT DISCHARGE REQUEST**

**CONDITIONS OF APPROVAL**

The department's approval of this discharge request is subject to the following conditions:

- (1) The indirect discharger shall fully comply with the applicable sewer use ordinance;
- (2) The indirect discharger shall fully comply with all federal, state and local pretreatment standards and requirements;
- (3) Using additional water to dilute effluent or introducing uncontaminated water to the effluent shall not be allowed as a substitute for any pretreatment necessary to maintain compliance;
- (4) The indirect discharger shall not make changes in the type of production, amount of flow, or pollutant characteristics, or any increase in pollutant concentration, without prior approval by the department through the submission of a new industrial wastewater discharge request;
- (5) The approval shall be based on and apply only to the subject discharge request and all associated plans and supporting information as submitted and shall be signed by the indirect discharger's authorized representative; and
- (6) The approval shall become void if the discharge approved does not begin within one year from the date of approval.

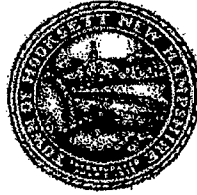
Upon receipt of notification from the department that the discharge request is approved, the municipality shall issue a discharge permit to the indirect discharger.

If there are any question or comments concerning this approval, please contact the Industrial Pretreatment Section Supervisor, at the Water Division, telephone 271-2052.





Bruce Kudrick  
Superintendent



Commission  
Sidney Baines, Chair  
Raymond Robb  
Roger Bergeron

Page 1 of 3  
REVISED 9/7/11

### TOWN OF HOOKSETT Sewer Commission

## Hauled Waste Waste Disposal Agreement No. WDA-001

In accordance with the provisions of the Town of Hooksett's Sewer Use Ordinance:

Office/Home  
PSNH  
780 North Commercial St.  
Manchester, NH 03101

Work Site  
PSNH - Merrimack Station  
97 River Street  
Bow, NH 03304

is authorized to discharge wastewater from the above-stated facility (the "Facility"). This discharge consists of:

<u>Description</u>	<u>Gallons/Day</u>
Treated Blowdown from Flue Gas Desulfurization (FGD) System	70,000 gallons per day

Compliance with this Waste Disposal Agreement does not relieve PSNH of its obligation to comply with any other applicable pretreatment requirements under local, State, or federal laws, including such requirements that may become effective during the term of this Agreement.

Noncompliance with any term or condition of this Agreement including the provisions of Page 2 shall constitute a violation of the Town's Sewer Use Ordinance and shall be subject to the penalty provisions of Section 9 and may include suspension of discharge privilege with 24 hours notice.

This Waste Disposal Agreement shall become Effective on: October 1, 2011  
This Waste Disposal Agreement shall Expire on: September 30, 2012

Bruce Kudrick	<i>Bruce Kudrick</i>	Superintendent	<u>9/20/11</u> <del>September 8, 2011</del>
Waste Disposal Agreement Issued By	(signature)	(Title)	(Date)
Sidney Baines	<i>Sidney Baines</i>	Chairman, Hooksett Sewer Commission	<u>9/29/11</u> <del>September 8, 2011</del>
Authorization By (Town)	(signature)	(Title)	(Date)

**Acknowledgement:** The undersigned acknowledges receipt of this Agreement and acknowledges that this discharge is subject to the requirements of the Sewer Use Ordinance and this Agreement.

PSNH Harold Kuyes 9/14/2011  
Company Name Authorized Representative Date

This Agreement is subject to the following: PSNH Agreement No. WDA-001



## Standard Conditions

**Changes in discharge** - Any substantial change in the type of production, amount of flow or wastewater characteristics, or any increase in wastewater concentration, must receive prior review and approval by the Town of Hooksett and the State of NH if applicable. The projected wastewater characteristics and concentrations were presented in PSNH's Industrial Discharge Request application submitted to the Town of Hooksett in May 2011 and are hereby a part of this Agreement.

**Spills, potentially harmful dischargers** - Immediate notification is required for any discharge that spills at the offloading facility that would potentially result in a violation of the Town's Stormwater Permit or other environmental concerns. This includes but is not limited to an accidental discharge of substances prohibited by the Sewer Use Ordinance or any slug loads or spills that may enter the public, right-of-way, receiving water or combined sewers.

- \* During normal business hours (7:00 A.M. to 4:00 P.M.) notify:  
Wastewater Plant Superintendent 485-7000
- \* At all other times notify:  
Wastewater Treatment Plant 485-7000

The notification shall include location of discharge, date and time thereof, type of waste, including concentration and estimated volumes, and any and all corrective actions taken to clean up the spill. PSNH will make notification in accordance with the requirements of this section and does not relieve its obligation of other reporting requirements as may arise under local, State, or federal laws.

**Agreement Continuance** - If PSNH desires to continue to discharge after the expiration of this Agreement, it shall reapply on the application forms then in use at least thirty (30) days before this Agreement expires. Under no circumstances shall PSNH continue to discharge after the expiration of this Agreement, except as authorized pursuant to a new agreement with, or an extension of this Agreement by, the Hooksett Sewer Commission.

**Access by the Town** - PSNH shall allow authorized Hooksett Sewer Commission personnel access for the purposes of inspection, investigation, and sampling of wastewater discharges from the Facility when requested.

**Sampling & Analytical Requirements** - Any sampling, preservation, handling, and analytical testing methods must conform to the requirements as set out in 40 CFR Part 136.

**Other Requirements** - The conditions listed in this Agreement are not all inclusive. The Town shall be notified if questions arise regarding PSNH's responsibilities under this Agreement or obligations under the Town's Sewer Use Ordinance. The Town reserves the right to make revisions to this Agreement in order to implement the requirements of the Ordinance and to protect the wastewater treatment plant and the public.

## Special Conditions

1. Designated discharge point shall be sewer manhole (SMH) AZ33 located on PSNH property or a PSNH right-of-way in Hooksett and will be accessible 24 hours per day, 7 days per week unless otherwise directed by the Hooksett Sewer Commission.
2. PSNH shall design and install a discharge station at SMH AZ33 that is consistent with current engineering standards, as approved by the Hooksett Sewer Commission and the NHDES through the Sewer Connection Permit application process.
3. Fee shall be \$30.00 per 1,000 gallons of discharge (at proposed waste concentration).
4. The volume of treated PGD blowdown shall be metered and recorded on site before hauling to the discharge station.
5. Authorization to discharge is subject to maintaining compliance with the requirements of this Agreement and providing that there are no extenuating circumstances at the Hooksett Wastewater Treatment Plant that might cause the Hooksett Sewer Commission not to be able to accept the discharge; otherwise, suspension of discharge may occur with 24 hours' prior notice.
6. The Hooksett Sewer Commission reserves the right to obtain random samples and test for specific parameters.



### Special Conditions

7. The Hooksett Sewer Commission shall consider developing mass limits in lieu of concentration-based limits contained in the Hooksett Sewer Use Ordinance.
8. Direct discharge at the Hooksett Wastewater Treatment Plant is not allowed.
9. The vehicle and container used to transport the treated wastewater shall meet all applicable federal and State requirements for transportation of industrial wastewater.
10. The tanker containers shall be dedicated to the transportation of the PSNH wastestream or shall not contain any residual liquids or residues from previous uses (other than treated FGD wastewater from PSNH).
11. During the first twenty-one (21) days that the FGD system attains operational status and the resulting wastewater is considered representative, PSNH shall obtain composite samples on three (3) separate days during this period. The samples shall be analyzed for the wastewater characteristics presented in PSNH's Industrial Discharge Request application submitted to the Town in May 2011. The laboratory reports shall be submitted to the Town within forty-eight (48) hours of receipt by PSNH.
12. Appropriate security shall be provided at the designated discharge station to protect against unauthorized access.
13. A Bill of Lading shall be prepared for each truck discharging to the Town wastewater collection system.
14. PSNH shall incur the additional incremental cost of biosolids (i.e., sludge) testing for selenium. Prior to the first discharge event, the Town shall obtain a representative sample of its biosolids for the analysis of selenium. The frequency of sampling and analysis for selenium shall be weekly for the first four (4) weeks after the PSNH discharge commences. After the initial 4-week period, the frequency of sampling and analysis for selenium shall be reduced as agreed to by both parties. The Town shall provide appropriate documentation to PSNH substantiating the biosolids testing costs.
15. In the event that it is determined that the PSNH discharge has adversely impacted the quality of its biosolids, and thus voiding the Town's agreement with the Town of Merrimack, PSNH shall incur the additional incremental costs to transport and dispose biosolids at Waste Management's facility in Rochester, NH, or an equivalent disposal facility. The incremental costs to transport and dispose of biosolids will be incurred at a point in time when the quality of biosolids (due to the concentration of selenium only) is unacceptable by the Town of Merrimack's biosolids processing facility. PSNH will be responsible for the incremental costs up to a point after the PSNH discharge has been terminated and the concentration of selenium in the Town's biosolids has reached a level at or below 4 mg/kg. In no case will PSNH be responsible for incremental costs beyond four (4) weeks from the time the PSNH discharge was terminated. The Town shall be responsible for contracting such services and shall provide appropriate documentation to PSNH substantiating the additional incremental costs.





The State of New Hampshire  
**DEPARTMENT OF ENVIRONMENTAL SERVICES**

Thomas S. Burack, Commissioner



**INDUSTRIAL WASTEWATER INDIRECT DISCHARGE REQUEST (IDR) APPROVAL**

**APPLICANT**

Indirect Discharger **PSNH**  
 Address **97 River Rd., Bow, NH**  
 Authorized Signature **Harold Keyes** **Station Manager**  
 Engineer **Ronald Breton, GZA GeoEnvironmental**

**MUNICIPALITY**

Municipality/POTW **Hooksett Wastewater Treatment Plant**  
 Approval Signature **Sidney Baines** **Chairman**  
 Date of IDR **August 16, 2011**

**APPROVAL**

PERMIT/REQUEST NUMBER **IDR 11-016 H**  
 FLOW **100000** gallons/day DATE: **August 19, 2011**

The Department of Environmental Services has reviewed and hereby approves the request as follows: Approval of the discharge to the applicant's wastewater facilities is based on review of the supporting information submitted and is subject to the conditions indicated below and the standard Conditions of Approval on the second page.

**CONDITIONS:**

Approval is for acceptance of highly treated wastewater from the wet flue gas desulfurization system. The wastewater will be hauled by tanker truck to the POTW.

*George F. Carlson, Jr.*  
 George F. Carlson, Jr., P.E.

Telephone (603) 271-2052





**NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES  
INDUSTRIAL WASTEWATER INDIRECT DISCHARGE REQUEST**

**CONDITIONS OF APPROVAL**

The department's approval of this discharge request is subject to the following conditions:

- (1) The indirect discharger shall fully comply with the applicable sewer use ordinance;
- (2) The indirect discharger shall fully comply with all federal, state and local pretreatment standards and requirements;
- (3) Using additional water to dilute effluent or introducing uncontaminated water to the effluent shall not be allowed as a substitute for any pretreatment necessary to maintain compliance;
- (4) The indirect discharger shall not make changes in the type of production, amount of flow, or pollutant characteristics, or any increase in pollutant concentration, without prior approval by the department through the submission of a new industrial wastewater discharge request;
- (5) The approval shall be based on and apply only to the subject discharge request and all associated plans and supporting information as submitted and shall be signed by the indirect discharger's authorized representative; and
- (6) The approval shall become void if the discharge approved does not begin within one year from the date of approval.

Upon receipt of notification from the department that the discharge request is approved, the municipality shall issue a discharge permit to the indirect discharger.

If there are any question or comments concerning this approval, please contact the Industrial Pretreatment Section Supervisor, at the Water Division, telephone 271-2052.



**CITY OF CONCORD, N.H.**  
**DEPARTMENT OF GENERAL SERVICES**  
**WASTEWATER DIVISION**

**PERMIT TO DISCHARGE**  
**INDUSTRIAL WASTEWATER**  
**TRANSPORTED WASTE**

[ X ] Concord WWTF [ ] Penacook WWTF Permit No. PSNH 01

1. Name of Industry: PSNH- Merrimack Station
2. Address of Industry: 97 River Road, Bow NH 03304
3. Name of Owner: Public Service Company of New Hampshire  
Phone # 603-669-4000
4. Owner's Address: 780 North Commercial Street, Manchester, NH 03101
5. Person in Responsible Charge/Phone No.: Harold Keyes ( Station Manager )  
Tel. 603-224-4081 ext. 4130
6. Existing Environmental Permit(s):

STATE

EPA

See Attached

See Attached

7. Standard Industrial Classification of Various Operations  
  
**4911**
8. Brief description of the nature and average rates of production and operations  
**Non-production Process. Operations consist of fossil fuel power generation.**  
**Wastewater is generated from air pollution control equipment.**
9. Brief description of each regulated process and applicable Federal categorical pretreatment standard:  
  
**Not Applicable**



10. If under categorical pretreatment standards, please attach a process flow diagram.

11. Wastewater flow (gallons per day): **TRANSPORTED WASTE**

	Industrial Process	Domestic =	Total
Average Daily	25,000	0.0	25,000
Maximum Daily:	25,000	0.0	25,000
Maximum Hourly:	N/A		

Note: Permitted discharge volume is the maximum allowed and is further limited based on a maximum daily Selenium loading of 0.300 lbs ( see Section 16 )

12. Please attach certified analyses showing the nature and concentrations of pollutants in discharge as indicated (Y or N).....[ N ]

**ESTIMATED POLLUTION CONCENTRATIONS SUBMITTED**

13. Brief description of all wastewater pretreatment equipment and/or systems currently in use:

**On File ( Submitted with Permit Application )**

14. Schedule of actions regarding further pretreatment of wastestream(s) if noncompliant with Federal and/or City discharge limitations.

**None at this time.**

15. All industrial users shall immediately notify the City of any spills, bypasses or slug discharges of waste or wastewater discharged by such a user and shall provide protection from accidental discharges of prohibited materials or other substances regulated by the City's Sewer Use Ordinance. The City may request the industrial user to develop a slug discharge control plan.

**All industrial users shall immediately notify the City of any new or changed discharge not covered under the existing industrial discharge permit.**



**16. Wastewater Discharge Limitations and Monitoring Requirements:**

The industrial user shall comply with the effluent limitations specified below and all general discharge standards in of the City of Concord's Sewer Use Ordinance.

<u>Parameter</u>	<u>Daily Average</u>	<u>Daily Maximum</u>	<u>(##) Sampling Frequency/Type</u>
Cadmium	0.12 mg/l	0.12 mg/l	Monthly
Copper	12.00 mg/l	12.00 mg/l	Monthly
Lead	2.77 mg/l	2.77 mg/l	Monthly
Nickel	5.37 mg/l	5.37 mg/l	Monthly
Silver	7.90 mg/l	7.90 mg/l	Monthly
Zinc	6.07 mg/l	6.07 mg/l	Monthly
Selenium	0.300 lbs/day	0.300 lbs/day	Twice/Monthly

Attached list of pollutants on Addendum A must be sampled and tested monthly and shall not be of concentrations to cause interference/inhibition at the Hall St. WWTF. In addition, the user's discharges at the Hall St. WWTF must not cause the Hall St. WWTF'S final effluent to exceed water quality standards criteria, and low metals criteria for Class A biosolids.

(##) Sampling Requirements for Reporting Purposes: (Further description of Section 16 above). Special note: Baseline monitoring shall consist of the analysis of pollutants listed on Addendum A and shall be conducted during initial start-up of the Merrimack Station scrubber system to determine actual pollutant concentrations prior to the initial discharge at the Hall St. WWTF.

16(a). All sampling and analyses conducted by any industrial user or by the industrial user's contract laboratory must be in accordance with 40 CFR Part 136.

All industrial users must maintain records of all information resulting from any monitoring activities as specified in 40 CFR 403.12(o).

All industrial users shall be required to retain for a maximum of five (5) years any records of monitoring activities and results and shall make such records available for inspection and copying by the City. This period of retention shall be extended during the course of any unresolved litigation regarding the industrial user or City, or when requested by the City.

16(b). Monitoring reports must include reporting requirements in 40 CFR 403.6(a)(2)(ii) for signature and certification.





17. Inspection Requirement/Frequency 1

18. Reporting Information:

The industrial user is required to submit reports to the City on the results of its sampling for the parameters specified in Section 16 of this permit.

Frequency of Reporting Monthly

Reports due on or before: The 15<sup>th</sup> of each month for the previous month's testing.

Sampling period for Report: Anytime during the month

Any additional sampling/testing conducted must be submitted.

(Please include a diagram indicating the location of the sampling point(s)).

**On File**

Note: All reports must be submitted to the following address:

City of Concord  
Dept. of General Services  
Wastewater Division  
125 Hall Street  
Concord, N.H. 03301  
Attn: Tom Neforas

19 (a). When self-monitoring by an industrial user indicates a violation, the industrial user must notify the City within 24 hours of becoming aware of the violation and must resample and resubmit the result(s) within thirty (30) days.

Applicable civil penalties for violations of this industrial wastewater discharge permit are so stated in the City's Sewer Use Ordinance, **Section 9-6-32** titled Penalties Defined.



## **INDUSTRIAL SLUG CONTROL PLAN**

**Not applicable: Generator is not connected to the sewer collection system.**

**Waste to be transported to the City of Concord Hall St. WWTF and discharged at a designated location within the WWTF.**



**INDUSTRIAL FACT SHEET**

**Merrimack Station - PSNH  
97 River Road  
Bow, New Hampshire 03304**

**Public Service Company of New Hampshire  
780 North Commercial Street  
Manchester, NH 03101**

**Harold Keyes ( Station Manager ) Tel. # 603-224-4081 ext. 4130  
Allan Palmer ( Senior Engineer ) Tel. # 603-634-2439  
Arthur Auclair (Environmental Coordinator) Tel. # 603-224-4081 ext. 4234**

**Fossil Fuel Power Generator**

**Waste generated from air pollution control equipment**

**Transported waste is allowed to be discharged Monday through Friday  
7: 00 a.m. – 3:30 p. m. (except City recognized holidays).**

**PSNH shall be billed at a rate of 3.7 cents per gallon.**

**Transported waste volumes must be accompanied by Bill of Lading  
to verify load volumes.**

**PSNH shall incur the cost of additional biosolids testing for selenium.  
Initially, such testing for selenium will be conducted not more than three  
times weekly. Sampling will be conducted by Hall St. WWTF personnel.  
Based on the City's evaluation of the data, the testing frequency for selenium  
in the biosolids may be reduced or eliminated.**


**Note: this permit is issued based on estimated pollutant concentrations as  
submitted with PSNH's Permit Application. The permit as issued may be  
revised or revoked based on actual test results once received when waste is  
being generated from the Scrubber System located at PSNH's Merrimack  
Station located at 97 River Road, Bow NH.**



Issued by:

  
\_\_\_\_\_  
Laboratory Manager

8-31-2011  
Date

8-31-2013  
Expiration Date 

This permit is non-transferable without prior notification to the City and without providing a copy of the permit to the new operator or owner. This permit may be revised due to any changes in Local, State and/or Federal regulations. A copy of this permit shall be provided to the NHDES if so requested.





## ADDENDUM A LIST OF POLLUTANTS

ALUMINUM  
ANTIMONY  
ARSENIC  
BARIUM  
BERYLLIUM  
CADMIUM  
CHROMIUM  
COPPER  
IRON  
LEAD  
MANGANESE  
MERCURY  
NICKEL  
SILVER  
ZINC  
SELENIUM  
THALLIUM

CHLORIDE  
CYANIDE  
FLOURIDE  
pH  
OIL AND GREASE  
SULFATE  
TOTAL SUSPENDED SOLIDS

**NOTE: ALL POLLUTANTS MUST BE SAMPLED AND TESTED MONTHLY.  
SELENIUM MUST BE TESTED TWICE MONTHLY**



LIST OF ENVIRONMENTAL PERMITS  
PUBLIC SERVICE OF NEW HAMPSHIRE  
MERRIMACK STATION

TP-008	Flue Gas Desulfurization Unit
FP-T-0054	Electric Generating Unit # 1
TP-T-0462	Electric Generating Unit # 2
TP-B-0490	Emergency Boiler
PO-B-1788	Emergency Generator # 1
PO-BP-2416	Primary Coal Crushers
PO-BP-2417	Secondary Coal Crushers
PO-B-0034	Combustion Turbine # 1
PO-B-0035	Combustion Turbine # 2
TV-AR-01	Acid Rain Permit
TV-AR-0055	Proposed Title V Operating Permit
TP-0068	Emergency Cooling Water Pump Engine
DPHS-SW-85-012	Solid Waste Facility
GWP-19840065-B-004	Ground Water Permit
11-026610	Permit to Operate Public Water System
DES-HW-LP-06-22	Hazardous Waste Limited Permit
NH00011465	NPDES Permit
NHR05C069	MSGP-2008



- BLANK PAGE -





The State of New Hampshire  
**DEPARTMENT OF ENVIRONMENTAL SERVICES**

Thomas S. Burack, Commissioner



**INDUSTRIAL WASTEWATER INDIRECT DISCHARGE REQUEST (IDR) APPROVAL**

**APPLICANT**

Indirect Discharger **PSNH**  
 Address **97 River Rd., Bow, NH**  
 Authorized Signature **Harold Keyes** **Station Manager**  
 Engineer **Ronald Breton, GZA GeoEnvironmental**

**MUNICIPALITY**

Municipality/POTW **Concord Wastewater Treatment Facility**  
 Approval Signature **Thomas Neforas** **Laboratory Manager**  
 Date of IDR **August 25, 2011**

**APPROVAL**

PERMIT/REQUEST NUMBER **IDR 11-016 C**

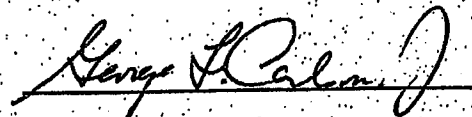
FLOW **25000** gallons/day

DATE: **August 29, 2011**

The Department of Environmental Services has reviewed and hereby approves the request as follows: Approval of the discharge to the applicant's wastewater facilities is based on review of the supporting information submitted and is subject to the conditions indicated below and the standard Conditions of Approval on the second page.

**CONDITIONS:**

Approval is for acceptance of highly treated wastewater from the wet flue gas desulfurization system. The wastewater will be hauled by tanker truck to the WWTF.

  
 George F. Carlson, Jr., P.E.

Telephone (603) 271-2052

DES Web site: [www.des.nh.gov](http://www.des.nh.gov)

P.O. Box 95, 29 Hazen Drive, Concord, New Hampshire 03302-0095

Telephone: (603) 271-3503 • Fax: (603) 271-2982 • TDD Access: Relay NH 1-800-735-2964





**NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES  
INDUSTRIAL WASTEWATER INDIRECT DISCHARGE REQUEST**

**CONDITIONS OF APPROVAL**

The department's approval of this discharge request is subject to the following conditions:

- (1) The indirect discharger shall fully comply with the applicable sewer use ordinance;
- (2) The indirect discharger shall fully comply with all federal, state and local pretreatment standards and requirements;
- (3) Using additional water to dilute effluent or introducing uncontaminated water to the effluent shall not be allowed as a substitute for any pretreatment necessary to maintain compliance;
- (4) The indirect discharger shall not make changes in the type of production, amount of flow, or pollutant characteristics, or any increase in pollutant concentration, without prior approval by the department through the submission of a new industrial wastewater discharge request;
- (5) The approval shall be based on and apply only to the subject discharge request and all associated plans and supporting information as submitted and shall be signed by the indirect discharger's authorized representative; and
- (6) The approval shall become void if the discharge approved does not begin within one year from the date of approval.

Upon receipt of notification from the department that the discharge request is approved, the municipality shall issue a discharge permit to the indirect discharger.

If there are any question or comments concerning this approval, please contact the Industrial Pretreatment Section Supervisor, at the Water Division, telephone 271-2052.



Allenstown Wastewater Treatment Facility

**ALLENSTOWN WASTEWATER TREATMENT FACILITY  
INDUSTRIAL DISCHARGE PERMIT - CLASS I**

PERMIT NO. HWIU-PSNH

In accordance with the provisions of the Allenstown Sewer Use Ordinance.

**PERMITTEE:**  
Public Service Company of New Hampshire  
Merrimack Station  
97 River Road  
Bow, NH 03304-3314

**OWNER:**  
Public Service Company of New Hampshire  
780 North Commercial St.  
Manchester, New Hampshire 03301

Is hereby authorized to discharge industrial wastewater from the above identified facility and through the outfalls identified herein into the Allenstown Publicly Owned Treatment Works (hereinafter referred to as AWTF), in accordance with the conditions set forth in this Permit. Compliance with this Permit does not relieve the permittee of its obligation to comply with any or all applicable pretreatment regulations, standards, or requirements under local, state, and federal statutes, including any such regulations, standards, requirements, or statutes that may become effective during the term of this permit.

Noncompliance with any term or condition of this Permit shall constitute a violation of the Allenstown, New Hampshire Sewer Use Ordinance and shall be subject to the penalty provisions therein.

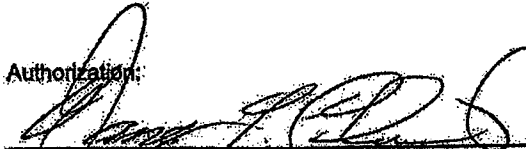
This Permit is issued in accordance with the application endorsed on May 11, 2011 and in conformity with all plans, specifications and other applicable data submitted to the town in support of the above application.

This permit shall become effective on 11/9/2011 and shall expire at midnight on

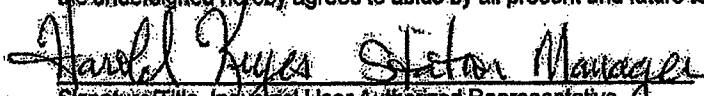
11/9/2012

Permit Issued By:

Authorization:

  
Dana L. Clement, Superintendent, Allenstown WWTF

I, the undersigned, have received this Industrial Discharge Permit and understand that this document is not a contract. The terms and conditions contained herein are required by the Allenstown Sewer Use Ordinance and the principles of contract law recognized by the State of New Hampshire are not applicable. Additionally, the undersigned hereby agrees to abide by all present and future terms of the Sewer Use Ordinance.

  
Signature/Title, Industrial User Authorized Representative

11/9/2011  
Date

THIS PERMIT CONTAINS THE FOLLOWING PARTS

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Cover Page             | <input type="checkbox"/> Discharge Limitations | <input type="checkbox"/> Monitoring Requirements |
| <input type="checkbox"/> Reporting Requirements | <input type="checkbox"/> Special Conditions    | <input type="checkbox"/> Compliance Schedule     |
| <input type="checkbox"/> Standard Conditions    | <input type="checkbox"/> Definitions           |  |



Allenstown Wastewater Treatment Facility

**PART 1 - DISCHARGE LIMITATIONS- PSNH Merrimack Station.**

A. During the effective period, the permittee is authorized to discharge wastewater to the Allenstown, New Hampshire sewer system from the outfall(s) listed below. Discharge must comply with the Allenstown Sewer Use Ordinance.

Outfall	Descriptions
PSNH Merrimack Station	Highly treated wastewater from wet flue gas desulfurization system

B. During the effective period, the discharge from the outfalls listed above shall not exceed the the following limitations:

**Permitted Flows (GPD) by Process at Outfall(s)**

	Daily Maximum	Monthly Average
Sanitary	0	0
Prétreated Process	100,000	3,000,000
Process 3	0	0
Process 4	0	0
Process 5	0	0
<b>Total Flow, GPD</b>	<b>100,000</b>	<b>3,000,000</b>

**Mass Limits  
 Pounds/Day  
 (Day Max/ Month  
 Avg)**

Parameter	Limitations (milligrams per liter, except as noted)		
	Daily Maximum	Monthly Average	
Biochemical Oxygen Demand §	15	10	12.5 / 250.2
Oil & Grease §	15	10	12.5 / 250.2
pH (standard units) §	8	6.5 - 8.0	
Total Suspended Solids §	15	10	12.5 / 250.2
Total Dissolved Solids §	20000	16000	16680 / 400320
§			- / -
§			- / -
§			- / -
Total Toxic Organics (VOC Fraction) §	2.13	2.13	1.8 / 53.3
Arsenic §	0.06	0.03	0.05 / 0.75
Cadmium §	0.11	0.07	0.09 / 1.75
Chromium (total) §	0.2	0.15	0.17 / 3.75
Copper §	0.08	0.0625	0.07 / 1.58
Cyanide, Total §	0.01	0.01	0.01 / 0.25
Lead §	0.1	0.08	0.08 / 2.00
Mercury §	0.002	0.0015	0.002 / 0.038
Molybdenum §	**	**	- / -
Nickel §	1	0.85	0.83 / 21.27
Selenium §	3	2.5	2.50 / 62.55
Silver §	0.05	0.04	0.04 / 1.00
Zinc §	1	0.5	0.83 / 12.51

§ Screening levels

\* Self-monitoring reports are required for these parameters. See Part 2 (A), Page 5 of the permit.  
 Mass limits: Day Max based on Daily Maximum Permitted Flow and Daily Maximum concentration limit;  
 Month Avg based on Monthly Average Permitted Flow and Monthly Average concentration limit.

\*\* Monitor Only



Allenstown Wastewater Treatment Facility

**C. General Prohibitions** - An Industrial User shall not introduce into the AWTF pollutants which cause Pass Through or Interference.

**D. Specific Prohibitions** - During the effective period of this permit, the Permittee is authorized to discharge process wastewater to the AWTF from the points identified in Part 1 Section A, whose effluent characteristics shall be at or below the concentration-based and mass-based screening values listed in Part 1 Section B.

The permittee shall comply with all prohibited discharges of the Sewer Use Ordinance and comply with all State and federal pretreatment standards and requirements. This shall include but not be limited to the following:

1. Any gasoline, benzene, naphtha, fuel oil or other flammable or explosive liquid, gas or solid, or any substance which may generate or form any flammable, explosive, or combustible substance, fluid, gas, vapor, or mixture when combined with air, water, or other substances found in sewers. This includes but is not limited to pollutants which cause an exceedance of ten percent of the lower explosive limit (LEL) at any point in the POTW or with a closed cup flashpoint of less than 140 degrees Fahrenheit.

2. Any waters or wastewaters having a pH lower than 6.5 or higher than 8.0 or having any other corrosive property which may be capable of causing damage or hazard to structures, equipment, and/or personnel of the sewage works, or with acidity or alkalinity in such quantities that the town believes may cause, alone or in combination with other discharges, interference or pass-through.

3. Any solid or viscous substances, including waters or wastewaters which contain fats, wax, greases or oils, or any substances, whether emulsified or not, which may solidify or become viscous at a temperature between 32 degrees Fahrenheit and 150 degrees Fahrenheit, in quantities or of such size capable of causing obstruction to the flow in sewers or causing other interference with the proper operation of the sewage works.

4. Any waters or wastewaters containing pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems.

5. Any waters or wastewaters having a temperature higher than 150 degrees Fahrenheit (65 degrees Celsius) or heat in amounts which will inhibit biological activity in the sewage treatment plant resulting in interference, but in no case heat in such quantities that the temperature of the sewage treatment plant influent exceeds 104 degrees Fahrenheit (40 degrees Celsius).

6. Petroleum oil, non-biodegradable cutting oil, or products of mineral oil in amounts that will cause interference or pass through.

7. Any waters or wastes containing odor-producing substances exceeding limits which may be established by the town.

8. Any radioactive wastes or isotopes of such half-life or concentration as may exceed limits established by the town or by applicable State or federal regulations.

9. Any quantities of flow, concentrations, or both which constitute a "slug" as defined herein.

**E. Removed Substances** - Solids, sludges, or other pollutants removed in the course of treatment or control of wastewater shall be disposed of in accordance with Section 405 of the Clean Water Act and Subtitles C and D of the Resource Conservation and Recovery Act, as well as in accordance with all applicable State and local requirements.

**F. Dilution Prohibited** - The permittee shall not increase the use of process water, or in any other way attempt to dilute a discharge as a partial or complete substitute for adequate treatment to achieve compliance with a pretreatment standard or requirement, with the exception of temperature.





Allenstown Wastewater Treatment Facility

**G. Uncontaminated Water** - No sanitary sewer shall be used to receive and convey or dispose of any storm or surface water, or any other uncontaminated or unpolluted drainage. These shall be discharged into storm drains, or to a natural outlet, as approved by the town and in accordance with any NPDES permitting requirements.

**PART 2 - MONITORING REQUIREMENTS**

**A. Scheduled Monitoring and Reporting** - Sampling and measurements as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this permit. Monitoring points shall not be changed without notification to and approval from the AWTF Superintendent. Analysis shall be performed by an Independent professional laboratory. Such laboratory shall be approved by the AWTF Superintendent. Cost to perform analytical services shall be paid by the permittee. From the period beginning on the effective date of the permit, representative samples shall be collected and analyzed not less frequently than indicated in the following table.

PARAMETER	FREQUENCY <sup>(1)</sup>	SAMPLE TYPE / LOCATION	DATE(S) REPORTS DUE
Quantity (Tons)	Each Truckload	AWTF Truck Scale	N/A
As, Cd, Cr, Cu, Pb, Mo, Hg, Ni, Se, Ag, Zn	Weekly for 1 <sup>st</sup> Month. 1 <sup>st</sup> sample required on first load. Reduced to Monthly if compliance is demonstrated	Grab <sup>(2)</sup> / End of pretreatment process or directly from delivery trucks	15 <sup>th</sup> of Month following analysis
Cyanide	Monthly, 1 <sup>st</sup> sample required on first load.	Grab <sup>(2)</sup> / End of pretreatment process or directly from delivery trucks	15 <sup>th</sup> of Month following analysis
BOD <sup>5</sup> , TSS, TDS	Monthly, 1 <sup>st</sup> sample required on first load.	Grab <sup>(2)</sup> / End of pretreatment process or directly from delivery trucks	15 <sup>th</sup> of Month following analysis
Oil & Grease	Monthly, 1 <sup>st</sup> sample required on first load.	Grab <sup>(2)</sup> / End of pretreatment process or directly from delivery trucks	15 <sup>th</sup> of Month following analysis
Volatile Organics (VOC method 624 USEPA)	Every other month, 1 <sup>st</sup> sample required on first load.	Grab <sup>(2)</sup> / End of pretreatment process or directly from delivery trucks	15 <sup>th</sup> of Month following analysis
pH <sup>(4)</sup>	Once per Load for 1 <sup>st</sup> 2 weeks. Frequency may be lessened once stability of process is established	Grab <sup>(2)</sup> / End of pretreatment process or directly from delivery trucks	Upon delivery of load
Narrative Statement	Statement identifying source of process wastewaters; Maximum and average daily flows from these processes <sup>(1)</sup> Compliance status with applicable pretreatment standards and if not in compliance, then what additional operation and maintenance practices and/or pretreatment are necessary.		December 31

NOTES:

- (1) Flow reports shall consist of total daily flows in gallons per day.
- (2) Samples may consist of grab samples collected from the end of the pretreatment process, the pumping system filling the delivery trucks, or directly from the delivery trucks.
- (3) If the permittee monitors any pollutant more frequently than required by this permit, using test procedures prescribed in 40 CFR Part 136 or amendments thereto, or as specified in this permit, the results of such monitoring shall be included in any calculations of actual daily maximum or monthly average pollutant discharge and the results shall be included in reports.
- (4) pH shall be analyzed by the permittee using approved methods (See PART 2, E) and shall be representative of each load.

**Signatory Requirements** - All reports shall be signed by an Authorized Representative as defined in the definitions section of this permit.



Allenstown Wastewater Treatment Facility

**Certification** - Signed reports shall include the following 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 ensure 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."

**B. Monitoring Scheduling Requirements** - Monitoring performed to satisfy the first reporting requirement of this permit shall be performed upon the first delivery under this permit.

Annual monitoring performed in subsequent years shall be performed within the first six months of the permit year.

The scheduling of sampling events and sample protocol is subject to approval by the AWTF. The permittee shall contact the AWTF at least five working days in advance of all proposed sampling events in order to obtain approval for an actual sampling date and protocol.

**C. Re-sampling** - If sampling performed indicates an exceedance of a screening level, the town shall be notified within 24 hours of the permittee becoming aware of the exceedance, in accordance with Part 3 (D) of this permit. The permittee is required to repeat the sampling and analysis and submit the results of the repeat analysis to the AWTF within 30 days after becoming aware of the exceedance, except the re-sampling is not required if the permittee samples at least once a month or the AWTF has sampled between the time when the initial sampling was performed and the time when the permittee received the results of this sampling.

**D. Effluent Monitoring Devices** - If effluent monitoring is required by this permit, then the following shall apply:

1. The appropriate devices and methods consistent with approved scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of monitored discharges.
2. All monitoring devices and sampling stations must be approved by the AWTF
3. The devices shall be installed, calibrated, and maintained to ensure the measurements are consistent with the accepted capability of that type of device and shall demonstrate the accuracy of the monitoring devices upon the request of the AWTF Superintendent.
4. The permittee shall accept the estimates of quantities of wastewater flows and other parameters, as established by the AWTF, during all periods in which required devices fail to operate properly. Quantitative estimates shall be mutually agreed upon by AWTF and the Permittee.

**E. Sampling and Analytical Methods** - Any sampling, preservation, handling, and analytical methods used must conform to 40 CFR Part 136 and amendments thereto, unless otherwise approved by EPA, or as specified in this permit.

**F. Additional Monitoring by the Permittee** - If sampling of any pollutant is performed more frequently than required by this permit, using test procedures prescribed in 40 CFR Part 136, then the results of this monitoring shall be included in the permittees effluent monitoring report or as required by the AWTF.

**PART 3 - REPORTING REQUIREMENTS**

**A. Verbal Reporting** - Verbal notification as required in this permit shall be directed to the following unless otherwise noted in a specific section:

1. During normal business hours.  
AWTF Superintendent (603) 485-5600
2. At all other times, notify:



Allenstown Wastewater Treatment Facility

AWTF Superintendent (603) 340-6888  
On-Call AWTF Operator (603) 340-1400

**B. Written Reporting** - All written reports required by this permit shall be submitted to the AWTF at the following address:

Allenstown Wastewater Treatment Facility  
35 Canal St.  
Allenstown, New Hampshire 03275

**C. Effluent Monitoring Reports** - Industrial Users shall submit periodic reports as required in Part 2, Section A - Scheduled Monitoring and Reporting. These reports may require:

1. Information indicating the nature and concentration of pollutants in the discharge from the regulated processes governed by pretreatment standards;
2. Maximum and daily flow for these process units;
3. Statements on compliance with applicable pretreatment standards on a consistent basis, and if not, what additional operation and maintenance practices and/or pretreatment are necessary; and
4. Complete sampling and analytical laboratory records.

**D. Exceedance of Effluent Screening Levels - Reporting** - In the event that effluent monitoring indicates an exceedance, the AWTF Superintendent, or other available representative identified in Section A above, shall be verbally notified within 24 hours after the permittee becomes aware of the exceedance. A written follow-up report signed by an authorized representative shall be filed with the AWTF within five (5) days. The report shall specify:

1. Description of the noncompliance, cause of the occurrence, and its impact on the permittees compliance status;
2. Anticipated time the condition of noncompliance is expected to continue, or if such conditions have been corrected, the duration of the period of noncompliance;
3. Steps taken by the permittee to reduce and eliminate the non-complying discharge; and
4. Steps taken by the permittee to prevent recurrence of the condition of noncompliance.
5. If a screening level is periodically exceeded, an evaluation shall be conducted to determine if the screening level should be adjusted to account for actual conditions.

**E. Spills, Potentially Harmful Discharges - Reporting** - Immediate notification by the permittee is required upon the occurrence of an accidental discharge of substances prohibited by the Sewer Use Ordinance or any slug loads or spills that may enter the public sewer. This shall also include immediate notification of any discharge which has the potential to cause a problem for the AWTF.

Verbal notification shall be made to the parties identified in Part 3, Section A above. The notification shall include location of discharge, date and time thereof, type of waste (including concentration and volume), and corrective actions taken. The permittees notification in accordance with the requirements of this section does not relieve it of other reporting requirements that arise under local, State, or federal laws.

Within five (5) days following an accidental discharge, the permittee shall submit to the AWTF a detailed written report signed by an authorized representative. The report shall specify:

1. The description and cause of the slug load or accidental discharge and the impact on the permittees compliance status. The description shall also include the location of discharge and the type, concentration, and volume of waste;



Allenstown Wastewater Treatment Facility

2. The duration of the period of the discharge, including exact dates and time of the discharge, and if the discharge is continuing, the time by which control of the discharge and compliance is reasonably expected to occur;
3. All steps taken by the permittee to reduce and eliminate the slug load, accidental discharge, or other potentially harmful discharge; and
4. Steps to be taken by the permittee to prevent recurrence of the condition of noncompliance.

**F. Operating Upset/Bypass Report** - In the event the permittee is unable to comply with any of the conditions of this permit due to a breakdown of pretreatment facilities or emergency bypass, the permittee shall provide an immediate verbal report to the parties identified in Part 3, Section A. A written follow-up report signed by an authorized representative shall be filed with the AWTF within five (5) days. The report shall contain the same information as required for the written report in Part 3, Section C above.

**G. Changed Discharge Reporting** - The permittee shall report changes in the nature and/or volume of the discharge pursuant to Part 6, Section I of this permit.

**H. Effluent Monitoring Records** - The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date of the sample measurement, report, or application.

All records that pertain to matters that are the subject of special orders or any other enforcement or litigation activities shall be retained and preserved by the permittee until all enforcement activities have concluded and all periods of limitation with respect to any and all appeals have expired.

If samples are collected, such records shall include for each sample:

1. The date, exact place, time and methods of sampling or measurements, and sample preservation techniques or procedures;
2. The name of the analytical laboratory performing the analyses;
3. Who performed the sampling or measurements;
4. The date(s) analyses were performed;
5. Who performed the analyses;
6. The EPA-approved method reference number for each analyte reported;
7. The full name of each analyte, including whether results are total or dissolved;
8. The results of such analyses;
9. Quality assurance information performed by the laboratory indicating if quality assurance results were acceptable;
10. The method detection limit for each analyte reported;
11. Units in which results are expressed; and
12. A copy of the chain-of-custody forms, properly completed, which accompany all samples submitted to the laboratory.

**I. Falsifying Information** - Knowingly making any false statement on any report or other document required by this permit and/or knowingly rendering any monitoring device or method inaccurate is a crime and may result in the imposition of criminal sanctions and/or civil penalties.

**J. Duty to Provide Information** - The permittee shall furnish to the AWTF within 15 days any information which the AWTF may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also, within 15 days of receipt of a request from AWTF, furnish to the AWTF copies of any records required to be kept pursuant to this permit.





Allenstown Wastewater Treatment Facility

**K. Anticipated Noncompliance** - The permittee shall give advance notice to the AWTF of any planned changes in the permitted facility or activity which may result in noncompliance with the requirements of this permit.

**L. Signatory Requirements** - All applications, reports, and information submitted to the AWTF as a requirement of this permit shall be signed by an Authorized Representative of the permittee.

**PART 4 - SPECIAL CONDITIONS**

- A. Permittee shall be responsible for all costs incurred by AWTF to facilitate delivery of permittees waste stream. AWTF shall provide estimated costs for any improvements or modifications needed for Permittees approval, prior to proceeding with said improvements or modifications.
- B. Permittee shall only utilize haulers approved by the AWTF for transportation of waste to the AWTF.
- C. Permittee shall be charged the effluent rate in use at the time of delivery until such time as the properties of the waste changes due to permittees use of equipment to concentrate the waste. Current effluent rate is \$7.19/Ton (\$0.03/gallon).
- D. When permittee concentrates its waste the rate shall revert to the septage rate in use at the time of delivery, provided there are no issues associated with accepting the concentrated waste.
- E. Acceptance of permittees waste shall in no way effect AWTF's existing or future NPDES permits.

**PART 5 - COMPLIANCE SCHEDULE**

No later than fourteen (14) calendar days following the date identified in the following schedule of compliance, the permittee shall submit either a report of progress or, in the case of specific action being required by identified dates, a written notice of compliance or noncompliance. In the last case, the notice shall include the cause of noncompliance, any remedial actions taken, and the date on which it expects to comply with the increment of progress. The permittee shall accomplish the following tasks in the designated time period:

EVENT  
N/A

NO LATER THAN  
N/A

**PART 6 - STANDARD CONDITIONS**

**A. Severability** - The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit, to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

**B. Duty to Comply** - All discharges authorized herein shall be consistent with the terms and conditions of this permit and the Allenstown Sewer Use Ordinance. Failure to comply with the requirements of this permit may be grounds for revocation, administrative action or enforcement proceedings, including civil or criminal penalties, injunctive relief, and summary abatements, as provided for in the Allenstown Sewer Use Ordinance, RSA 149:1 19, and/or the Federal Clean Water Act.

**C. Duty to Mitigate** - The permittee shall take all reasonable steps to minimize or correct any adverse impact to the AWTF or the environment resulting from noncompliance with this permit including, but not limited to:

- 1. Accelerated or additional monitoring;
- 2. Halting or reducing production activities;
- 3. Providing alternate methods of treatment; and/or
- 4. Halting or reducing discharges.

Upon reduction of efficiency of operation or loss or failure of all or part of the treatment facility, the permittee shall, to the extent necessary to maintain compliance with its permit, control its production or discharges (or both) until operation of the treatment facility is restored or an alternative method of treatment is provided. This requirement applies, for example, when the primary source of power of the treatment



Allenstown Wastewater Treatment Facility

facility fails or is reduced. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

**D. Permit Modification, Suspension, Revocation** - After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for causes including, but not limited, the following:

1. To incorporate any new or revised federal, State, or local pretreatment standards or requirements;
2. Material or substantial alterations or additions to the permittees operation processes, or discharge volume or character, which were not considered in drafting the effective permit;
3. A change in any condition of either the Industrial User or the AWTF that requires either a temporary or permanent reduction or elimination of the authorized discharge;
4. Information indicating that the permitted discharge poses a threat to the collection and treatment systems, AWTF personnel, or the receiving waters;
5. Violation of any terms or conditions of this permit or the Allenstown Sewer Use Ordinance;
6. Misrepresentation or failure to disclose fully all relevant facts in the permit application or in any required reporting;
7. Revision of, or a grant of, variance from such categorical standards pursuant to 40 CFR 403.13;
8. To correct typographical or other errors in the permit;
9. To reflect transfer of the facility ownership and/or operation to a new owner/operator;
10. Upon request of the permittee, provided such request does not create a violation of any applicable requirements, standards, laws, or rules and regulations;
11. Tampering with monitoring equipment;
12. Refusing to allow timely access to the facility premises and records;
13. Failure to pay fees, fines, or charges;
14. Failure to meet compliance schedules; and
15. To incorporate any new or revised requirements developed by the AWTF as are necessary to ensure AWTF compliance with its NPDES permit and/or applicable sludge management requirements promulgated by the U.S. EPA or State of New Hampshire.
16. To incorporate revised monitoring requirements in Part 2, Section A.

The filing of a request by the permittee for a permit modification, revocation, and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

**E. Permit Appeals** - The permittee may petition to appeal the terms of this permit within thirty (30) days of the effective date.

This petition must be in writing; failure to submit a petition for review shall be deemed to be a waiver of the appeal. In its petition, the permittee must indicate the permit provisions objected to, the reasons for this objection, and the alternative condition, if any, it seeks to be placed in the permit.

The effectiveness of this permit shall not be stayed pending reconsideration. The AWTF Superintendent's decision not to reconsider a final permit shall be considered final administrative action for purpose of judicial review. The permittee seeking judicial review of the AWTF Superintendent's final action must do so by filing a complaint with the District Court for Merrimack County within the State of New Hampshire.



Allenstown Wastewater Treatment Facility

**F. Property Rights** - The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any damage to private property or any invasion of personal rights, nor any violation of federal, State, or local laws or regulations.

**G. Change in Ownership** - In the event that the permittee undergoes a major change in ownership of either its corporate voting stock or control of its corporate stock or of the building to which this permit relates, then the permit may be reassigned or transferred if:

1. At least thirty (30) days advance notice is provided to the AWTF.
2. The new owner provides written notice that there is no immediate intent to change the facility's operations and processes, and identifies the specific date on which the transfer is to occur; and
3. The new owner acknowledges full responsibility for complying with the terms of this permit.

**H. Re-permitting** - If the permittee desires to continue to discharge after the expiration of this permit, it shall reapply on the application forms then in use at least sixty (60) days before this permit expires. Under no circumstances shall the permittee continue to discharge without an effective permit. An expired permit will continue to be effective and enforceable until the permit is reissued if:

1. The Industrial User has submitted a complete permit application at least sixty (60) days prior to the expiration date of the user's existing permit; and
2. The failure to reissue the permit, prior to expiration of the previous permit, is not due to any act or failure to act on the part of the Industrial User.

**I. Changes in Discharge** - Approval for modifications, additions, and/or expansions that increase or decrease the quality and/or quantity of wastewater discharged to the AWTF must be requested in writing to the Superintendent at least sixty (60) days prior to the proposed starting date for the change. This permit may then be modified or reissued to reflect such changes. No change in the permittees discharge may be made unless reported to and approved by the AWTF and State of New Hampshire Department of Environmental Services. ~~In no case shall new connections, increased flows, or significant changes in effluent quantity and/or quality be permitted if such will cause an exceedance of the effluent screening levels specified herein.~~

**J. Compliance with Applicable Pretreatment Standards and Requirements** - Compliance with this permit does not relieve the permittee from its obligations regarding compliance with any and all applicable local, State, and federal pretreatment standards and requirements including any such standards or requirements that may become effective during the term of this permit.

**K. Confidential Information** - Except for data determined to be confidential or proprietary, all information required for and by this permit shall be available for public inspection.

**L. Proper Operation and Maintenance** - The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes but is not limited to: effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

**M. Flow Measurements** - If flow measurement is required by this permit, the appropriate flow measurement devices and methods consistent with approved scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated, and maintained to ensure that the accuracy of the measurements are consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than 10 percent from true discharge rates throughout the range of expected discharge volumes.

**N. Bypass of Treatment Facility**



Allenstown Wastewater Treatment Facility

1. Bypass is prohibited unless it is unavoidable to prevent loss of life, personal injury or severe property damage or no feasible alternatives exist.
2. The permittee may allow bypass to occur which does not cause effluent limitations to be exceeded, but only if it is for essential maintenance to assure efficient operation.
3. Notification of Bypass
  - a. Anticipated bypass. If the permittee knows in advance of the need for bypass, it shall submit prior written notice to the AWTF at least ten (10) working days in advance.
  - b. Unanticipated bypass. The permittee shall immediately verbally notify the AWTF and submit a written notice within five (5) working days. The report shall specify:
    - A description of the bypass, its cause and duration;
    - Whether the bypass has been corrected; and
    - The steps being taken to reduce, eliminate, and prevent a recurrence of the bypass.

**O. Inspection and Entry** - The permittee shall allow authorized AWTF personnel, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittees premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit;
4. Sample or monitor, for the purposes of assuring permit compliance, any substances or parameters at any locations; and
5. Inspect any production, manufacturing, fabricating, or storage area where pollutants regulated under the permit could originate, be stored, or be discharged to the sewer system.

**P. Civil and Criminal Liability** - Nothing in this permit shall be construed to relieve the permittee from civil and/or criminal penalties for noncompliance under local, State, or federal laws or regulations.

**Q. Remedies** - The AWTF reserves all rights and remedies that it has under or by reason of any statutory law, ordinance, or common law to enforce any condition of this permit, including, but not limited to:

1. Civil and/or criminal penalties;
2. Recovery of expenses incurred as a result of noncompliance;
3. Permit revocation;
4. Emergency action to halt or prevent any imminently harmful discharge;
5. Fines and/or imprisonment; and
6. Newspaper publication of significant violators.

**R. Other Requirements** - The conditions listed in this permit are not intended to be all inclusive. The AWTF shall be notified if questions arise regarding the permittees responsibilities. The AWTF reserves the right to make revisions to this permit in order to implement the requirements of the Allenstown Sewer Use Ordinance.

**PART 7 - DEFINITIONS**

**Act or "the Act"** - The Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. § 1251 et seq.

**Authorized Representative** - An authorized representative shall be:





Allenstown Wastewater Treatment Facility

a. (i) A president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or

(ii) The manager of one or more manufacturing, production, or operation facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

b. By a general partner or proprietor if the Industrial User is a partnership or sole proprietorship respectively.

c. By a duly authorized representative of the individual designated in paragraph (a) or (b) of this section if:

(i) The authorization is made in writing by the individual described in paragraph (a) or (b); (ii) The authorization specifies either an individual or a position having responsibility for the overall operation of the facility from which the industrial discharge originates, such as the position of plant manager, operator of a well, or well field superintendent, or a position of equivalent responsibility, or having overall responsibility for environmental matters for the company; and

(iii) The written authorization is submitted to the AWTF

d. If an authorization under paragraph (c) of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, or overall responsibility for environmental matters for the company, a new authorization satisfying the requirements of paragraph (c) of this section must be submitted to the AWTF prior to or together with any reports to be signed by an authorized representative.

**Biochemical Oxygen Demand (BOD)** - The quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedures for five (5) days at 20° Centigrade, usually expressed as a concentration (e.g., mg/l), as determined by 40 CFR Part 136.

**Categorical Pretreatment Standard or Categorical Standard** - Any regulation containing pollutant discharge limits promulgated by EPA in accordance with Sections 307(b) and (c) of the Act (33 U.S.C. § 1317) which apply to a specific category of users and which appear in 40 CFR Chapter I, Subchapter N, Parts 405-471.

**Chain-of-Custody** - A form documenting the handling of samples from the time of collection to the time received by the laboratory. Information required includes time and date sampled, sampler identification, location, all individuals handling the sample, times and dates of transfers and any other information necessary to document the validity of the sample.

**Town** - Shall mean the Town of Allenstown, New Hampshire or the Town of Pembroke, New Hampshire whichever is applicable.

**Daily Maximum** - The maximum allowable discharge of pollutant or flow during a calendar day. Where daily maximum limitations are expressed in units of mass, the daily discharge is the total mass discharged over the course of the day. Where daily maximum limitations are expressed in terms of concentration, the daily maximum is the measurement of representative sample(s) obtained as specified in Part 2, Section A of this permit.

**Environmental Protection Agency or EPA** - The United States Environmental Protection Agency or, where appropriate, the Regional Water Management Division Director, or other duly authorized official of said agency.

**Flow Recorder** - Shall mean a weir, meter of flume, or other device which will measure and record the volume of wastewater discharged.

**Hazardous Substance** - Any substance designated under 40 CFR Part 116 pursuant to Section 311 of "the Act."



Allenstown Wastewater Treatment Facility

**Industrial User** - Shall mean any person contributing any non-domestic source of pollutants into the POTW.

**Industrial (Process) Wastewater** - The wastewater from industrial processes, trade, or business as distinct from domestic or sanitary sewage.

**Interference** - A discharge, which alone or in conjunction with a discharge or discharges from other sources, inhibits or disrupts the AWTF, its treatment processes or operations or its sludge processes, use, or disposal; and, therefore, is a cause of a violation of the town's NPDES permit or of the prevention of sewage sludge use or disposal in compliance with any of the following statutory/regulatory provisions, or permits issued there under, or any more stringent State or local regulations: Section 405 of the Act; the Solid Waste Disposal Act, including Title II commonly referred to as the Resource Conservation and Recovery Act (RCRA); any State regulation contained in any State sludge management plan prepared pursuant to Subtitle D of the Solid Waste Disposal Act; the Clean Air Act; the Toxic Substances Control Act; and the Marine Protection, Research, and Sanctuaries Act.

**Town Wastewater Department** - shall mean an authorized agent of the Allenstown Sewer Commission established to operate and maintain the town's Wastewater Treatment Facilities.

**Lower Explosive Limit (LEL)** - This refers to the lowest concentration of gas or vapor (% by volume in air) that will burn or explode if an ignition source is present and at ambient temperatures.

**Monthly Average** - The arithmetic mean for effluent samples collected during a calendar month or specified 30-day period.

**Method Detection Limit** - The minimum concentration of a substance that can be measured and reported as defined and determined in 40 CFR, Part 136, Appendix B.

**NHDES** - New Hampshire Department of Environmental Services.

**NPDES** - National Pollutant Discharge Elimination System; the national program for issuing and enforcing permits for the discharge of pollutants from any point source into waters of the United States, under Sections 402, 318, and 405 of the Clean Water Act.

**Pass Through** - A discharge which exits the AWTF into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the town's NPDES permit, including an increase in the magnitude or duration of a violation.

**Permittee** - The person or legal entity named on page 1 of this permit.

**Pretreatment (Treatment, Treat)** - The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to, or in lieu of discharging or otherwise, introducing such pollutants into the AWTF.

**Pretreatment Standards (Standards, Effluent Limitations)** - Shall mean prohibited discharge standards, categorical pretreatment standards, and local limits.

**Priority Pollutants** - A group of toxic chemicals listed by the EPA in 40 CFR Part 403, Appendix B as requiring restriction from entering municipal sewers or any receiving waters.

**Prohibited Discharge Standards or Prohibited Discharges** - Absolute prohibitions against the discharge of certain substances; these prohibitions appear in the Sewer Use Ordinance and 40 CFR 403.5(b).

**Sewer Use Ordinance** - This refers to the Sewer Use Ordinance for the Town of Allenstown.

**Publicly Owned Treatment Works (POTW)** - The treatment works owned by the Town (referred to as AWTF). This definition includes any devices or systems used in the collection, storage, treatment, recycling, and reclamation of sewage or industrial wastes of a liquid nature. It also includes sewers, pipes, and other conveyances which convey wastewater to the AWTF treatment plant.



Allenstown Wastewater Treatment Facility

---

**Sample** - Shall mean a portion of the wastewater obtained for analytical purposes. This portion may be:

a. **Composite Sample** - A sample that is collected over time, formed either by continuous sampling or by mixing discrete samples. The sample may be composited either as a:

(i) **Time Composite** - Composed of discrete sample aliquots collected in one container at constant time intervals providing representative samples irrespective of stream flow; or

(ii) **Flow Proportional Composite** - Collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increases while maintaining a constant time interval between aliquots.

b. **Grab Sample** - An individual sample collected in less than 15 minutes without regard to flow or time.

**Sampler** - A device used with or without flow measurement to obtain a portion of water or wastewater for analytical purposes. May be designed for taking single (grab), composite samples, continuous samples, or periodic samples.

**Sampling Station** - A specified location where monitoring takes place on a regular basis.

**Sanitary (Domestic) Wastewater** - Shall mean normal wastewater from household and toilet wastes discharged from any improved property, excluding ground, surface, or storm water.

**Screening Level** - Shall mean the concentration of a pollutant which under baseline conditions has the potential to impact the operation of the AWTF treatment process and/or the quality of its treated effluent.

**Shall** - is mandatory; **May** - is permissive.

**Significant Industrial User -**

a. A user subject to categorical pretreatment standards; or

b. A user that:

(i) Discharges an average of twenty-five thousand (25,000) gallons per day or more of process wastewater to the POTW (excluding sanitary, non-contact cooling, and boiler blowdown wastewater);

(ii) Contributes a process waste stream which makes up five (5) percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or

(iii) Is designated as such by the AWTF on the basis that it has a reasonable potential for adversely affecting the AWTF's operation or for violating any pretreatment standard or requirement.

**Suspended Solids (SS)** - Shall mean the solids that either float on the surface of, or are in suspension in, wastewater and which are largely removable by laboratory filtering, as determined by 40 CFR part 136.

**Slug Load or Slug** - Any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge, at a flow rate or concentration which would cause a violation of the prohibited discharge standards in the Sewer Use Ordinance or 40 CFR 403.5(b).

**Slug Control Plan** - A plan prepared by an Industrial User to control slug discharges. Elements of the plan include: description of discharge practices, description of stored chemicals, procedures for notifying the POTW of slug discharges, and procedures to prevent adverse impact from accidental spills.

**Standard Industrial Classification (SIC) Codes** - A four-digit code number which classifies individual business firms. SIC code listings are published by the United States Office of Management and Budget. See *Standard Industrial Classification Manual*, Superintendent of Documents, United States Government Printing Office, Washington, D.C. 20402.

**Superintendent** - The person designated by the Allenstown Sewer Commission to supervise the operation of the AWTF, and who is charged with certain duties and responsibilities, or a duly authorized representative.



Allenstown Wastewater Treatment Facility

**Wastewater Treatment Plant or Treatment Plant (WWTP / WWTF)-** That portion of the AWTF which is designated to provide treatment of municipal sewage and industrial waste.





- BLANK PAGE -





The State of New Hampshire  
**DEPARTMENT OF ENVIRONMENTAL SERVICES**



Thomas S. Burack, Commissioner

**INDUSTRIAL WASTEWATER INDIRECT DISCHARGE REQUEST (IDR) APPROVAL**

**APPLICANT**

Indirect Discharger PSNH  
Address 97 River Rd., Bow, NH  
Authorized Signature Harold Keyes Station Manager  
Engineer Ronald Breton, GZA GeoEnvironmental

**MUNICIPALITY**

Municipality/POTW Allenstown WWTF  
Approval Signature Dana L. Clement Superintendent  
Date of IDR July 25, 2011

**APPROVAL**

PERMIT/REQUEST NUMBER IDR 11-016 A  
FLOW 100000 gallons/day DATE: August 12, 2011

The Department of Environmental Services has reviewed and hereby approves the request as follows: Approval of the discharge to the applicant's wastewater facilities is based on review of the supporting information submitted and is subject to the conditions indicated below and the standard Conditions of Approval on the second page.

**CONDITIONS:**

Approval is for acceptance of highly treated wastewater from the wet flue gas desulfurization system. The wastewater will be hauled by tanker truck to the WWTF.

George F. Carlson, Jr., P.E.

Telephone (603) 271-2052



NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES  
INDUSTRIAL WASTEWATER INDIRECT DISCHARGE REQUEST

CONDITIONS OF APPROVAL

The department's approval of this discharge request is subject to the following conditions:

- (1) The indirect discharger shall fully comply with the applicable sewer use ordinance;
- (2) The indirect discharger shall fully comply with all federal, state and local pretreatment standards and requirements;
- (3) Using additional water to dilute effluent or introducing uncontaminated water to the effluent shall not be allowed as a substitute for any pretreatment necessary to maintain compliance;
- (4) The indirect discharger shall not make changes in the type of production, amount of flow, or pollutant characteristics, or any increase in pollutant concentration, without prior approval by the department through the submission of a new industrial wastewater discharge request;
- (5) The approval shall be based on and apply only to the subject discharge request and all associated plans and supporting information as submitted and shall be signed by the indirect discharger's authorized representative; and
- (6) The approval shall become void if the discharge approved does not begin within one year from the date of approval.

Upon receipt of notification from the department that the discharge request is approved, the municipality shall issue a discharge permit to the indirect discharger.

If there are any question or comments concerning this approval, please contact the Industrial Pretreatment Section Supervisor, at the Water Division, telephone 271-2052.



Kevin A. Sheppard, P.E.  
Public Works Director

Timothy J. Clougherty  
Deputy Public Works Director

Frederick J. McNeill, P.E.  
Chief Engineer



Commission  
Raymond Hebert  
Harold Sullivan  
Robert R. Rivard  
Rick Rothwell  
Bill Skoutaris

**CITY OF MANCHESTER**  
Highway Department  
Environmental Protection Division

**Trucked Waste      Special Agreement      No. SA 3001-10-11**

In accordance with the provisions of the City of Manchester's Special Agreement Provisions:

Office/Home  
PSNH  
780 North Commercial St.  
Manchester, NH 03101

Work Site  
PSNH - Merrimack Station  
97 River Street  
Bow, NH 03304

is authorized to discharge wastewater from the above stated facility (the "Facility"). This discharge consists of:

Description      Gallons/Day  
Treated Blowdown from Flue Gas Desulfurization (FGD) System      24,750 gallons per day

Compliance with this Special Agreement does not relieve the owner of its obligation to comply with any other applicable pretreatment requirements under local, State, or Federal laws, including such requirements that may become effective during the term of this Agreement.

Noncompliance with any term or condition of this Agreement including the provisions of Page 2 and 3 shall constitute a violation of the City's Sewer Use Ordinance ("Sewer Use Ordinance") and shall be subject to the penalty provisions of Article V, Section 52.999 and may include suspension of discharge privilege with 24 hours notice.

This Special Agreement shall become Effective on: December 1, 2011  
This Special Agreement shall Expire on: November 30, 2012

	Chief Engineer - EPD	<u>2/9/12</u>
Special Agreement Issued By	Title	Date
	Public Works Director - Highways	<u>2-13-12</u>
Authorization by (City)	Title	Date

**Acknowledgement:** The undersigned acknowledges receipt of this Special Agreement and acknowledges that this discharge is subject to the requirements of the Sewer Use Ordinance Article V.

PSNH  
Company Name

Authorized Representative

2/9/2012  
Date





## Standard Conditions

This agreement is subject to the following standard conditions.

**Acceptance of discharge** – The FGD blowdown must first be turned away in part, or in total, by the Towns of Hooksett, Allenstown and the City of Concord before discharge is accepted at EPD's Manchester WWTP.

**Responsible contact** – PSNH must designate one main responsible contact (Shift Supervisor 224-4081 x4141) and provide their 24- hour phone number along with an alternate person (Paul Raichle 225-5571) and their 24- hour contact information who can act on behalf of PSNH in emergency situations.

**Tanker delivery** - PSNH must use dedicated tankers or tankers that have been rinsed internally and certified "industrial clean" by the tanker truck owner so no other discharge is inadvertently disposed of at Manchester's WWTP.

**Delivery hours** – The hours of delivery shall be from Monday through Friday from 6:00 AM until 4:00 PM and on weekends and holidays from 7:00 AM until 2:00 PM. Hours outside these times may be agreed to in writing by both parties and amended to this agreement.

**Changes in discharge** - Any substantial change in the type of production, amount of flow or pollutant characteristics, or any increase in pollutant concentration, must receive prior review and approval by the City of Manchester and the State of NH if applicable. The projected wastewater characteristics were presented in the Industrial Wastewater Discharge Permit application submitted to the City of Manchester in May 2011.

**Spills, potentially harmful dischargers** - Immediate notification is required for any discharge which spills at the offloading facility that would cause a problem for the Wastewater Treatment Plant's Stormwater Permit or other environmental concerns. This includes but is not limited to an accidental discharge of substances prohibited by the Sewer Use Ordinance or any slug loads or spills that may enter the public, right-of-way, receiving water, or combined sewers. Notification information as follows:

- \* During normal business hours (7:00 A.M. to 4:00 P.M.) notify:
  - Chief Sanitary Engineer 624-6341
  - Wastewater Plant Superintendent 624-6526
  - Industrial Pretreatment Office 624-6513
- \* At all other times notify:
  - Wastewater Treatment Plant 624-6421

The notification shall include location of discharge, date and time thereof, type of waste, including concentration and estimated volumes, and any and all corrective actions taken. The owner will make notification in accordance with the requirements of this section and does not relieve its obligation of other reporting requirements as may arise under local, State, or Federal laws.

**Agreement continuance** – If the owner desires to continue to discharge after the expiration of this Agreement, it shall reapply on the application forms then in use at least thirty (30) calendar days before this Agreement expires. Under no circumstances shall the owner continue to discharge after the expiration of this Agreement, except as authorized pursuant to a new agreement with, or an extension of this Agreement by, the City.

**Access by the City** - The owner shall allow authorized EPD personnel unrestricted access for the purposes of inspection, investigation, and sampling of wastewater discharges from the PSNH Work Site when requested.

**Sampling & analytical requirements** - Any sampling, preservation, handling, and analytical testing methods must conform to the requirements as set out in 40 CFR Part 136.

**Charges and rates** – The rate is based upon mass loading. The daily allowable loading for aluminum is 0.21 lbs and for selenium it is 0.6025 lbs. As aluminum and selenium are the main concerns in the FGD concentration the rate is based on loading for both aluminum at \$3,213.25 per pound, or the rate for selenium at \$1,066.80 per pound. The total fee will be based on the highest of the aluminum or selenium loading, but not on both. This is not a fee based on per 1,000 gallon discharge, but rather on the mass loading of aluminum and selenium.





MARK A. YOUNG  
EXECUTIVE DIRECTOR

## LOWELL REGIONAL WASTEWATER UTILITY

WASTEWATER COLLECTION AND TREATMENT



SERVING  
LOWELL  
CHELMSFORD  
DRACUT  
TEWKSBURY  
TYNGSBORO

September 28, 2011

Allan Palmer  
Public Service of New Hampshire  
97 River Road  
Bow, NH 03304

Mr. Palmer,

The Lowell Regional Wastewater Utility (the "Utility") is in receipt of permit application materials requesting authorization to discharge hauled wastewater generated from the Flue Gas Desulfurization (FGD) system at the Public Service of New Hampshire's Bow facility.

After reviewing your request and visiting your facility, the Utility is granting an Interim Discharge Authorization (IDA) to Public Service of New Hampshire for Six (6) Months beginning on October 1, 2011, a formal request must be submitted before the expiration date should an extension be necessary. The IDA authorizes the discharge of hauled wastewater to the Duck Island Wastewater Treatment Facility (WWTF), with the following conditions:

1. **Compliance with the City of Lowell's Sewer Use Ordinance:** All discharges from this facility must comply with the City of Lowell's Sewer Use Ordinance/Local Limits. A copy is enclosed for your reference.
2. **Daily Discharge Limit:** 70,000 Gallons Per Day (GPD).
3. **Proposed Discharge Fee:** \$0.035 per gallon. Payment terms should be arranged with the Executive Director.
4. **Provide access to Utility personnel for inspection and sampling:** The Permittee shall provide Utility personnel access to its facilities and hauling vehicles for the purposes of monitoring permitted discharges, determining pollutant sources, inspecting processes, and/or verifying IDA compliance.
5. **Wastewater sampling shall be performed to characterize the process discharges and establish compliance with local sewer discharge limits.** As part of the permit application process, Public Service of New Hampshire submitted projected sampling results. While this information is useful, it is imperative that new sampling data that characterizes actual discharges be compiled.

*The Utility is requiring that Baseline Monitoring Analysis (BMA) be conducted on wastewater discharges from the FGD system to identify all priority pollutants contained in the process wastewaters within Two (2) Weeks of initial discharge.*



***A second round of BMA sampling shall be conducted once the facility has completed start-up procedures and is operating under normal conditions. Sampling results shall be submitted to the Utility no later than December 16, 2011. Please notify the Utility in writing should extenuating circumstances make it not possible to submit the BMA by this date.***

The discharges shall be analyzed for the following priority pollutants: pH; BOD (Biochemical Oxygen Demand); COD (Chemical Oxygen Demand); TSS (Total Suspended Solids); Metals [Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium (Total), Copper, Fluoride, Lead, Mercury, Molybdenum, Nickel, Selenium, Silver, Thallium, and Zinc]; Cyanide (Total); Nitrogen (Total); Phenols (Total); Oil & Grease (O&G); Poly-Chlorinated Biphenyls (PCB's); Volatile Organic Compounds (VOC's); and Semi-Volatile Organic Compounds (SVOC's). PCB's, VOC's, and SVOC's shall be analyzed using EPA Methods 608, 624, and 625, respectively.

**Please Note: PCB, VOC and SVOC analysis shall only be performed during the second round of BMA sampling.**

***Based on the results of the BMA, subsequent sampling requirements will be specified in the new discharge permit. All samples shall be representative of the process discharges; samples will be collected and preserved according to Standard Method 1060 A-C. A state-certified laboratory shall analyze all wastewater samples. A Self-Monitoring Report (SMR) Summary Sheet is enclosed for submittal of the BMA sampling results. For your reference, an excerpt from *Standard Methods for the Examination of Water and Wastewater (20<sup>th</sup> Edition)* is enclosed. For a current list of state-certified labs, you may use the following link to the Massachusetts Department of Environmental Protection website: following link:  
<http://public.dep.state.ma.us/labcert/labcert.aspx>.***

- 6. An interim discharge period of Six (6) Months shall be used to demonstrate compliance with the local sewer discharge limits.** Wastewater characterization and compliance with the local limits will be used to consider the permit application for authorization to discharge industrial wastewater. In addition to BMA self-monitoring sampling results, the Utility may conduct its own sampling of discharges to the WWTF. Results from all sampling conducted during the interim discharge period will be used to confirm compliance with local limits and identify pollutants of concern. Specific sampling requirements will be included in a five-year industrial sewer user discharge permit that will be issued at the end of the interim discharge period.
- 7. Permittee sampling shall be conducted on a Monthly basis beginning on the Second Month of discharge:** Reports are due on the last day of the month and shall be submitted to Pretreatment Coordinator, Amy Daigneault.
- 8. The Utility is requiring that the discharges be analyzed according to the schedule in condition No. 7 for the following parameters:** pH, COD (Chemical Oxygen Demand), Arsenic, Cadmium, Lead, Mercury, and Silver.
- 9. The Utility intends on conducting weekly monitoring at the WWTF. Monitoring will be conducted weekly for the first month and if data indicates compliance sampling will be reduced.**
- 10. Permittee will be responsible for monitoring costs incurred by the Utility (i.e. analytical lab fees). Invoices will be issued on a monthly basis and will contain supporting documentation on cost.**



- 11. Maintain and operate the wastewater treatment system properly.** All equipment and unit processes shall be maintained and operated in a manner that ensures effective treatment. Keep a bound logbook or a comparable method of record keeping that contains descriptions of operational conditions and maintenance activities regarding the wastewater treatment system. Record discharge volumes and pH measurements in the logbook.
- 12. Report any new information to the Utility:** Should any new information become available regarding the characteristics of the discharge, report this to the Utility immediately.
- 13. The Utility reserves the right to require additional information, makes changes to this IDA as needed, or terminate this IDA.**

Please contact me at 978-970-4248 x1622 if you have any questions regarding this Interim Discharge Authorization.

Respectfully,

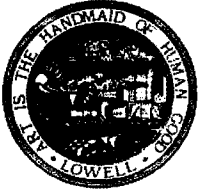


Amy Daigneault  
Pretreatment Coordinator  
Lowell Regional Wastewater Utility

Cc File  
Mark Young, Executive Director, Lowell Regional Wastewater Utility  
Michael Stuer, Engineering Manager, Lowell Regional Wastewater Utility  
Tom Kawa, Operations Superintendent, Lowell Regional Wastewater Utility  
Ron Breton, P.E., GZA Geoenvironmental







**MARK A. YOUNG**  
EXECUTIVE DIRECTOR

# LOWELL REGIONAL WASTEWATER UTILITY

WASTEWATER COLLECTION AND TREATMENT



SERVING  
LOWELL  
CHELMSFORD  
DRACUT  
TEWKSBURY  
TYNGSBORO

March 29, 2012

Allan Palmer  
Public Service of New Hampshire  
97 River Road  
Bow, NH 03304

Mr. Palmer,

The Lowell Regional Wastewater Utility (the "Utility") has approved your request for an extension to the **Interim Discharge Authorization (IDA) that was issued to Public Service of New Hampshire on September 28, 2011**. The IDA authorizes the discharge of hauled wastewater to the Duck Island Wastewater Treatment Facility (WWTF). The IDA will be extended until October 5, 2012.

The Utility has reviewed the IDA and has made a few notable changes. The notable changes are summarized below in red:

- 1. Compliance with the City of Lowell's Sewer Use Ordinance:** All discharges from this facility must comply with the City of Lowell's Sewer Use Ordinance/Local Limits. A copy was provided for your reference.
- 2. Daily Discharge Limit:** 70,000 Gallons Per Day (GPD).
- 3. Proposed Discharge Fee:** \$0.035 per gallon for Stream A and \$0.06 for Stream B. Payment terms should be arranged with the Executive Director.
- 4. Provide access to Utility personnel for inspection and sampling:** The Permittee shall provide Utility personnel access to its facilities and hauling vehicles for the purposes of monitoring permitted discharges, determining pollutant sources, inspecting processes, and/or verifying IDA compliance.
- 5. Wastewater sampling shall be performed to characterize the process discharges and establish compliance with local sewer discharge limits.** As part of the permit application process, Public Service of New Hampshire submitted projected sampling results. While this information is useful, it is imperative that new sampling data that characterizes actual discharges be compiled.

*The Utility is requiring that Baseline Monitoring Analysis (BMA) be conducted on wastewater discharges from the FGD system to identify all priority pollutants contained in the process wastewaters within Two (2) Weeks of initial discharge.*

*A second round of BMA sampling shall be conducted once the facility has completed start-up procedures and is operating under normal conditions. Sampling results shall be submitted to the Utility no later than December 16, 2011. Please notify the Utility in writing should extenuating circumstances make it not possible to submit the BMA by this date.*



The discharges shall be analyzed for the following priority pollutants: pH; BOD (Biochemical Oxygen Demand); COD (Chemical Oxygen Demand); TSS (Total Suspended Solids); Metals [Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium (Total), Copper, Fluoride, Lead, Mercury, Molybdenum, Nickel, Selenium, Silver, Thallium, and Zinc]; Cyanide (Total); Nitrogen (Total); Phenols (Total); Oil & Grease (O&G); Poly-Chlorinated Biphenyls (PCB's); Volatile Organic Compounds (VOC's); and Semi-Volatile Organic Compounds (SVOC's). PCB's, VOC's, and SVOC's shall be analyzed using EPA Methods 608, 624, and 625, respectively.

**Please Note: PCB, VOC and SVOC analysis shall only be performed during the second round of BMA sampling.**

*Based on the results of the BMA, subsequent sampling requirements will be specified in the new discharge permit.* All samples shall be representative of the process discharges; samples will be collected and preserved according to Standard Method 1060 A-C. A state-certified laboratory shall analyze all wastewater samples. A Self-Monitoring Report (SMR) Summary Sheet is enclosed for submittal of the BMA sampling results. For your reference, an excerpt from *Standard Methods for the Examination of Water and Wastewater (20<sup>th</sup> Edition)* is enclosed. For a current list of state-certified labs, you may use the following link to the Massachusetts Department of Environmental Protection website: following link: <http://public.depstate.ma.us/labcert/labcert.aspx>.

6. **An interim discharge period of Six (6) Months shall be used to demonstrate compliance with the local sewer discharge limits.** Wastewater characterization and compliance with the local limits will be used to consider the permit application for authorization to discharge industrial wastewater. In addition to BMA self-monitoring sampling results, the Utility may conduct its own sampling of discharges to the WWTF. Results from all sampling conducted during the interim discharge period will be used to confirm compliance with local limits and identify pollutants of concern. Specific sampling requirements will be included in a five-year industrial sewer user discharge permit that will be issued at the end of the interim discharge period.
7. **Permittee sampling shall be conducted on a Monthly basis beginning on the Second Month of discharge:** Reports are due on the last day of the month and shall be submitted to Pretreatment Coordinator, Amy Daigneault.  
  
Please Note the Permittee has an additional 30 days after the months end to submit Monthly Reports.
8. **The Utility is requiring that the discharges be analyzed according to the schedule in condition No. 7 for the following parameters:** pH, COD (Chemical Oxygen Demand), Arsenic, Cadmium, Lead, Mercury, and Silver.
9. **The Utility intends on conducting monthly monitoring at the WWTF.**
10. **Permittee will be responsible for monitoring costs incurred by the Utility (i.e. analytical lab fees). Invoices will be issued on a monthly basis and will contain supporting documentation on cost.**
11. **Maintain and operate the wastewater treatment system properly.** All equipment and unit processes shall be maintained and operated in a manner that ensures effective treatment. Keep a bound logbook or a comparable method of record keeping that contains descriptions of operational conditions and maintenance activities regarding the wastewater treatment system. Record discharge volumes and pH measurements in the logbook.
12. **Report any new information to the Utility:** Should any new information become available regarding the characteristics of the discharge, report this to the Utility immediately.



**13. The Utility reserves the right to require additional information, makes changes to this IDA as needed, or terminate this IDA.**

Please contact me at 978-674-1622 if you have any questions regarding this Interim Discharge Authorization.

Respectfully,



Amy Daigneault  
Pretreatment Coordinator  
Lowell Regional Wastewater Utility

Cc File  
Mark Young, Executive Director, Lowell Regional Wastewater Utility  
Michael Stuer, Engineering Manager, Lowell Regional Wastewater Utility  
Tom Kawa, Operations Superintendent, Lowell Regional Wastewater Utility  
Ron Breton, P.E., GZA GeoEnvironmental









- 1) Please provide the following information with regard to the offsite disposal of FGD WWTS effluent from Merrimack Station:**
  - b) (3) The results of any effluent sampling accomplished for each separate truck load of FGD WWTS effluent.**

1(b) (3) PSNH provides the attached data, specific to the offsite disposal of FGD treated wastewater effluent, resulting from the direct sampling of effluent on trucks headed for POTWs. Please note that the spreadsheets provided in response to the first question also contain some responsive data (pH data).







Arthur Auclair  
Northeast Utilities  
97 River Road  
Bow , NH 03304



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 106677  
Client Identification: Merrimack Station  
Date Received: 1/5/2012

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](http://www.eailabs.com) for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:  
Solid samples are reported on a dry weight basis, unless otherwise noted  
< : "less than" followed by the reporting limit  
> : "greater than" followed by the reporting limit  
%R : % Recovery

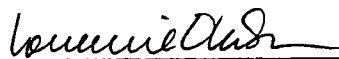
Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

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

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

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

Sincerely,

  
Lorraine Olashaw, Lab Director

1.13.12  
Date

44  
# of pages (excluding cover letter)



# SAMPLE CONDITIONS PAGE

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Temperature upon receipt (°C): **4.7**

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)
106677.01	Treat Tank Eff Composite	1/5/12	1/5/12	aqueous		Adheres to Sample Acceptance Policy
106677.02	Treat Tank Eff Grab	1/5/12	1/5/12	aqueous		Adheres to Sample Acceptance Policy
106677.03	Treat Tank Eff Grab	1/5/12	1/5/12	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



# LABORATORY REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Sample ID: Treat Tank Eff Grab

Lab Sample ID: 106677.02  
Matrix: aqueous  
Date Sampled: 1/5/12  
Date Received: 1/5/12  
Units: ug/l  
Date of Analysis: 1/6/12  
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) 98 %R  
1,2-Dichlorobenzene-d4 (surr) 90 %R  
Toluene-d8 (surr) 100 %R



# QC REPORT

EAI ID#: 106677

Client: Northeast Utilities

Client Designation: Merrimack Station

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Chloromethane	< 5	19 (97 %R)	21 (105 %R) (8 RPD)	1/6/2012	ug/l	0 - 273	20	624
Vinyl chloride	< 2	18 (91 %R)	20 (101 %R) (10 RPD)	1/6/2012	ug/l	0 - 251	20	624
Bromomethane	< 2	21 (105 %R)	23 (113 %R) (7 RPD)	1/6/2012	ug/l	0 - 242	20	624
Chloroethane	< 5	19 (95 %R)	20 (101 %R) (6 RPD)	1/6/2012	ug/l	14 - 230	20	624
Trichlorofluoromethane	< 5	17 (84 %R)	18 (88 %R) (5 RPD)	1/6/2012	ug/l	17 - 181	20	624
Acrolein	< 50	< 50 (%R N/A)	< 50 (%R) (RPD)	1/6/2012	ug/l			624
Acetone	< 50	< 50 (78 %R)	< 50 (90 %R) (14 RPD)	1/6/2012	ug/l			624
1,1-Dichloroethene	< 1	17 (83 %R)	18 (89 %R) (7 RPD)	1/6/2012	ug/l	0 - 234	20	624
Methylene chloride	< 5	18 (88 %R)	19 (93 %R) (6 RPD)	1/6/2012	ug/l	0 - 221	20	624
Carbon disulfide	< 5	17 (%R)	19 (%R) (RPD)	1/6/2012	ug/l			624
Acrylonitrile	< 50	< 50 (%R)	< 50 (%R) (RPD)	1/6/2012	ug/l			624
Methyl-t-butyl ether(MTBE)	< 10	20 (%R)	20 (%R) (RPD)	1/6/2012	ug/l			624
trans-1,2-Dichloroethene	< 2	18 (89 %R)	18 (92 %R) (3 RPD)	1/6/2012	ug/l	54 - 156	20	624
Vinyl acetate	< 10	30 (%R)	30 (%R) (RPD)	1/6/2012	ug/l			624
1,1-Dichloroethane	< 2	19 (93 %R)	20 (98 %R) (5 RPD)	1/6/2012	ug/l	59 - 155	20	624
cis-1,2-Dichloroethene	< 2	19 (%R)	20 (%R) (RPD)	1/6/2012	ug/l			624
2-Butanone(MEK)	< 10	20 (%R)	20 (%R) (RPD)	1/6/2012	ug/l			624
Chloroform	< 2	19 (94 %R)	20 (99 %R) (5 RPD)	1/6/2012	ug/l	51 - 138	20	624
1,1,1-Trichloroethane	< 2	18 (91 %R)	19 (97 %R) (6 RPD)	1/6/2012	ug/l	52 - 162	20	624
Carbon tetrachloride	< 2	18 (91 %R)	19 (95 %R) (4 RPD)	1/6/2012	ug/l	70 - 140	20	624
Benzene	< 1	19 (97 %R)	20 (102 %R) (5 RPD)	1/6/2012	ug/l	37 - 151	20	624
1,2-Dichloroethane	< 2	18 (91 %R)	19 (94 %R) (3 RPD)	1/6/2012	ug/l	49 - 155	20	624
Trichloroethene	< 2	19 (93 %R)	20 (98 %R) (5 RPD)	1/6/2012	ug/l	71 - 157	20	624
1,2-Dichloropropane	< 2	19 (95 %R)	20 (98 %R) (3 RPD)	1/6/2012	ug/l	0 - 210	20	624
Bromodichloromethane	< 2	19 (96 %R)	20 (100 %R) (4 RPD)	1/6/2012	ug/l	35 - 155	20	624
2-Chloroethylvinylether	< 2	23 (115 %R)	24 (121 %R) (5 RPD)	1/6/2012	ug/l	0 - 305	20	624
4-Methyl-2-pentanone(MIBK)	< 10	20 (%R)	20 (%R) (RPD)	1/6/2012	ug/l			624
cis-1,3-Dichloropropene	< 2	22 (109 %R)	23 (113 %R) (4 RPD)	1/6/2012	ug/l	0 - 227	20	624
Toluene	< 1	20 (101 %R)	21 (103 %R) (2 RPD)	1/6/2012	ug/l	47 - 150	20	624
trans-1,3-Dichloropropene	< 2	18 (90 %R)	19 (93 %R) (3 RPD)	1/6/2012	ug/l	17 - 183	20	624
1,1,2-Trichloroethane	< 2	20 (100 %R)	21 (104 %R) (4 RPD)	1/6/2012	ug/l	52 - 150	20	624
2-Hexanone	< 10	20 (%R)	20 (%R) (RPD)	1/6/2012	ug/l			624
Tetrachloroethene	< 2	20 (100 %R)	21 (106 %R) (6 RPD)	1/6/2012	ug/l	64 - 148	20	624
Dibromochloromethane	< 2	20 (102 %R)	21 (104 %R) (2 RPD)	1/6/2012	ug/l	53 - 149	20	624
Chlorobenzene	< 2	20 (98 %R)	20 (100 %R) (2 RPD)	1/6/2012	ug/l	37 - 160	20	624
Ethylbenzene	< 1	20 (101 %R)	21 (105 %R) (4 RPD)	1/6/2012	ug/l	37 - 162	20	624
mp-Xylene	< 1	40 (101 %R)	43 (106 %R) (5 RPD)	1/6/2012	ug/l	70 - 130	20	624
o-Xylene	< 1	21 (104 %R)	22 (109 %R) (5 RPD)	1/6/2012	ug/l	70 - 130	20	624
Styrene	< 1	21 (%R)	22 (%R) (RPD)	1/6/2012	ug/l			624
Bromoform	< 2	18 (88 %R)	18 (90 %R) (2 RPD)	1/6/2012	ug/l	45 - 169	20	624
1,1,2,2-Tetrachloroethane	< 2	20 (99 %R)	20 (100 %R) (1 RPD)	1/6/2012	ug/l	46 - 157	20	624
1,3-Dichlorobenzene	< 1	20 (100 %R)	21 (104 %R) (4 RPD)	1/6/2012	ug/l	59 - 156	20	624
1,4-Dichlorobenzene	< 1	20 (98 %R)	20 (102 %R) (4 RPD)	1/6/2012	ug/l	18 - 190	20	624
1,2-Dichlorobenzene	< 1	20 (98 %R)	20 (102 %R) (4 RPD)	1/6/2012	ug/l	18 - 190	20	624
4-Bromofluorobenzene (surr)	100 %R	101 %R	102 %R	1/6/2012	% Rec	70 - 130		624





# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
1,2-Dichlorobenzene-d4 (surr)	93 %R	90 %R	89 %R	1/6/2012	% Rec	70 - 130		624
Toluene-d8 (surr)	100 %R	102 %R	102 %R	1/6/2012	% 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.  
\*/! Flagged analyte recoveries deviated from the QA/QC limits. Any impact to data is addressed below.



# LABORATORY REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Sample ID: Treat Tank Eff Grab

Lab Sample ID: 106677.02  
Matrix: aqueous  
Date Sampled: 1/5/12  
Date Received: 1/5/12  
Units: ug/l  
Date of Extraction/Preparation: 1/6/12  
Date of Analysis: 1/6/12  
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



# LABORATORY REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Sample ID: Treat Tank Eff Grab

Lab Sample ID: 106677.02  
Matrix: aqueous  
Date Sampled: 1/5/12  
Date Received: 1/5/12  
Units: ug/l  
Date of Extraction/Preparation: 1/6/12  
Date of Analysis: 1/6/12  
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) 33 %R  
Phenol-d6 (surr) 24 %R  
2,4,6-Tribromophenol (surr) 90 %R  
Nitrobenzene-D5 (surr) 71 %R  
2-Fluorobiphenyl (surr) 72 %R  
p-Terphenyl-D14 (surr) 84 %R



# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Batch ID: 734507-32510/A010512E6251

Client Designation: **Merrimack Station**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Phenol	< 1	14 (27 %R)	14 (29 %R) (7 RPD)	1/5/2012	ug/l	15 - 130	20	625mod
2-Chlorophenol	< 1	29 (59 %R)	30 (60 %R) (2 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
2,4-Dichlorophenol	< 1	35 (70 %R)	36 (72 %R) (3 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
2,4,5-Trichlorophenol	< 1	18 (72 %R)	19 (75 %R) (4 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
2,4,6-Trichlorophenol	< 1	34 (68 %R)	36 (71 %R) (4 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
Pentachlorophenol	< 5	34 (68 %R)	39 (78 %R) (14 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
2-Nitrophenol	< 1	35 (70 %R)	37 (73 %R) (4 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
4-Nitrophenol	< 5	16 (32 %R)	17 (35 %R) (9 RPD)	1/5/2012	ug/l	15 - 130	20	625mod
2,4-Dinitrophenol	< 5	38 (75 %R)	40 (81 %R) (8 RPD)	1/5/2012	ug/l	15 - 130	20	625mod
2-Methylphenol	< 1	15 (61 %R)	16 (64 %R) (5 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
3/4-Methylphenol	< 1	13 (53 %R)	14 (54 %R) (2 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
2,4-Dimethylphenol	< 1	33 (66 %R)	34 (67 %R) (2 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
4-Chloro-3-methylphenol	< 1	36 (73 %R)	36 (73 %R) (0 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
4,6-Dinitro-2-methylphenol	< 5	39 (77 %R)	41 (81 %R) (5 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
Benzoic Acid	< 50	< 50 (31 %R)	< 50 (34 %R) (9 RPD)	1/5/2012	ug/l	15 - 140	20	625mod
N-Nitrosodimethylamine	< 1	12 (46 %R)	12 (47 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
n-Nitroso-di-n-propylamine	< 1	17 (67 %R)	17 (69 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
n-Nitrosodiphenylamine	< 1	22 (90 %R)	23 (90 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
bis(2-Chloroethyl)ether	< 1	16 (63 %R)	16 (64 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
bis(2-chloroisopropyl)ether	< 1	15 (61 %R)	15 (62 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
bis(2-Chloroethoxy)methane	< 1	17 (69 %R)	18 (70 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
1,3-Dichlorobenzene	< 1	13 (52 %R)	13 (52 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
1,4-Dichlorobenzene	< 1	13 (52 %R)	13 (52 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
1,2-Dichlorobenzene	< 1	14 (54 %R)	14 (55 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
1,2,4-Trichlorobenzene	< 1	14 (57 %R)	14 (58 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
2-Chloronaphthalene	< 1	16 (63 %R)	16 (65 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
4-Chlorophenyl-phenylether	< 1	18 (71 %R)	18 (72 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
4-Bromophenyl-phenylether	< 1	19 (75 %R)	19 (75 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Hexachloroethane	< 1	11 (43 %R)	11 (43 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Hexachlorobutadiene	< 1	10 (40 %R)	10 (42 %R) (5 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Hexachlorocyclopentadiene	< 5	* 9 (37 %R)	10 (41 %R) (10 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Hexachlorobenzene	< 1	18 (73 %R)	19 (78 %R) (7 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
4-Chloroaniline	< 1	20 (80 %R)	20 (80 %R) (0 RPD)	1/5/2012	ug/l	15 - 140	20	625mod
2-Nitroaniline	< 5	17 (67 %R)	18 (71 %R) (6 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
3-Nitroaniline	< 1	18 (73 %R)	19 (76 %R) (4 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
4-Nitroaniline	< 1	18 (73 %R)	19 (77 %R) (5 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzyl alcohol	< 5	16 (65 %R)	17 (67 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Nitrobenzene	< 1	16 (65 %R)	17 (68 %R) (5 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Isophorone	< 1	20 (79 %R)	20 (81 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
2,4-Dinitrotoluene	< 1	20 (81 %R)	21 (85 %R) (5 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
2,6-Dinitrotoluene	< 1	19 (75 %R)	20 (79 %R) (5 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzdine (estimated)	< 5	23 (92 %R)	20 (81 %R) (13 RPD)	1/5/2012	ug/l	15 - 168	20	625mod
3,3'-Dichlorobenzidine	< 1	19 (75 %R)	19 (76 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Pyridine	< 5	11 (45 %R)	11 (46 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Azobenzene	< 1	18 (71 %R)	18 (71 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod



# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Batch ID: 734507-32510/A010512E6251

Client Designation: **Merrimack Station**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Carbazole	< 1	20 (79 %R)	20 (81 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Dimethylphthalate	< 1	18 (73 %R)	18 (74 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Diethylphthalate	< 1	19 (76 %R)	19 (77 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Di-n-butylphthalate	< 5	19 (77 %R)	19 (76 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Butylbenzylphthalate	< 1	19 (76 %R)	19 (77 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
bis(2-Ethylhexyl)phthalate	< 5	19 (76 %R)	19 (76 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Di-n-octylphthalate	< 1	18 (73 %R)	19 (75 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Dibenzofuran	< 1	16 (66 %R)	17 (67 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Naphthalene	< 1	17 (67 %R)	17 (67 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
2-Methylnaphthalene	< 1	16 (62 %R)	16 (62 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Acenaphthylene	< 1	16 (63 %R)	16 (65 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Acenaphthene	< 1	17 (70 %R)	18 (71 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Fluorene	< 1	17 (70 %R)	18 (71 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Phenanthrene	< 1	19 (74 %R)	19 (76 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Anthracene	< 1	19 (77 %R)	19 (77 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Fluoranthene	< 1	19 (75 %R)	19 (76 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Pyrene	< 1	18 (73 %R)	18 (73 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzo[a]anthracene	< 1	19 (75 %R)	19 (76 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Chrysene	< 1	19 (77 %R)	19 (77 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzo[b]fluoranthene	< 1	19 (75 %R)	19 (77 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzo[k]fluoranthene	< 1	19 (77 %R)	20 (79 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzo[a]pyrene	< 1	19 (76 %R)	19 (77 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Indeno[1,2,3-cd]pyrene	< 1	19 (78 %R)	19 (77 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Dibenz[a,h]anthracene	< 1	20 (80 %R)	19 (77 %R) (4 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzo[g,h,i]perylene	< 1	20 (79 %R)	19 (77 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
2-Fluorophenol (surr)	39 %R	39 %R	39 %R	1/5/2012	% Rec	21 - 110	20	625mod
Phenol-d6 (surr)	28 %R	28 %R	29 %R	1/5/2012	% Rec	15 - 94	20	625mod
2,4,6-Tribromophenol (surr)	76 %R	92 %R	82 %R	1/5/2012	% Rec	15 - 110	20	625mod
Nitrobenzene-D5 (surr)	76 %R	75 %R	77 %R	1/5/2012	% Rec	35 - 114	20	625mod
2-Fluorobiphenyl (surr)	77 %R	73 %R	75 %R	1/5/2012	% Rec	43 - 116	20	625mod
p-Terphenyl-D14 (surr)	89 %R	95 %R	90 %R	1/5/2012	% 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.

Hexachlorocyclopentadiene exhibited recovery below acceptance limits in the LCS. Hexachlorocyclopentadiene was not detected in the sample.



# LABORATORY REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

---

<b>Sample ID:</b>	Treat Tank Eff Grab
<b>Lab Sample ID:</b>	106677.02
<b>Matrix:</b>	aqueous
<b>Date Sampled:</b>	1/5/12
<b>Date Received:</b>	1/5/12
<b>Units:</b>	mg/L
<b>Date of Extraction/Prep:</b>	1/9/12
<b>Date of Analysis:</b>	1/9/12
<b>Analyst:</b>	LAS
<b>Method:</b>	1664A
<b>Dilution Factor:</b>	1
<b>Oil &amp; Grease (HEM)</b>	< 5



# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Oil & Grease (HEM)	< 5	37 (93 %R)	33 (82 %R) (13 RPD)	1/9/2012	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. Any impact to data is addressed below.



# LABORATORY REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Sample ID: Treat Tank Eff  
Grab

Lab Sample ID: 106677.02  
Matrix: aqueous  
Date Sampled: 1/5/12  
Date Received: 1/5/12  
Units: ug/l  
Date of Extraction/Prep: 1/6/12  
Date of Analysis: 1/6/12  
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)	81 %R
DCB (surr)	96 %R





# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Batch ID: 734508-43146/A010612E608P1

Client Designation: **Merrimack Station**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
PCB-1016	< 0.3	2.0 (101 %R)	2.1 (106 %R) (5 RPD)	1/6/2012	ug/l	40 - 140	20	608
PCB-1221	< 0.3	< 0.3 (%R N/A)	< 0.3 (%R N/A) (RPD N/A)	1/6/2012	ug/l			608
PCB-1232	< 0.3	< 0.3 (%R N/A)	< 0.3 (%R N/A) (RPD N/A)	1/6/2012	ug/l			608
PCB-1242	< 0.3	< 0.3 (%R N/A)	< 0.3 (%R N/A) (RPD N/A)	1/6/2012	ug/l			608
PCB-1248	< 0.3	< 0.3 (%R N/A)	< 0.3 (%R N/A) (RPD N/A)	1/6/2012	ug/l			608
PCB-1254	< 0.3	< 0.3 (%R N/A)	< 0.3 (%R N/A) (RPD N/A)	1/6/2012	ug/l			608
PCB-1260	< 0.3	2.0 (102 %R)	2.1 (105 %R) (3 RPD)	1/6/2012	ug/l	40 - 140	20	608
TMX (surr)	84 %R	88 %R	90 %R	1/6/2012	% Rec	30 - 150		608
DCB (surr)	95 %R	101 %R	100 %R	1/6/2012	% 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#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

**Sample ID:** Treat Tank Eff Composite

**Lab Sample ID:** 106677.01

**Matrix:** aqueous

**Date Sampled:** 1/5/12

**Date Received:** 1/5/12

Solids Suspended	14
Solids Dissolved	21000
Fluoride	10
Sulfate	1200
Chloride	11000
Nitrate-N	100
Alkalinity Total (CaCO3)	180
Ammonia-N	0.92
BOD	< 6
COD	130
pH	7.3

Units	Analysis			Method	Analyst
	Date	Time			
mg/L	01/10/12	15:40	2540D	DLS	
mg/L	01/11/12	13:15	2540C	DLS	
mg/L	01/11/12	11:23	300.0	KL	
mg/L	01/11/12	11:23	300.0	KL	
mg/L	01/10/12	12:17	4500CIE	DLS	
mg/L	01/06/12	12:57	353.2	DLS	
mg/L	01/11/12	9:40	2320B	SEL	
mg/L	01/10/12	8:30	4500NH3D	SEL	
mg/L	01/06/12	14:05	5210B	SKC	
mg/L	01/12/12	10:20	H8000	SKC	
SU	01/05/12	15:10	4500H+B	NZ	

**Sample ID:** Treat Tank Eff Grab

**Lab Sample ID:** 106677.02

**Matrix:** aqueous

**Date Sampled:** 1/5/12

**Date Received:** 1/5/12

Cyanide Total	0.02
Sulfide	< 0.1
Sulfite	< 2
Total Residual Chlorine	< 0.05
Total Phenols	< 0.3

Units	Analysis			Method	Analyst
	Date	Time			
mg/L	01/11/12	8:45	4500CNE	KJR	
mg/L	01/11/12	13:20	8131HACH	KJR	
mg/L	01/05/12	17:30	377.1	JL	
mg/L	01/05/12	16:50	4500CIG	NZ	
mg/L	01/09/12	9:00	420.1	JCC	

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



# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Parameter Name	Blank	LCS	LCSD	Units	Date of Analysis	Limits	RPD	Method
Solids Suspended	< 5	90 (90 %R)	93 (93 %R) (3 RPD)	mg/L	1/10/12	90 - 110	20	2540D
Solids Dissolved	< 5	970 (97 %R)	NA	mg/L	1/11/12	85 - 115		2540C
Fluoride	< 0.1	2.0 (101 %R)	2.0 (101 %R) (0 RPD)	mg/L	1/11/12	90 - 110	20	300.0
Sulfate	< 1	21 (106 %R)	21 (103 %R) (3 RPD)	mg/L	1/11/12	90 - 110	20	300.0
Chloride	< 1	26 (103 %R)	26 (103 %R) (0 RPD)	mg/L	1/10/12	90 - 110	20	4500CIE
Nitrate-N	< 0.05	5.3 (106 %R)	5.3 (106 %R) (0 RPD)	mg/L	1/6/12	90 - 110	20	353.2
Alkalinity Total (CaCO3)	< 1	10 (99 %R)	10 (100 %R) (1 RPD)	mg/L	1/11/12	85 - 115	20	2320B
Cyanide Total	< 0.02	0.27 (106 %R)	0.23 (91 %R) (15 RPD)	mg/L	1/11/12	85 - 115	20	4500CNE
Ammonia-N	< 0.05	2.0 (100 %R)	2.1 (105 %R) (5 RPD)	mg/L	1/10/12	90 - 110	20	4500NH3DN
Sulfide	< 0.1	0.4 (98 %R)	0.4 (90 %R) (9 RPD)	mg/L	1/11/12	80 - 120	20	8131HACH
Sulfite	< 2	NA	NA	mg/L	1/5/12			377.1
Total Residual Chlorine	< 0.05	0.88 (101 %R)	0.87 (100 %R) (1 RPD)	mg/L	1/5/12	80 - 120	20	4500CIG
BOD	< 6	430 (109 %R)	390 (97 %R) (12 RPD)	mg/L	1/6/12	84 - 115	20	5210B
COD	< 10	100 (101 %R)	100 (98 %R) (3 RPD)	mg/L	1/12/12	85 - 115	20	H8000
Total Phenols	< 0.05	0.28 (112 %R)	0.27 (106 %R) (6 RPD)	mg/L	1/9/12	85 - 115	20	420.1
pH		6.0 (101 %R)	6.05 (101 %R) (0 RPD)	SU	1/5/12	5.95 - 6.07	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.



# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Parameter Name	Duplicate Parent ID	Duplicate Parent	Duplicate	Units	Date of Analysis	RPD	Method
Solids Suspended	106692.03	180	160 (13 RPD)	mg/L	1/10/12	20	2540D
Solids Dissolved		NA	NA	mg/L	1/11/12		2540C
Fluoride		NA	NA	mg/L	1/11/12	20	300.0
Sulfate		NA	NA	mg/L	1/11/12	20	300.0
Chloride		NA	NA	mg/L	1/10/12	20	4500CIE
Nitrate-N		NA	NA	mg/L	1/6/12	20	353.2
Alkalinity Total (CaCO3)		NA	NA	mg/L	1/11/12	20	2320B
Cyanide Total		NA	NA	mg/L	1/11/12	20	4500CNE
Ammonia-N	106627.02	13	13 (2 RPD)	mg/L	1/10/12	20	4500NH3D
Sulfide		NA	NA	mg/L	1/11/12	20	8131HACH
Sulfite	106677.02	< 2	< 2 (RPD N/A)	mg/L	1/5/12	20	377.1
Total Residual Chlorine		NA	NA	mg/L	1/5/12	20	4500CIG
BOD	106657.02	410	400 (3 RPD)	mg/L	1/6/12	20	5210B
COD		NA	NA	mg/L	1/12/12	20	H8000
Total Phenols		NA	NA	mg/L	1/9/12	20	420.1
pH	106649.01	6.3	6.3 (0 RPD)	SU	1/5/12	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.



# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Parameter Name	MS/MSD Parent ID	MS/MSD Parent	Matrix Spike	MSD	Date of Units Analysis	Limits	RPD	Method
Solids Suspended		NA	NA	NA	mg/L 1/10/12		20	2540D
Solids Dissolved		NA	NA	NA	mg/L 1/11/12			2540C
Fluoride		NA	NA	NA	mg/L 1/11/12		20	300.0
Sulfate		NA	NA	NA	mg/L 1/11/12		20	300.0
Chloride	106632.02	11	22 (110 %R)	22 (109 %R) (1 RPD)	mg/L 1/10/12	80-120	20	4500CIE
Nitrate-N	106678.01	1.2	12 (110 %R)	12 (109 %R) (1 RPD)	mg/L 1/6/12	80-120	20	353.2
Alkalinity Total (CaCO3)	106607.01	29	48 (98 %R)	NA	mg/L 1/11/12	80-120	20	2320B
Cyanide Total	106677.02	0.02	0.25 (93 %R)	0.23 (86 %R) (8 RPD)	mg/L 1/11/12	75-125	20	4500CNE
Ammonia-N	106627.02	13	16 (115 %R)	15 (85 %R) (30 RPD)	mg/L 1/10/12	80-120	20	4500NH3
Sulfide		NA	NA	NA	mg/L 1/11/12		20	8131HAC
Sulfite		NA	NA	NA	mg/L 1/5/12			377.1
Total Residual Chlorine		NA	NA	NA	mg/L 1/5/12		20	4500ClG
BOD	106657.02	410	760 (82 %R)	NA	mg/L 1/6/12	75-125	20	5210B
COD	106677.01	130	220 (92 %R)	230 (99 %R) (7 RPD)	mg/L 1/12/12	80-120	20	H8000
Total Phenols	106677.02	< 0.3	0.4 (42 %R)	0.4 (42 %R) (133 RPD)	mg/L 1/9/12	80-120	20	420.1
pH		NA	NA	NA	SU 1/5/12		10	4500H+B

Total Phenols: The MS and MSD recoveries were below acceptance criteria even when the parent sample was diluted indicating a matrix interference.

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.



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

11 January 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,

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

Liz Siska  
Project Manager



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
Treat Tank Eff Composite	1201073-01	Water	05-Jan-12 10:00	06-Jan-12 09:50
Treat Tank Eff Grab	1201073-02	Water	05-Jan-12 08:00	06-Jan-12 09:50

Frontier Global Sciences, Inc.

A handwritten signature in cursive script that reads "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.*

Page 1 of 26  
1201073 Final Report  
01/11/2012



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

## CASE NARRATIVE

### SAMPLE RECEIPT

Samples were received at Frontier Global Sciences (FGS) on January 6th, 2012. The samples were received intact, on-ice with temperatures measured at 3.4 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 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, Inc.

A handwritten signature in cursive script that reads "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.*

Page 2 of 26  
1201073 Final Report  
01/11/2012





### CHAIN OF CUSTODY FORMS

1201073

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

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



Page 1 of 1

1201073

Client: <u>1201073</u>		Contact: <u>John Siska</u>		Address: <u>414 Pontius Ave N</u>		Phone: <u>206-622-6960</u>		Fax: <u>206-622-6870</u>		E-mail: <u>info@FrontierGS.com</u>		Website: <u>http://www.FrontierGS.com</u>	
Project Name: <u>1201073</u>		Contract No: <u>3065P</u>		Report To: <u>John Siska</u>		Invoice To: <u>John Siska</u>		Address: <u>414 Pontius Ave N</u>		Phone: <u>206-622-6960</u>		Fax: <u>206-622-6870</u>	
E-mail: <u>john.siska@frontiergs.com</u>		E-mail: <u>john.siska@frontiergs.com</u>		E-mail: <u>john.siska@frontiergs.com</u>		E-mail: <u>john.siska@frontiergs.com</u>		E-mail: <u>john.siska@frontiergs.com</u>		E-mail: <u>john.siska@frontiergs.com</u>		E-mail: <u>john.siska@frontiergs.com</u>	
Engraved Bottle ID		Sample ID		# of Bottles		Matrix		Date & Time		Sampled By		Field Parameters: (VOC, SVOC, PCB, Other (%))	
1	1-201073	1-201073	1	Water	1/6/12	John Siska							
2	1-201073	1-201073	3	Water	1/6/12	John Siska							
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
For Laboratory Use Only		Matrix Codes: (W=Pure Water, WW=Water/Water, SW=Sea Water, SS=Soil and Sediment, TS=Plant and Animal Tissue, HC=Hydrocarbons, DT=Trip, O=Other)		Requisitioned By: <u>John Siska</u>		Received By: <u>John Siska</u>		Received By: <u>WPS</u>		Comments: <u>1-201073</u>		Cooler Temp: <u>2.4°C</u>	
COC Seal: <u>A10</u>		Comments: <u>1-201073</u>		Name: <u>John Siska</u>		Name: <u>John Siska</u>		Name: <u>WPS</u>		Organization: <u>EAI</u>		Organization: <u>WPS</u>	
Carrier: <u>UPS</u>		Date & Time: <u>1/6/12</u>		Date & Time: <u>1/6/12</u>		Date & Time: <u>1/6/12</u>		Date & Time: <u>1/6/12</u>		Date & Time: <u>1/6/12</u>		Date & Time: <u>1/6/12</u>	
# of Coolers: <u>110-4422</u>		By signing, you declare that you agree with FGS terms and conditions, and that you authorize FGS to perform the specified analyses.		Customer Approval: <u>John Siska</u>		Date: <u>1/6/12</u>		Date: <u>1/6/12</u>		Date: <u>1/6/12</u>		Date: <u>1/6/12</u>	

Rec'd by: Alexa Bahar, FGS, 1-6-12 11:07

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.

Page 3 of 26  
 1201073 Final Report  
 01/11/2012



## ANALYTICAL RESULTS

### Treat Tank Eff Composite

Matrix: Water

Laboratory ID: 1201073-01

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Aluminum	41.1	2.2	20.0	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Antimony	0.520	0.023	0.100	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Barium	300	0.14	1.00	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Beryllium	0.522	0.114	0.300	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Cadmium	0.207	0.021	0.100	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Calcium	5050000	16200	200000	µg/L	5000	F201077	2A10015	01/10/12	FGS-054	
Chromium	ND	0.04	0.50	µg/L	5	F201062	2A10002	01/09/12	FGS-054	U
Copper	ND	0.05	0.50	µg/L	5	F201062	2A10002	01/09/12	FGS-054	U
Iron	ND	6.5	50.0	µg/L	5	F201062	2A10002	01/09/12	FGS-054	U
Lead	ND	0.020	0.200	µg/L	5	F201062	2A10002	01/09/12	FGS-054	U
Manganese	293	0.74	10.0	µg/L	100	F201062	2A10002	01/09/12	FGS-054	
Molybdenum	140	0.03	0.30	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Nickel	8.03	0.04	0.50	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Silver	ND	0.030	0.100	µg/L	5	F201062	2A10002	01/09/12	FGS-054	U
Sodium	277000	115	2000	µg/L	100	F201062	2A10002	01/09/12	FGS-054	
Thallium	6.64	0.006	0.025	µg/L	5	F201062	2A10002	01/09/12	FGS-054	QB-01
Zinc	ND	0.08	1.00	µg/L	5	F201062	2A10002	01/09/12	FGS-054	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 4 of 26  
 1201073 Final Report  
 01/11/2012



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

## ANALYTICAL RESULTS

### Treat Tank Eff Grab

Matrix: Water

Laboratory ID: 1201073-02

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Arsenic	4.98	1.02	3.00	µg/L	20	F201062	2A10015	01/10/12	FGS-054	
Mercury	10.5	0.34	2.02	ng/L	4	F201063	2A09010	01/09/12	EPA 1631E	FB-1631
Selenium	74.0	3.88	12.0	µg/L	20	F201062	2A10015	01/10/12	FGS-054	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 5 of 26  
1201073 Final Report  
01/11/2012



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

### MATRIX DUPLICATES/TRIPPLICATES

SOURCE: 1201073-02

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-DUP1

Analyte	Sample Concentration ng/L	Duplicate Concentration ng/L	MRL	% RPD	RPD Limit	Method	Notes
Mercury	10.48	10.54	2.02	0.617	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 6 of 26  
1201073 Final Report  
01/11/2012

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

**SOURCE: 1201073-01**

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

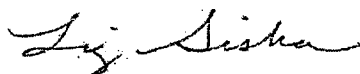
Lab Number: F201062-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Beryllium	0.522	2.0200	2.676	107	75 - 135	FGS-054	
Aluminum	41.1	151.50	210.7	112	80 - 115	FGS-054	
Chromium	0.47	7.0700	8.59	115	85 - 115	FGS-054	
Iron	ND	505.00	563.6	112	75 - 125	FGS-054	
Nickel	8.03	4.0400	11.98	97.7	68 - 134	FGS-054	
Copper	0.29	4.0400	4.00	91.8	51 - 145	FGS-054	
Zinc	0.27	10.100	9.10	87.4	46 - 146	FGS-054	
Arsenic	5.32	15.150	22.17	111	85 - 115	FGS-054	
Selenium	71.73	30.300	100.6	95.3	59 - 149	FGS-054	
Molybdenum	140.3	2.0200	142.1	88.8	80 - 115	FGS-054	
Silver	ND	1.5150	1.216	80.3	74 - 119	FGS-054	
Cadmium	0.207	0.80800	1.076	108	84 - 113	FGS-054	
Antimony	0.520	0.80800	1.360	104	79 - 122	FGS-054	
Barium	300.0	10.100	305.0	49.8	80 - 120	FGS-054	QM-02
Thallium	6.645	0.40400	6.882	58.7	64 - 137	FGS-054	QB-01, QM-02
Lead	ND	1.5150	1.635	108	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	2.639	105	1.39	75 - 135	20	FGS-054	
Aluminum	151.50	213.8	114	1.50	80 - 115	20	FGS-054	
Chromium	7.0700	8.59	115	0.0611	85 - 115	20	FGS-054	
Iron	505.00	553.8	110	1.76	75 - 125	20	FGS-054	
Nickel	4.0400	12.20	103	1.83	68 - 134	20	FGS-054	
Copper	4.0400	3.95	90.7	1.15	51 - 145	20	FGS-054	
Zinc	10.100	8.87	85.2	2.51	46 - 146	20	FGS-054	
Arsenic	15.150	22.81	115	2.84	85 - 115	20	FGS-054	
Selenium	30.300	110.8	129	9.65	59 - 149	20	FGS-054	
Molybdenum	2.0200	143.5	159	0.993	80 - 115	20	FGS-054	QM-02
Silver	1.5150	1.226	81.0	0.852	74 - 119	20	FGS-054	
Cadmium	0.80800	0.956	92.7	11.8	84 - 113	20	FGS-054	

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

Page 7 of 26  
1201073 Final Report  
01/11/2012



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

### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1201073-01

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201062-MS/MSD1

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Antimony	0.80800	1.373	106	0.924	79 - 122	20	FGS-054	
Barium	10.100	307.1	71.1	0.703	80 - 120	20	FGS-054	QM-02
Thallium	0.40400	6.918	67.6	0.520	64 - 137	20	FGS-054	QB-01
Lead	1.5150	1.580	104	3.44	72 - 143	20	FGS-054	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 8 of 26  
1201073 Final Report  
01/11/2012



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

**SOURCE: 1201073-01RE1**

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201062-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Sodium	277400	505.00	264500	-2560	75 - 125	FGS-054	QM-02
Manganese	293.1	6.0600	287.1	-98.7	80 - 120	FGS-054	QM-02

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Sodium	505.00	270000	-1460	2.06	75 - 125	20	FGS-054	QM-02
Manganese	6.0600	289.7	-55.3	0.912	80 - 120	20	FGS-054	QM-02

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.*

Page 9 of 26  
 1201073 Final Report  
 01/11/2012



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

**SOURCE: 1201073-01**

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201062-MS/MSD3

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Beryllium	0.522	10.100	10.96	103	75 - 135	FGS-054	AS
Aluminum	41.1	2020.0	2166	105	80 - 115	FGS-054	AS
Chromium	0.47	202.00	230.0	114	85 - 115	FGS-054	AS
Iron	ND	1010.0	1103	109	75 - 125	FGS-054	AS
Nickel	8.03	252.50	255.1	97.8	68 - 134	FGS-054	AS
Copper	0.29	252.50	224.5	88.8	51 - 145	FGS-054	AS
Zinc	0.27	505.00	422.7	83.7	46 - 146	FGS-054	AS
Arsenic	5.32	202.00	235.0	114	85 - 115	FGS-054	AS
Selenium	71.73	202.00	287.2	107	59 - 149	FGS-054	AS
Molybdenum	140.3	101.00	244.7	103	80 - 115	FGS-054	AS
Silver	ND	10.100	8.224	81.4	74 - 119	FGS-054	AS
Cadmium	0.207	20.200	19.18	93.9	84 - 113	FGS-054	AS
Antimony	0.520	10.100	11.16	105	79 - 122	FGS-054	AS
Barium	300.0	404.00	775.3	118	80 - 120	FGS-054	AS
Thallium	6.645	10.100	17.46	107	64 - 137	FGS-054	AS, QB-01
Lead	ND	50.500	51.95	103	72 - 143	FGS-054	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	10.100	11.25	106	2.66	75 - 135	20	FGS-054	AS
Aluminum	2020.0	2171	105	0.234	80 - 115	20	FGS-054	AS
Chromium	202.00	231.3	114	0.528	85 - 115	20	FGS-054	AS
Iron	1010.0	1112	110	0.802	75 - 125	20	FGS-054	AS
Nickel	252.50	255.9	98.2	0.346	68 - 134	20	FGS-054	AS
Copper	252.50	225.5	89.2	0.424	51 - 145	20	FGS-054	AS
Zinc	505.00	425.5	84.2	0.647	46 - 146	20	FGS-054	AS
Arsenic	202.00	236.5	114	0.629	85 - 115	20	FGS-054	AS
Selenium	202.00	287.0	107	0.0540	59 - 149	20	FGS-054	AS
Molybdenum	101.00	246.7	105	0.806	80 - 115	20	FGS-054	AS
Silver	10.100	8.290	82.1	0.798	74 - 119	20	FGS-054	AS
Cadmium	20.200	19.31	94.6	0.670	84 - 113	20	FGS-054	AS
Antimony	10.100	11.31	107	1.29	79 - 122	20	FGS-054	AS

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*

Page 10 of 26  
 1201073 Final Report  
 01/11/2012

Liz Siska, Project Manager





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

### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1201073-01

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201062-MS/MSD3

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Barium	404.00	779.8	119	0.575	80 - 120	20	FGS-054	AS
Thallium	10.100	17.56	108	0.595	64 - 137	20	FGS-054	AS, QB-01
Lead	50.500	52.16	103	0.399	72 - 143	20	FGS-054	AS

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 11 of 26  
1201073 Final Report  
01/11/2012



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

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

**SOURCE: 1201073-01RE1**

**Batch:** F201062

**Sequence:** 2A10002

**Preparation:** Closed Vessel Nitric Oven Digestion

**Lab Number:** F201062-MS/MSD4

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Sodium	277400	202000	474400	97.5	75 - 125	FGS-054	AS
Manganese	293.1	2020.0	2396	104	80 - 120	FGS-054	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Sodium	202000	480300	100	1.25	75 - 125	20	FGS-054	AS
Manganese	2020.0	2405	105	0.346	80 - 120	20	FGS-054	AS

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 12 of 26  
 1201073 Final Report  
 01/11/2012



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

**SOURCE: 1201073-02**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-MS/MSD1

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	10.48	20.400	31.36	102	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	20.400	27.08	81.4	14.7	71 - 125	24	EPA 1631E	

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.*

Page 13 of 26  
 1201073 Final Report  
 01/11/2012

Liz Siska, Project Manager



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

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

**SOURCE: 1112278-02**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-MS/MSD2

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	7.61	20.400	27.86	99.2	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	20.400	28.37	102	1.82	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 14 of 26  
 1201073 Final Report  
 01/11/2012



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

**SOURCE: 1201029-01**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-MS/MSD3

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	5.34	10.200	15.58	100	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	14.07	85.6	10.2	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 15 of 26  
 1201073 Final Report  
 01/11/2012



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

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

**SOURCE: 1201030-02**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-MS/MSD4

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	5.54	10.200	14.82	91.0	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	14.61	89.0	1.40	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 16 of 26  
 1201073 Final Report  
 01/11/2012



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

**SOURCE: 1201073-01RE2**

Batch: F201077

Sequence: 2A10015

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201077-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Calcium	5052000	1515.0	5067000	1010	70 - 130	FGS-054	QM-02

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Calcium	1515.0	5034000	-1190	0.660	70 - 130	20	FGS-054	QM-02

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.*

Page 17 of 26  
 1201073 Final Report  
 01/11/2012

Liz Siska, Project Manager



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

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

**SOURCE: 1201073-01RE2**

Batch: F201077

Sequence: 2A10015

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201077-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Calcium	5052000	10100000	15570000	104	70 - 130	FGS-054	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Calcium	10100000	15550000	104	0.125	70 - 130	20	FGS-054	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 18 of 26  
 1201073 Final Report  
 01/11/2012





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

**RECOVERY AND RPD**

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201062-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Beryllium	2.0000	2.039	102	75 - 135	FGS-054	
Sodium	500.00	487	97.4	80 - 120	FGS-054	
Aluminum	150.00	152.4	102	85 - 115	FGS-054	
Calcium	1500.0	1550	103	80 - 120	FGS-054	
Chromium	7.0000	6.82	97.4	85 - 115	FGS-054	
Manganese	6.0000	6.03	101	85 - 115	FGS-054	
Iron	500.00	481.5	96.3	80 - 120	FGS-054	
Nickel	4.0000	4.06	102	68 - 134	FGS-054	
Copper	4.0000	4.15	104	51 - 145	FGS-054	
Zinc	10.000	10.16	102	46 - 146	FGS-054	
Arsenic	15.000	15.38	103	85 - 115	FGS-054	
Selenium	30.000	31.50	105	59 - 149	FGS-054	
Molybdenum	2.0000	1.97	98.3	85 - 115	FGS-054	
Silver	1.5000	1.569	105	74 - 119	FGS-054	
Cadmium	0.80000	0.850	106	84 - 113	FGS-054	
Antimony	0.80000	0.866	108	79 - 122	FGS-054	
Barium	10.000	10.41	104	85 - 115	FGS-054	
Thallium	0.40000	0.433	108	64 - 134	FGS-054	
Lead	1.5000	1.611	107	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	2.078	104	1.91	75 - 135	20	FGS-054	
Sodium	500.00	496	99.2	1.88	80 - 120	20	FGS-054	
Aluminum	150.00	154.4	103	1.28	85 - 115	20	FGS-054	
Calcium	1500.0	1583	106	2.10	80 - 120	20	FGS-054	
Chromium	7.0000	6.95	99.3	1.90	85 - 115	20	FGS-054	
Manganese	6.0000	6.15	103	1.97	85 - 115	20	FGS-054	
Iron	500.00	494.6	98.9	2.69	80 - 120	20	FGS-054	

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*

Page 19 of 26  
 1201073 Final Report  
 01/11/2012

Liz Siska, Project Manager



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

**RECOVERY AND RPD**

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201062-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Nickel	4.0000	4.15	104	2.20	68 - 134	20	FGS-054	
Copper	4.0000	4.28	107	3.01	51 - 145	20	FGS-054	
Zinc	10.000	10.52	105	3.48	46 - 146	20	FGS-054	
Arsenic	15.000	15.69	105	2.00	85 - 115	20	FGS-054	
Selenium	30.000	32.57	109	3.35	59 - 149	20	FGS-054	
Molybdenum	2.0000	1.93	96.6	1.72	85 - 115	20	FGS-054	
Silver	1.5000	1.557	104	0.768	74 - 119	20	FGS-054	
Cadmium	0.80000	0.868	108	2.04	84 - 113	20	FGS-054	
Antimony	0.80000	0.872	109	0.661	79 - 122	20	FGS-054	
Barium	10.000	10.54	105	1.25	85 - 115	20	FGS-054	
Thallium	0.40000	0.443	111	2.27	64 - 134	20	FGS-054	
Lead	1.5000	1.641	109	1.85	72 - 143	20	FGS-054	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 20 of 26  
 1201073 Final Report  
 01/11/2012



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

**RECOVERY AND RPD**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-BS/BSD1

LCS Source: Nist 1641d

Analyte	Spike Added (ng/L)	LCS Concentration (ng/L)	LCS % Recovery	Recovery Limits	Method	Notes
Mercury	15.679	15.50	98.8	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	15.95	102	2.89	80 - 120	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 21 of 26  
 1201073 Final Report  
 01/11/2012



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

**RECOVERY AND RPD**

Batch: F201077

Sequence: 2A10015

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201077-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Calcium	1500.0	1517	101	80 - 120	FGS-054	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Calcium	1500.0	1571	105	3.47	80 - 120	20	FGS-054	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 22 of 26  
 1201073 Final Report  
 01/11/2012

## PREPARATION BLANKS

Instrument: Hg-17

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F201063-BLK1	Mercury	-0.009	0.50	ng/L	F201063	EPA 1631E	U
F201063-BLK2	Mercury	-0.006	0.50	ng/L	F201063	EPA 1631E	U
F201063-BLK3	Mercury	-0.02	0.50	ng/L	F201063	EPA 1631E	U
F201063-BLK4	Mercury	0.03	0.50	ng/L	F201063	EPA 1631E	U, QB-04
F201063-BLK5	Mercury	0.11	0.52	ng/L	F201063	EPA 1631E	U, QB-06

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.*



Page 23 of 26  
1201073 Final Report  
01/11/2012

Liz Siska, Project Manager



### PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F201062-BLK1	Beryllium	0.0002	0.060	µg/L	F201062	FGS-054	U
F201062-BLK1	Sodium	0.09	20	µg/L	F201062	FGS-054	U
F201062-BLK1	Aluminum	0.09	4.0	µg/L	F201062	FGS-054	U
F201062-BLK1	Calcium	0.5	40	µg/L	F201062	FGS-054	U
F201062-BLK1	Chromium	0.03	0.10	µg/L	F201062	FGS-054	U
F201062-BLK1	Manganese	-0.002	0.10	µg/L	F201062	FGS-054	U
F201062-BLK1	Iron	-0.06	10.0	µg/L	F201062	FGS-054	U
F201062-BLK1	Nickel	0.004	0.10	µg/L	F201062	FGS-054	U
F201062-BLK1	Copper	-0.0003	0.10	µg/L	F201062	FGS-054	U
F201062-BLK1	Zinc	0.04	0.20	µg/L	F201062	FGS-054	U
F201062-BLK1	Arsenic	-0.07	0.15	µg/L	F201062	FGS-054	U
F201062-BLK1	Selenium	0.003	0.60	µg/L	F201062	FGS-054	U
F201062-BLK1	Molybdenum	0.005	0.06	µg/L	F201062	FGS-054	U
F201062-BLK1	Silver	0.0002	0.020	µg/L	F201062	FGS-054	U
F201062-BLK1	Cadmium	-0.00002	0.020	µg/L	F201062	FGS-054	U
F201062-BLK1	Antimony	-0.0003	0.020	µg/L	F201062	FGS-054	U
F201062-BLK1	Barium	-0.04	0.20	µg/L	F201062	FGS-054	U
F201062-BLK1	Thallium	0.007	0.005	µg/L	F201062	FGS-054	QB-10
F201062-BLK1	Lead	0.003	0.040	µg/L	F201062	FGS-054	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 24 of 26  
 1201073 Final Report  
 01/11/2012



### PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2A10015

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F201077-BLK1	Calcium	0.2	40	µg/L	F201077	FGS-054	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 25 of 26  
1201073 Final Report  
01/11/2012



## 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-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-06 The blank was preserved to 5% BrCl rather than 1%. The control limit for blanks preserved to greater than 1% BrCl is the preservation percentage multiplied by the MRL.
- 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-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.
- FB-1631 Required equipment/field/filter blank not submitted by the client. The sample has been analyzed according to 1631E, but does not meet 1631E criteria
- 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

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 26 of 26  
1201073 Final Report  
01/11/2012









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



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 107555  
Client Identification: Merrimack Station  
Date Received: 1/5/2012

Dear Mr. Pepler :

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 Method 200.8  
(Al,Sb,Ba,Be,Cd,Ca,Cr,Cu,Fe,Pb,Mn,Mo,Na,Ni,Ag,Tl,Zn,As,Se & Hg)

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

4/25/12  
Date

29  
# of pages (excluding cover letter)

**REVISED**  
PN6 4/25/12



# SAMPLE CONDITIONS PAGE

EAI ID#: 107555

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

Client Designation: **Merrimack Station**

**Temperature upon receipt (°C): 4.7**

**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)
107555.01	Treat Tank Eff Composite	1/5/12	1/5/12	aqueous		Adheres to Sample Acceptance Policy
107555.02	Treat Tank Eff Grab	1/5/12	1/5/12	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



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

25 April 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,

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

Liz Siska  
Project Manager



### 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
Treat Tank Eff Composite	1201073-01	Water	05-Jan-12 10:00	06-Jan-12 09:50
Treat Tank Eff Grab	1201073-02	Water	05-Jan-12 08:00	06-Jan-12 09:50

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



## CASE NARRATIVE

Revised Report 4/25/12:

Per client request Boron was removed from report.

Revised Report 3/28/12:

Per client request samples were prepared and analyzed for total metals in accordance with EPA 200.8 (modified).

### SAMPLE RECEIPT

Samples were received at Frontier Global Sciences (FGS) on January 6th, 2012. The samples were received intact, on-ice with temperatures measured at 3.4 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 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, 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



### CHAIN OF CUSTODY FORMS

1261073



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

414 Point St. N. Suite 400 Bothell  
 Phone: 206-422-6866  
 Fax: 206-422-6896  
 Email: info@frontiersci.com  
 http://www.FrontierGS.com

1201072

Page 4 of 1

Client Name: <u>Alloya Energy, Inc.</u>		Project: <u>Phase 1 - 1201072</u>		Requester: <u>Alloya Energy, Inc.</u>		Requester Title: <u>Project Manager</u>		Requester Phone: <u>206-422-6866</u>		Requester Email: <u>info@frontiersci.com</u>	
Address: <u>1201072</u>		City: <u>Bothell, WA</u>		State: <u>WA</u>		Zip: <u>98011</u>		Country: <u>USA</u>		Date of Report: <u>04/25/2012</u>	
Report To: <u>Alloya Energy, Inc.</u>		Sample For: <u>Phase 1 - 1201072</u>		Sample ID: <u>22652</u>		Sample Location: <u>Phase 1 - 1201072</u>		Sample Date: <u>04/25/2012</u>		Sample Time: <u>15:10:54</u>	
Address: <u>1201072</u>		City: <u>Bothell, WA</u>		State: <u>WA</u>		Zip: <u>98011</u>		Country: <u>USA</u>		Date of Report: <u>04/25/2012</u>	
Phone: <u>206-422-6866</u>		Fax: <u>206-422-6896</u>		Email: <u>info@frontiersci.com</u>		Website: <u>http://www.FrontierGS.com</u>		Requester: <u>Alloya Energy, Inc.</u>		Requester Title: <u>Project Manager</u>	
No.		Engraved Bottle ID		Sample ID		# of Bottles		Date & Time		Comments	
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
For Laboratory Use Only		Method Code:		Requested By:		Requested By:		Requested By:		Requested By:	
FSC Serial: <u>120</u>		Comments: <u>1201072</u>		Name: <u>Alloya Energy, Inc.</u>		Name: <u>Alloya Energy, Inc.</u>		Name: <u>Alloya Energy, Inc.</u>		Name: <u>Alloya Energy, Inc.</u>	
Cycler Temp: <u>4°C</u>		FSC Part No: <u>1201072</u>		Name: <u>Alloya Energy, Inc.</u>		Name: <u>Alloya Energy, Inc.</u>		Name: <u>Alloya Energy, Inc.</u>		Name: <u>Alloya Energy, Inc.</u>	
Current: <u>EMPS</u>		FSC Part No: <u>1201072</u>		Name: <u>Alloya Energy, Inc.</u>		Name: <u>Alloya Energy, Inc.</u>		Name: <u>Alloya Energy, Inc.</u>		Name: <u>Alloya Energy, Inc.</u>	
FSC Part No: <u>1201072</u>		FSC Part No: <u>1201072</u>		Name: <u>Alloya Energy, Inc.</u>		Name: <u>Alloya Energy, Inc.</u>		Name: <u>Alloya Energy, Inc.</u>		Name: <u>Alloya Energy, Inc.</u>	
# of Closures: <u>1201072</u>		FSC Part No: <u>1201072</u>		Name: <u>Alloya Energy, Inc.</u>		Name: <u>Alloya Energy, Inc.</u>		Name: <u>Alloya Energy, Inc.</u>		Name: <u>Alloya Energy, Inc.</u>	
Storage Location: <u>1201072</u>		FSC Part No: <u>1201072</u>		Name: <u>Alloya Energy, Inc.</u>		Name: <u>Alloya Energy, Inc.</u>		Name: <u>Alloya Energy, Inc.</u>		Name: <u>Alloya Energy, Inc.</u>	
By signing, you declare that you agree with FGS terms and conditions, and that you authorize FGS to perform the specified analyses.		Signature: <u>[Signature]</u>		Signature: <u>[Signature]</u>		Signature: <u>[Signature]</u>		Signature: <u>[Signature]</u>		Signature: <u>[Signature]</u>	

Rec'd by: A. B. R. Alloya Energy, Inc., 1-6-12, 11:07

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

Liz Siska, Project Manager





## ANALYTICAL RESULTS

### Treat Tank Eff Composite

Matrix: Water

Laboratory ID: 1201073-01

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Aluminum	ND	8.9	80.0	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	U
Antimony	<b>0.408</b>	0.092	0.400	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	
Barium	<b>240</b>	0.54	4.00	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	
Beryllium	ND	0.454	1.20	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	U
Cadmium	ND	0.083	0.400	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	U
Calcium	<b>5010000</b>	16200	200000	µg/L	5000	F203271	2C22005	03/22/12	EPA 200.8 Mod	
Chromium	ND	0.18	2.00	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	U
Copper	ND	0.20	2.00	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	U
Iron	ND	26.0	200	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	U
Lead	ND	0.078	0.800	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	U
Manganese	<b>280</b>	0.15	2.00	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	
Molybdenum	<b>134</b>	0.12	1.20	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	
Nickel	<b>9.79</b>	0.16	2.00	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	
Silver	ND	0.120	0.400	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	U
Sodium	<b>259000</b>	23	400	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	
Thallium	<b>5.56</b>	0.250	1.00	µg/L	100	F203314	2C25005	03/25/12	EPA 200.8 Mod	
Zinc	ND	0.33	4.00	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	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



## ANALYTICAL RESULTS

### Treat Tank Eff Grab

Matrix: Water

Laboratory ID: 1201073-02

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Arsenic	8.51	1.02	3.00	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	
Mercury	10.5	0.34	2.02	ng/L	4	F201063	2A09010	01/09/12	EPA 1631E	FB-1631
Selenium	68.9	3.88	12.0	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



### MATRIX DUPLICATES/TRIPPLICATES

SOURCE: 1201073-02

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-DUP1

Analyte	Sample Concentration ng/L	Duplicate Concentration ng/L	MRL	% RPD	RPD Limit	Method	Notes
Mercury	10.48	10.54	2.02	0.617	24	EPA 1631E	

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



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

**SOURCE: 1201073-02**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-MS/MSD1

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	10.48	20.400	31.36	102	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	20.400	27.08	81.4	14.7	71 - 125	24	EPA 1631E	

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



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

**SOURCE: 1112278-02**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-MS/MSD2

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	7.61	20.400	27.86	99.2	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	20.400	28.37	102	1.82	71 - 125	24	EPA 1631E	

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



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

**SOURCE: 1201029-01**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-MS/MSD3

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	5.34	10.200	15.58	100	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	14.07	85.6	10.2	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

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

**SOURCE: 1201030-02**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

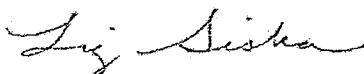
Lab Number: F201063-MS/MSD4

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	5.54	10.200	14.82	91.0	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	14.61	89.0	1.40	71 - 125	24	EPA 1631E	

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



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

**SOURCE: 1201073-01RE3**

Batch: F203271

Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203271-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Calcium	5013000	1515.0	4802000	-13900	70 - 130	EPA 200.8 Mod	QM-02

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Calcium	1515.0	4943000	-4600	2.89	70 - 130	20	EPA 200.8 Mod	QM-02

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



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

**SOURCE: 1201073-01RE4**

Batch: F203271

Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

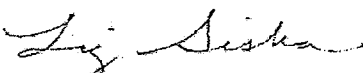
Lab Number: F203271-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Beryllium	0.507	2.0200	2.442	95.8	70 - 130	EPA 200.8 Mod	
Sodium	258800	505.00	257700	-213	70 - 130	EPA 200.8 Mod	QM-02
Aluminum	52.9	151.50	202.3	98.6	70 - 130	EPA 200.8 Mod	
Chromium	0.57	7.0700	8.04	106	70 - 130	EPA 200.8 Mod	
Manganese	280.5	6.0600	283.4	47.6	70 - 130	EPA 200.8 Mod	QM-02
Iron	ND	505.00	520.0	103	70 - 130	EPA 200.8 Mod	
Nickel	9.79	4.0400	14.11	107	70 - 130	EPA 200.8 Mod	
Copper	0.55	4.0400	4.34	93.9	70 - 130	EPA 200.8 Mod	
Zinc	0.40	10.100	8.42	79.4	70 - 130	EPA 200.8 Mod	
Arsenic	10.30	15.150	24.18	91.6	70 - 130	EPA 200.8 Mod	
Selenium	63.40	30.300	89.73	86.9	70 - 130	EPA 200.8 Mod	
Molybdenum	133.8	2.0200	136.7	142	70 - 130	EPA 200.8 Mod	QM-02
Silver	ND	1.5150	1.388	91.6	70 - 130	EPA 200.8 Mod	
Cadmium	0.332	0.80800	1.105	95.6	70 - 130	EPA 200.8 Mod	
Antimony	0.408	0.80800	1.259	105	70 - 130	EPA 200.8 Mod	
Barium	239.7	10.100	249.5	96.8	70 - 130	EPA 200.8 Mod	
Lead	ND	1.5150	1.542	102	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	2.0200	2.561	102	4.74	70 - 130	20	EPA 200.8 Mod	
Sodium	505.00	257100	-336	0.243	70 - 130	20	EPA 200.8 Mod	QM-02
Aluminum	151.50	203.4	99.3	0.564	70 - 130	20	EPA 200.8 Mod	
Chromium	7.0700	7.73	101	3.85	70 - 130	20	EPA 200.8 Mod	
Manganese	6.0600	285.2	76.9	0.625	70 - 130	20	EPA 200.8 Mod	
Iron	505.00	518.7	103	0.242	70 - 130	20	EPA 200.8 Mod	
Nickel	4.0400	13.81	99.5	2.13	70 - 130	20	EPA 200.8 Mod	
Copper	4.0400	4.19	90.2	3.47	70 - 130	20	EPA 200.8 Mod	
Zinc	10.100	9.16	86.8	8.49	70 - 130	20	EPA 200.8 Mod	
Arsenic	15.150	22.25	78.9	8.31	70 - 130	20	EPA 200.8 Mod	
Selenium	30.300	94.00	101	4.64	70 - 130	20	EPA 200.8 Mod	
Molybdenum	2.0200	136.6	137	0.0771	70 - 130	20	EPA 200.8 Mod	QM-02

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



### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1201073-01RE4

Batch: F203271

Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203271-MS/MSD2

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	1.5150	1.387	91.5	0.0874	70 - 130	20	EPA 200.8 Mod	
Cadmium	0.80800	1.061	90.2	4.03	70 - 130	20	EPA 200.8 Mod	
Antimony	0.80800	1.274	107	1.21	70 - 130	20	EPA 200.8 Mod	
Barium	10.100	251.4	116	0.781	70 - 130	20	EPA 200.8 Mod	
Lead	1.5150	1.534	101	0.525	70 - 130	20	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

**SOURCE: 1201073-01RE3**

Batch: F203271

Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203271-MS/MSD3

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Calcium	5013000	10100000	15120000	100	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Calcium	10100000	16140000	110	6.53	70 - 130	20	EPA 200.8 Mod	AS

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



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

**SOURCE: 1201073-01RE4**

Batch: F203271

Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203271-MS/MSD4

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Beryllium	0.507	20.200	20.41	98.5	70 - 130	EPA 200.8 Mod	AS
Sodium	258800	40400	292900	84.5	70 - 130	EPA 200.8 Mod	AS
Aluminum	52.9	4040.0	3956	96.6	70 - 130	EPA 200.8 Mod	AS
Chromium	0.57	404.00	430.1	106	70 - 130	EPA 200.8 Mod	AS
Manganese	280.5	404.00	704.2	105	70 - 130	EPA 200.8 Mod	AS
Iron	ND	2020.0	2121	105	70 - 130	EPA 200.8 Mod	AS
Nickel	9.79	505.00	511.2	99.3	70 - 130	EPA 200.8 Mod	AS
Copper	0.55	505.00	475.4	94.0	70 - 130	EPA 200.8 Mod	AS
Zinc	0.40	1010.0	907.4	89.8	70 - 130	EPA 200.8 Mod	AS
Arsenic	10.30	404.00	431.7	104	70 - 130	EPA 200.8 Mod	AS
Selenium	63.40	404.00	468.8	100	70 - 130	EPA 200.8 Mod	AS
Molybdenum	133.8	202.00	338.1	101	70 - 130	EPA 200.8 Mod	AS
Silver	ND	20.200	18.50	91.6	70 - 130	EPA 200.8 Mod	AS
Cadmium	0.332	40.400	39.37	96.6	70 - 130	EPA 200.8 Mod	AS
Antimony	0.408	20.200	20.91	102	70 - 130	EPA 200.8 Mod	AS
Barium	239.7	808.00	1056	101	70 - 130	EPA 200.8 Mod	AS
Lead	ND	101.00	99.32	98.3	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	20.200	20.07	96.8	1.71	70 - 130	20	EPA 200.8 Mod	AS
Sodium	40400	292600	83.7	0.114	70 - 130	20	EPA 200.8 Mod	AS
Aluminum	4040.0	3954	96.6	0.0362	70 - 130	20	EPA 200.8 Mod	AS
Chromium	404.00	428.7	106	0.337	70 - 130	20	EPA 200.8 Mod	AS
Manganese	404.00	694.4	102	1.40	70 - 130	20	EPA 200.8 Mod	AS
Iron	2020.0	2077	103	2.11	70 - 130	20	EPA 200.8 Mod	AS
Nickel	505.00	512.6	99.6	0.276	70 - 130	20	EPA 200.8 Mod	AS
Copper	505.00	470.7	93.1	0.997	70 - 130	20	EPA 200.8 Mod	AS
Zinc	1010.0	905.9	89.6	0.166	70 - 130	20	EPA 200.8 Mod	AS
Arsenic	404.00	429.9	104	0.419	70 - 130	20	EPA 200.8 Mod	AS
Selenium	404.00	468.2	100	0.141	70 - 130	20	EPA 200.8 Mod	AS
Molybdenum	202.00	336.5	100	0.473	70 - 130	20	EPA 200.8 Mod	AS

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



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

**SOURCE: 1201073-01RE4**

Batch: F203271

Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203271-MS/MSD4

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	20.200	18.95	93.8	2.42	70 - 130	20	EPA 200.8 Mod	AS
Cadmium	40.400	39.33	96.5	0.104	70 - 130	20	EPA 200.8 Mod	AS
Antimony	20.200	21.07	102	0.736	70 - 130	20	EPA 200.8 Mod	AS
Barium	808.00	1058	101	0.205	70 - 130	20	EPA 200.8 Mod	AS
Lead	101.00	98.77	97.8	0.549	70 - 130	20	EPA 200.8 Mod	AS

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



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

**SOURCE: 1201073-01RE6**

Batch: F203314

Sequence: 2C25005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203314-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Thallium	5.563	0.40400	5.875	77.3	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Thallium	0.40400	5.880	78.5	0.0859	70 - 130	20	EPA 200.8 Mod	

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



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

**SOURCE: 1201073-01RE6**

Batch: F203314

Sequence: 2C25005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203314-MS/MSD4

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Thallium	5.563	101.00	103.3	96.8	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Thallium	101.00	103.7	97.1	0.341	70 - 130	20	EPA 200.8 Mod	AS

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



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

**RECOVERY AND RPD**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-BS/BSD1

LCS Source: Nist 1641d

Analyte	Spike Added (ng/L)	LCS Concentration (ng/L)	LCS % Recovery	Recovery Limits	Method	Notes
Mercury	15.679	15.50	98.8	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	15.95	102	2.89	80 - 120	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

**RECOVERY AND RPD**

Batch: F203271

Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203271-BS/BSD1

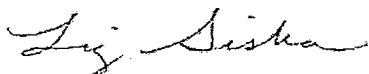
LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Beryllium	2.0000	1.930	96.5	85 - 115	EPA 200.8 Mod	
Sodium	500.00	499	99.8	85 - 115	EPA 200.8 Mod	
Aluminum	150.00	146.0	97.3	85 - 115	EPA 200.8 Mod	
Calcium	1500.0	1528	102	85 - 115	EPA 200.8 Mod	
Chromium	7.0000	6.57	93.9	85 - 115	EPA 200.8 Mod	
Manganese	6.0000	5.86	97.6	85 - 115	EPA 200.8 Mod	
Iron	500.00	475.3	95.1	85 - 115	EPA 200.8 Mod	
Nickel	4.0000	4.01	100	85 - 115	EPA 200.8 Mod	
Copper	4.0000	4.18	105	85 - 115	EPA 200.8 Mod	
Zinc	10.000	10.33	103	85 - 115	EPA 200.8 Mod	
Arsenic	15.000	14.37	95.8	85 - 115	EPA 200.8 Mod	
Selenium	30.000	29.66	98.9	85 - 115	EPA 200.8 Mod	
Molybdenum	2.0000	1.81	90.5	85 - 115	EPA 200.8 Mod	
Silver	1.5000	1.517	101	85 - 115	EPA 200.8 Mod	
Cadmium	0.80000	0.781	97.6	85 - 115	EPA 200.8 Mod	
Antimony	0.80000	0.815	102	85 - 115	EPA 200.8 Mod	
Barium	10.000	9.69	96.9	85 - 115	EPA 200.8 Mod	
Lead	1.5000	1.597	106	85 - 115	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	2.0000	1.949	97.4	0.955	85 - 115	20	EPA 200.8 Mod	
Sodium	500.00	500	100	0.216	85 - 115	20	EPA 200.8 Mod	
Aluminum	150.00	148.5	99.0	1.71	85 - 115	20	EPA 200.8 Mod	
Calcium	1500.0	1544	103	1.03	85 - 115	20	EPA 200.8 Mod	
Chromium	7.0000	6.67	95.3	1.48	85 - 115	20	EPA 200.8 Mod	
Manganese	6.0000	5.96	99.4	1.75	85 - 115	20	EPA 200.8 Mod	
Iron	500.00	485.2	97.0	2.06	85 - 115	20	EPA 200.8 Mod	
Nickel	4.0000	4.02	101	0.246	85 - 115	20	EPA 200.8 Mod	

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



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

**RECOVERY AND RPD**

Batch: F203271

Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203271-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Copper	4.0000	4.28	107	2.24	85 - 115	20	EPA 200.8 Mod	
Zinc	10.000	10.39	104	0.570	85 - 115	20	EPA 200.8 Mod	
Arsenic	15.000	14.52	96.8	0.977	85 - 115	20	EPA 200.8 Mod	
Selenium	30.000	30.15	101	1.66	85 - 115	20	EPA 200.8 Mod	
Molybdenum	2.0000	1.82	91.0	0.564	85 - 115	20	EPA 200.8 Mod	
Silver	1.5000	1.502	100	1.03	85 - 115	20	EPA 200.8 Mod	
Cadmium	0.80000	0.828	103	5.85	85 - 115	20	EPA 200.8 Mod	
Antimony	0.80000	0.808	101	0.848	85 - 115	20	EPA 200.8 Mod	
Barium	10.000	9.86	98.6	1.77	85 - 115	20	EPA 200.8 Mod	
Lead	1.5000	1.620	108	1.42	85 - 115	20	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

**RECOVERY AND RPD**

Batch: F203314

Sequence: 2C25005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203314-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Thallium	0.40000	0.396	98.9	85 - 115	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Thallium	0.40000	0.391	97.8	1.12	85 - 115	20	EPA 200.8 Mod	

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



### PREPARATION BLANKS

Instrument: Hg-17

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F201063-BLK1	Mercury	-0.009	0.50	ng/L	F201063	EPA 1631E	U
F201063-BLK2	Mercury	-0.006	0.50	ng/L	F201063	EPA 1631E	U
F201063-BLK3	Mercury	-0.02	0.50	ng/L	F201063	EPA 1631E	U
F201063-BLK4	Mercury	0.03	0.50	ng/L	F201063	EPA 1631E	U, QB-04
F201063-BLK5	Mercury	0.11	0.52	ng/L	F201063	EPA 1631E	U, QB-06

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

## PREPARATION BLANKS

Instrument: ICPMS-6

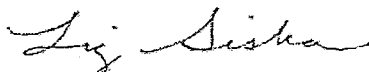
Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F203271-BLK1	Beryllium	0.00008	0.060	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Sodium	2	20	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Aluminum	-0.04	4.0	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Calcium	1	40	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Chromium	-0.02	0.10	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Manganese	0.01	0.10	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Iron	-0.02	10.0	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Nickel	0.004	0.10	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Copper	0.003	0.10	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Zinc	0.007	0.20	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Arsenic	-0.06	0.15	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Selenium	-0.02	0.60	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Molybdenum	0.01	0.06	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Silver	-0.0005	0.020	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Cadmium	0.004	0.020	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Antimony	0.002	0.020	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Barium	0.01	0.20	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Lead	0.010	0.040	µg/L	F203271	EPA 200.8 Moc	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



### PREPARATION BLANKS

Instrument: ICPMS-3

Sequence: 2C25005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F203314-BLK1	Thallium	0.0007	0.010	µg/L	F203314	EPA 200.8 Moc	U

Frontier Global Sciences, Inc.

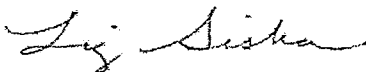
Liz Siska, Project Manager

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

## 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-06 The blank was preserved to 5% BrCl rather than 1%. The control limit for blanks preserved to greater than 1% BrCl is the preservation percentage multiplied by the MRL.
- 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.
- FB-1631 Required equipment/field/filter blank not submitted by the client. The sample has been analyzed according to 1631E, but does not meet 1631E criteria
- 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

Frontier Global Sciences, Inc.



Liz Siska, Project Manager

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







# eastern analytical

*professional laboratory services*

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



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](http://www.eailabs.com) for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:  
Solid samples are reported on a dry weight basis, unless otherwise noted  
< : "less than" followed by the reporting limit  
> : "greater than" followed by the reporting limit  
%R : % Recovery

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

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

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

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

Sincerely,

Lorraine Olashaw, Lab Director

2-8-12

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



# 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 Analysis:** 1/27/12**Analyst:** KJP**Method:** 624**Dilution Factor:** 1

Chloromethane &lt; 5

Vinyl chloride &lt; 2

Bromomethane &lt; 2

Chloroethane &lt; 5

Trichlorofluoromethane &lt; 5

Acrolein &lt; 50

Acetone &lt; 50

1,1-Dichloroethene &lt; 1

Methylene chloride &lt; 5

Carbon disulfide &lt; 5

Acrylonitrile &lt; 50

Methyl-t-butyl ether(MTBE) &lt; 10

trans-1,2-Dichloroethene &lt; 2

Vinyl acetate &lt; 10

1,1-Dichloroethane &lt; 2

cis-1,2-Dichloroethene &lt; 2

2-Butanone(MEK) &lt; 10

Chloroform &lt; 2

1,1,1-Trichloroethane &lt; 2

Carbon tetrachloride &lt; 2

Benzene &lt; 1

1,2-Dichloroethane &lt; 2

Trichloroethene &lt; 2

1,2-Dichloropropane &lt; 2

Bromodichloromethane &lt; 2

2-Chloroethylvinylether &lt; 2

4-Methyl-2-pentanone(MIBK) &lt; 10

cis-1,3-Dichloropropene &lt; 2

Toluene 2

trans-1,3-Dichloropropene &lt; 2

1,1,2-Trichloroethane &lt; 2

2-Hexanone &lt; 10

Tetrachloroethene &lt; 2

Dibromochloromethane &lt; 2

Chlorobenzene &lt; 2

Ethylbenzene &lt; 1

mp-Xylene &lt; 1

o-Xylene &lt; 1

Styrene &lt; 1

Bromoform &lt; 2

1,1,2,2-Tetrachloroethane &lt; 2

1,3-Dichlorobenzene &lt; 1

1,4-Dichlorobenzene &lt; 1

1,2-Dichlorobenzene &lt; 1

4-Bromofluorobenzene (surr) 93 %R

1,2-Dichlorobenzene-d4 (surr) 106 %R

Toluene-d8 (surr) 99 %R



# QC REPORT

EAI ID#: 107170

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



# QC REPORT

EAI ID#: 107170

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.  
\*/! Flagged analyte recoveries deviated from the QA/QC limits. Any impact to data is addressed below.



# 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/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



# 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/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



# QC REPORT

EAI ID#: 107170

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
Benzdine (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





# QC REPORT

EAI ID#: 107170

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.



# 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:** 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



# QC REPORT

EAI ID#: 107170

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.  
 \*/I 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

Fluoride	6.2
Chloride	9500
Nitrate-N	68
Cyanide Total	0.01
Ammonia-N	1.2
BOD	< 6
COD	180
Total Phenols	< 0.5
pH	7.6

Units	Analysis		Method	Analyst
	Date	Time		
mg/L	2/01/12	13:35	300.0	KL
mg/L	1/30/12	13:33	4500CIE	DLS
mg/L	1/27/12	9:15	353.2	DLS
mg/L	1/31/12	9:15	4500CNE	KJR
mg/L	1/30/12	15:15	4500NH3D	SEL
mg/L	1/27/12	17:30	5210B	SKC
mg/L	2/02/12	16:15	H8000	SKC
mg/L	1/31/12	9:00	420.1	JCC
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 2/8/2012 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.



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,

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

Liz Siska  
Project Manager





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.

A handwritten signature in cursive script that reads "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.*

Page 1 of 19  
1201361 Final Report  
02/03/2012



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

## 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, 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.*

Page 2 of 19  
1201361 Final Report  
02/03/2012



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

### CHAIN OF CUSTODY FORMS

1201361



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

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

Page 1 of 1

1201361

Client: Eastern Analytical, Inc. Address: 25 Cheney Drive Concord, NH 03301		Contact: Jeff Engle Phone: 603-228-2850 Fax: 603-228-4591 E-mail: jeff@eastlabs.com Contract/PO: 27732		Report To: Same Address: Same Phone: 603-228-6525 Fax: 603-228-4591 E-mail: CustomerService@eastlabs.com		Invoice To: Same Address: Same Phone: Fax:		Analyses Requested		FGS PM: Liz Siska Date: 1/26/12 TAT (business days): 20 (std) 15 @ 5 4 3 2 24 hrs. (For TAT - 10 days, contact PM Discounts apply for expedited TAT) Saturday delivery? <input type="checkbox"/> Y <input type="checkbox"/> N (If yes, please contact PM) EOD <input checked="" type="checkbox"/> Y <input type="checkbox"/> N QA <input type="checkbox"/> Standard <input type="checkbox"/> High	
No.	Engraved Bottle ID	Sample ID	# of Bottles	Matrix	Date & Time	Sampled By	Field Filtered (Y/N)	Field Preserved: HNO <sub>3</sub> HCl BCl Other (%)	Total Metals	Comments	
1	C-3024	Effluent field blank	1	AW	1/26/12 08:00	JSE	N	-	X	1) Metals Inc. (As, Al, Sb, Ag, Ba, Bi, Cd, Cr, Cu, Fe, Pb, Mn, Hg, Mo, Ni, Se, As, Ti, Zn)	
2	C-3024	Treat Tank Effluent	3	WW	1/26/12 08:00	JSE	N	-	X	2) Please use certified cell - Field effluent 3) Project - Specific methods add: sample volume provided.	
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
For Laboratory Use Only		Matrix Codes:		Relinquished By:		Received By:		Received By:			
COC Seal: 10		FW: Fresh Water		Name: Jeff Engle		Name: Jennifer Clark		Name: WPS			
Cooler Temp: 2.9°C		WW: Waste Water		Organization: Eastern Analytical		Organization: EAT		Organization: WPS			
Carrier: UPS		SB: Sea and Brackish Water		Date & Time: 1/26/12 10:45		Date & Time: 1/26/12 10:45		Date & Time: 1/26/12 15:30			
VTSR: 0927		SS: Soil and Sediment		Tracking number: 1E X 46 549 13 9827 4534							
# of Coolers: 1 (ONE)		TS: Plant and Animal Tissue									
		HC: Hydrocarbons									
		TR: Trap									
		OT: Other									
Sample Disposal: <input type="checkbox"/> Return (shipping fees may apply) <input type="checkbox"/> Standard Disposal - 30 Days after report <input type="checkbox"/> 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: <i>Jennifer Clark</i> Date: 01/24/12					

Rec'd @ FGS: Alex M BAHM, FGS 1-27-12  
 VTSR: 0927

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*

Page 3 of 19  
 1201361 Final Report  
 02/03/2012

Liz Siska, Project Manager



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	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 4 of 19  
 1201361 Final Report  
 02/03/2012



## 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

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 5 of 19  
 1201361 Final Report  
 02/03/2012



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

### MATRIX DUPLICATES/TRIPPLICATES

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	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 6 of 19  
1201361 Final Report  
02/03/2012



**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

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*

Page 7 of 19  
 1201361 Final Report  
 02/03/2012

Liz Siska, Project Manager



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

**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	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 8 of 19  
 1201361 Final Report  
 02/03/2012



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

**SOURCE: 1201361-02**

Batch: F201252

Sequence: 2B02001

Preparation: Closed Vessel Nitric Oven Digestion

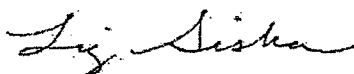
Lab Number: F201252-MS/MSD3

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

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.*



Page 9 of 19  
1201361 Final Report  
02/03/2012

Liz Siska, Project Manager



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

**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

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 10 of 19  
1201361 Final Report  
02/03/2012



**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

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 11 of 19  
 1201361 Final Report  
 02/03/2012



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

**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	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 12 of 19  
 1201361 Final Report  
 02/03/2012



**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	

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.*

Page 13 of 19  
 1201361 Final Report  
 02/03/2012

Liz Siska, Project Manager



**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	

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.*



**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	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 15 of 19  
 1201361 Final Report  
 02/03/2012



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

**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	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 16 of 19  
 1201361 Final Report  
 02/03/2012





### 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

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 17 of 19  
 1201361 Final Report  
 02/03/2012



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

### 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

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

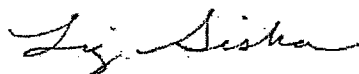
*The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Page 18 of 19  
1201361 Final Report  
02/03/2012

## 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

Frontier Global Sciences, Inc.



Liz Siska, Project Manager

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

Page 19 of 19  
1201361 Final Report  
02/03/2012



eastern analytical, inc.  
Professional laboratory services

# CHAIN-OF-CUSTODY RECORD

107170 55

Date/Time: 1/26/12 Matrix: aqueous Parameters and Sample Notes: AqTot/SWLLMetalsSub # of containers: 1  
 Composites need start and stop dates/times: 9:15 Grab or Comp: Grab or Comp

Sampler confirms ID and parameters are accurate  
 Circle preservative/s: HCL, HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>, NaOH, MEQH, Na<sub>2</sub>S<sub>2</sub>O<sub>8</sub>, ICE

Treat Tank Effluent: 1/26/12 aqueous  
9:20 Grab or Comp: Grab or Comp  
 AqTot/SWLLMetalsSub/NH3/BOD/Cl/COD/CyanT/F/NO3/OG1664/V624/AE625/E608/PCB/TTPhenols / PH \*  
 Sampler confirms ID and parameters are accurate  
 Circle preservative/s: HCL, HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>, NaOH, MEQH, Na<sub>2</sub>S<sub>2</sub>O<sub>8</sub>, ICE  
 \* AT Customer's Request  
 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.

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)  
 Email/Address: paul.pepler@gza.com

Results Needed by: Preferred date 1/28/12  
 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, Ti, Zn. Metals analyses require project-specific MS/MSD.  
624, 625, 608 results needed  
 QC deliverables:  A  A+  B  B+  C  PC  
2/1/2012 JG

Reporting Options:  HC  EDD PDF  EDD email  PDF prelin, NO FAX  e-mail Login Confirmation  NO FAX  
 PONumber: 02259252  
 Quote No: 45 °C  
 Temperature: 45 °C  
 Ice present:  Yes  No  
 Samples collected by: JG JG  
 Relinquished by: [Signature] Date/Time: 1/26/12 10:45  
 Received by: [Signature]



# eastern analytical

*professional laboratory services*

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



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 107330  
Client Identification: Wastewater Analysis - **Weekly**  
Date Received: 2/2/2012

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](http://www.eailabs.com) for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:  
Solid samples are reported on a dry weight basis, unless otherwise noted  
< : "less than" followed by the reporting limit  
> : "greater than" followed by the reporting limit  
%R : % Recovery

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

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

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

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

Sincerely,



Lorraine Olashaw, Lab Director

2-17-12

Date

30

# of pages (excluding cover letter)



# QC REPORT

EAI ID#: 107330

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

Batch ID: 734541-34922/A020812OG1661

Client Designation: Wastewater Analysis - *Weekly*

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Oil & Grease (HEM)	< 5	36 (91 %R)	36 (90 %R) (1 RPD)	2/8/2012	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#: 107330

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

Sample ID: Treat Tank Effluent

Lab Sample ID: 107330.02

Matrix: aqueous

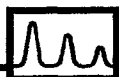
Date Sampled: 2/2/12

Date Received: 2/2/12

Solids Suspended	6
Solids Dissolved	19000
Fluoride	2.9
Sulfate	1200
Chloride	9300
Nitrate-N	65
Cyanide Total	< 0.01
Ammonia-N	1.1
BOD	< 6
COD	140
Total Phenols	< 0.5
pH	7.4

Units	Analysis		Method	Analyst
	Date	Time		
mg/L	2/03/12	10:45	2540D	DLS
mg/L	2/03/12	10:45	2540C	DLS
mg/L	2/08/12	15:01	300.0	KL
mg/L	2/08/12	14:46	300.0	KL
mg/L	2/03/12	10:35	4500CIE	DLS
mg/L	2/03/12	10:32	353.2	DLS
mg/L	2/08/12	9:30	4500CNE	KJR
mg/L	2/09/12	9:00	4500NH3D	SEL
mg/L	2/03/12	11:20	5210B	KJR
mg/L	2/07/12	16:00	H8000	SKC
mg/L	2/08/12	2:00	420.1	JCC
SU	2/02/12	16:30	4500H+B	KJR

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



# QC REPORT

EAI ID#: 107330

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

Client Designation: **Wastewater Analysis - Weekly**

Parameter Name	Blank	LCS	LCSD	Units	Date of Analysis	Limits	RPD	Method
Solids Suspended	< 2	95 (95 %R)	94 (94 %R) (1 RPD)	mg/L	2/3/12	90 - 110	20	2540D
Solids Dissolved	< 5	990 (99 %R)	NA	mg/L	2/3/12	85 - 115	20	2540C
Fluoride	< 0.1	2.0 (99 %R)	2.0 (99 %R) (0 RPD)	mg/L	2/8/12	90 - 110	20	300.0
Sulfate	< 1	20 (100 %R)	20 (101 %R) (1 RPD)	mg/L	2/8/12	90 - 110	20	300.0
Chloride	< 1	24 (96 %R)	24 (97 %R) (1 RPD)	mg/L	2/3/12	90 - 110	20	4500CIE
Nitrate-N	< 0.5	4.9 (99 %R)	4.9 (98 %R) (1 RPD)	mg/L	2/3/12	90 - 110	20	353.2
Cyanide Total	< 0.02	0.25 (100 %R)	NA	mg/L	2/8/12	85 - 115	20	4500CNE
Ammonia-N	< 0.05	2.2 (109 %R)	2.2 (110 %R) (1 RPD)	mg/L	2/9/12	90 - 110	20	4500NH3DN
BOD	< 6	420 (104 %R)	420 (104 %R) (0 RPD)	mg/L	2/3/12	84 - 115	20	5210B
COD	< 10	100 (103 %R)	100 (101 %R) (2 RPD)	mg/L	2/7/12	85 - 115	20	H8000
Total Phenols	< 0.05	0.22 (87 %R)	0.22 (89 %R) (2 RPD)	mg/L	2/8/12	85 - 115	20	420.1
pH		6.05 (101 %R)	6.07 (101 %R) (0 RPD)	SU	2/2/12	5.95 - 6.07	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.





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

15 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,

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

Liz Siska  
Project Manager



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-3015 Effluent Field Blank	1202063-01	Water	02-Feb-12 08:47	03-Feb-12 09:30
Treat Tank Effluent	1202063-02	Water	02-Feb-12 09:15	03-Feb-12 09:30

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 1 of 23  
1202063 Final Report  
02/15/2012



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

## CASE NARRATIVE

### SAMPLE RECEIPT

Samples were received at Frontier Global Sciences (FGS) on February 3rd, 2012. The samples were received intact, on-ice with temperatures measured at 10.6 degrees Celsius.

### SAMPLE PREPARATION AND ANALYSIS

Samples were prepared and analyzed for total metals in accordance with EPA Method 200.8 (modified).

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

### ANALYTICAL ISSUES

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

A handwritten signature in cursive script that reads "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.*

Page 2 of 23  
1202063 Final Report  
02/15/2012



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

### CHAIN OF CUSTODY FORMS



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

414 Pon 107330 39  
Fax: 206-622-6870  
info@FrontierGS.com  
http://www.FrontierGS.com

Page 1 of 1

1202063

Client: Eastern Analytical, Inc		Contact: Jeff Gayle		Analyses Requested		FGS PM: Liz Siska	
Address: 25 Chocoll Drive Concord NH 03301		Phone: 603 228 0525 Fax: 603 228 4571				Date: 2/2/2012	
Project Name: Merrimack station		E-mail: jgffg@ealabs.com				TAT (business days): 20 (std)	
Report To: same		Contract/PO:				15 @ 5 4 3 2 24 hrs.	
Address: same		Invoice To: same				(For TAT < 10 days, contact PM.	
Phone: 603 228 0525 Fax: 603 228 4571		Address: same				Saturday delivery? <input type="checkbox"/> Y <input type="checkbox"/> N	
E-mail: customer.service@ealabs.com		E-mail: customer.service@ealabs.com				(If yes, please contact PM)	
No.		Engraved Bottle ID		Sample ID		# of Bottles	
		Matrix		Date & Time		Field Preserved: HNO <sub>3</sub> HCl BrCl Other (%)	
						Total Metals	
						Comments	
1		C-3015		Effluent Field Blank		1	
2		C-3024 C-3057 C-3058		Treat Tank Effluent		3	
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
For Laboratory Use Only		Matrix Codes:		Relinquished By:		Received By:	
COC Seal: No		FW: Fresh Water		Name: Jim Blackwell		Name: Chris Whinsu	
Cooler Temp: 10.6°C		WW: Waste Water		Organization: Eastern Analytical		Organization: FGS	
Carrier: UPS		SB: Sea and Brackish Water		Date & Time: 2/2/12 13:00		Date & Time: 2-3-12	
VTSR: 0930		SS: Soil and Sediment		Tracking number: 1Z X46 549 01 9628 9755		Date & Time: 14:31	
# of Coolers: 1 (one)		TS: Plant and Animal Tissue		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: _____	
Sample Disposal:		HC: Hydrocarbons					
<input type="checkbox"/> Return (shipping fees may apply)		TR: Trap					
<input type="checkbox"/> Standard Disposal - 30 Days after report		OT: Other					
<input type="checkbox"/> Retain for _____ weeks after report (storage fees may apply)							

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*

Page 3 of 23  
1202063 Final Report  
02/15/2012

Liz Siska, Project Manager

### CHAIN OF CUSTODY FORMS

FGS Work Order: 1202063 Sample Receipt Checklist

Client: Eastern Analytical Date & Time Received: 2-3-12 3:30 Date Logged In: 2-3-12 14:31  
 Project: Merrimack Station Received By: Alexa Bahm Logged In By: Alexa Bahm  
 SDS: \_\_\_\_\_ # of Coolers Received: 1 (one) FGS PM: Liz Siska  
 Samples Analyzed By: X Shipping Service \_\_\_\_\_ Counter \_\_\_\_\_ Hand \_\_\_\_\_ Other: (specify) \_\_\_\_\_  
 Tracking/IR/ID Number(s): UPS 1Z X46 549 01 9628 9755

Cooler Information		Yes	No	NA	Comments
The coolers do not appear to be tampered with:					
Gustatory seals are present and intact:			<input checked="" type="checkbox"/>		
Custody seals signed by:				<input checked="" type="checkbox"/>	<u>None used</u>

Thermal Preservation: X Loose Ice \_\_\_\_\_ Gel/Blue Ice \_\_\_\_\_ None (Ambient) \_\_\_\_\_ Other (specify) \_\_\_\_\_  
 Thermometer ID: 0268 Correction Factor (CF): 0.4 -degrees C

Cooler 1:	<u>10.6</u> °C
Cooler 2:	°C
Cooler 3:	°C
Cooler 4:	°C
Cooler 5:	°C

Cooler 6:	°C
Cooler 7:	°C
Cooler 8:	°C
Cooler 9:	°C
Cooler 10:	°C

Chain of Custody  
 COC is present and includes the following information for each sample:

Sample ID/Sample Description:	Yes	No	NA	Comments
Date and Time of Sample Collection:	<input checked="" type="checkbox"/>			
Sampled By:	<input checked="" type="checkbox"/>			
Preservation Type:			<input checked="" type="checkbox"/>	
Requested Analyses:	<input checked="" type="checkbox"/>			
Required Signatures:	<input checked="" type="checkbox"/>			
Informal chain of custody required:			<input checked="" type="checkbox"/>	

Sample Condition/Integrity	Yes	No	NA	Comments
Sample containers were received intact:	<input checked="" type="checkbox"/>			
Sample labels are present and legible:	<input checked="" type="checkbox"/>			
Sample ID on container matches COC:	<input checked="" type="checkbox"/>			
Correct sample containers used for requested analyses:	<input checked="" type="checkbox"/>			
Samples received within holding time:	<input checked="" type="checkbox"/>			
Sample volume sufficient for requested analyses:	<input checked="" type="checkbox"/>			
Correct preservative used for requested analyses:			<input checked="" type="checkbox"/>	
pH of samples checked and within method requirements:			<input checked="" type="checkbox"/>	
If pH adjusted by laboratory, noted in logbook:			<input checked="" type="checkbox"/>	

Anomalies/Non-conformances: N/A

Client Communication \_\_\_\_\_ Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Method: \_\_\_\_\_  
 Discussion/Resolution: \_\_\_\_\_

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.



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

## ANALYTICAL RESULTS

### C-3015 Effluent Field Blank

Matrix: Water

Laboratory ID: 1202063-01

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Aluminum	ND	0.4	4.0	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Antimony	ND	0.005	0.020	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Arsenic	ND	0.05	0.15	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Barium	ND	0.03	0.20	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Beryllium	ND	0.023	0.060	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Cadmium	ND	0.004	0.020	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Chromium	ND	0.009	0.10	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Copper	ND	0.01	0.10	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Iron	ND	1.3	10.0	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Lead	ND	0.004	0.040	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Manganese	0.12	0.007	0.10	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Mercury	ND	0.08	0.50	ng/L	1	F202057	2B06014	02/06/12	EPA 1631E	U
Molybdenum	ND	0.006	0.06	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Nickel	ND	0.008	0.10	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Selenium	ND	0.19	0.60	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Silver	ND	0.006	0.020	µg/L	1	F202159	2B15016	02/15/12	EPA 200.8 Mod	QM-12, U
Thallium	ND	0.001	0.005	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	QB-02, U
Zinc	ND	0.02	0.20	µg/L	1	F202053	2B15001	02/14/12	EPA 200.8 Mod	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 5 of 23  
 1202063 Final Report  
 02/15/2012



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

## ANALYTICAL RESULTS

### Treat Tank Effluent

Matrix: Water

Laboratory ID: 1202063-02

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Aluminum	218	22.2	200	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Antimony	1.55	0.230	1.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Arsenic	12.1	2.55	7.50	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Barium	243	1.35	10.0	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Beryllium	ND	1.14	3.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Cadmium	ND	0.208	1.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Chromium	ND	0.45	5.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Copper	5.53	0.50	5.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Iron	ND	65.0	500	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Lead	ND	0.195	2.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Manganese	631	0.37	5.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Mercury	36.0	0.84	5.05	ng/L	10	F202057	2B06014	02/06/12	EPA 1631E	
Molybdenum	195	0.30	3.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Nickel	ND	0.40	5.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Selenium	121	9.69	30.0	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Silver	ND	0.300	1.00	µg/L	50	F202159	2B15016	02/15/12	EPA 200.8 Mod	QM-12, U
Thallium	6.85	0.056	0.250	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	QB-01
Zinc	ND	0.82	10.0	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	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.*

Page 6 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager



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

### MATRIX DUPLICATES/TRIPPLICATES

SOURCE: 1202063-02

Batch: F202057

Sequence: 2B06014

Preparation: BrCl Oxidation

Lab Number: F202057-DUP1

Analyte	Sample Concentration ng/L	Duplicate Concentration ng/L	MRL	% RPD	RPD Limit	Method	Notes
Mercury	36.03	36.21	5.05	0.482	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 7 of 23  
1202063 Final Report  
02/15/2012





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

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

**SOURCE: 1202063-02**

Batch: F202053

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202053-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	2.062	102	70 - 130	EPA 200.8 Mod	
Aluminum	217.7	151.50	355.1	90.7	70 - 130	EPA 200.8 Mod	
Chromium	2.05	7.0700	9.47	105	70 - 130	EPA 200.8 Mod	
Manganese	631.1	6.0600	611.0	-331	70 - 130	EPA 200.8 Mod	QM-02
Iron	ND	505.00	474.3	93.9	70 - 130	EPA 200.8 Mod	
Nickel	3.25	4.0400	7.58	107	70 - 130	EPA 200.8 Mod	
Copper	5.53	4.0400	9.39	95.7	70 - 130	EPA 200.8 Mod	
Zinc	0.99	10.100	12.68	116	70 - 130	EPA 200.8 Mod	
Arsenic	12.06	15.150	24.53	82.3	70 - 130	EPA 200.8 Mod	
Selenium	121.3	30.300	145.2	79.1	70 - 130	EPA 200.8 Mod	
Molybdenum	195.2	2.0200	192.5	-135	70 - 130	EPA 200.8 Mod	QM-02
Cadmium	0.623	0.80800	1.437	101	70 - 130	EPA 200.8 Mod	
Antimony	1.549	0.80800	2.358	100	70 - 130	EPA 200.8 Mod	
Barium	243.3	10.100	251.4	79.3	70 - 130	EPA 200.8 Mod	
Thallium	6.848	0.40400	7.126	68.9	70 - 130	EPA 200.8 Mod	QB-01
Lead	ND	1.5150	1.334	88.0	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	2.0200	2.025	100	1.80	70 - 130	20	EPA 200.8 Mod	
Aluminum	151.50	338.6	79.8	4.77	70 - 130	20	EPA 200.8 Mod	
Chromium	7.0700	9.09	99.6	4.12	70 - 130	20	EPA 200.8 Mod	
Manganese	6.0600	612.2	-311	0.200	70 - 130	20	EPA 200.8 Mod	QM-02
Iron	505.00	464.8	92.0	2.03	70 - 130	20	EPA 200.8 Mod	
Nickel	4.0400	8.13	121	7.06	70 - 130	20	EPA 200.8 Mod	
Copper	4.0400	9.35	94.8	0.415	70 - 130	20	EPA 200.8 Mod	
Zinc	10.100	10.13	90.4	22.4	70 - 130	20	EPA 200.8 Mod	QR-08
Arsenic	15.150	25.77	90.5	4.92	70 - 130	20	EPA 200.8 Mod	
Selenium	30.300	139.9	61.4	3.76	70 - 130	20	EPA 200.8 Mod	QM-02
Molybdenum	2.0200	190.9	-213	0.823	70 - 130	20	EPA 200.8 Mod	QM-02
Cadmium	0.80800	1.230	75.2	15.5	70 - 130	20	EPA 200.8 Mod	
Antimony	0.80800	2.316	95.0	1.77	70 - 130	20	EPA 200.8 Mod	

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.*

Page 8 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager



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

### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1202063-02

Batch: F202053

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202053-MS/MSD1

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Barium	10.100	250.6	71.7	0.305	70 - 130	20	EPA 200.8 Mod	
Thallium	0.40400	6.963	28.6	2.31	70 - 130	20	EPA 200.8 Mod	QM-02, QB-01
Lead	1.5150	1.403	92.6	5.09	70 - 130	20	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 9 of 23  
1202063 Final Report  
02/15/2012



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

**SOURCE: 1202063-02**

Batch: F202053

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202053-MS/MSD3

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Beryllium	ND	50.500	42.91	85.0	70 - 130	EPA 200.8 Mod	AS
Aluminum	217.7	10100	9206	89.0	70 - 130	EPA 200.8 Mod	AS
Chromium	2.05	1010.0	1006	99.4	70 - 130	EPA 200.8 Mod	AS
Manganese	631.1	1010.0	1582	94.2	70 - 130	EPA 200.8 Mod	AS
Iron	ND	5050.0	4849	96.0	70 - 130	EPA 200.8 Mod	AS
Nickel	3.25	1262.5	1190	94.0	70 - 130	EPA 200.8 Mod	AS
Copper	5.53	1262.5	1149	90.6	70 - 130	EPA 200.8 Mod	AS
Zinc	0.99	2525.0	2401	95.0	70 - 130	EPA 200.8 Mod	AS
Arsenic	12.06	1010.0	1050	103	70 - 130	EPA 200.8 Mod	AS
Selenium	121.3	1010.0	1168	104	70 - 130	EPA 200.8 Mod	AS
Molybdenum	195.2	505.00	685.1	97.0	70 - 130	EPA 200.8 Mod	AS
Cadmium	0.623	101.00	96.95	95.4	70 - 130	EPA 200.8 Mod	AS
Antimony	1.549	50.500	50.84	97.6	70 - 130	EPA 200.8 Mod	AS
Barium	243.3	2020.0	2379	106	70 - 130	EPA 200.8 Mod	AS
Thallium	6.848	50.500	53.06	91.5	70 - 130	EPA 200.8 Mod	AS, QB-01
Lead	ND	252.50	220.5	87.3	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	50.500	43.37	85.9	1.08	70 - 130	20	EPA 200.8 Mod	AS
Aluminum	10100	9221	89.1	0.164	70 - 130	20	EPA 200.8 Mod	AS
Chromium	1010.0	990.2	97.8	1.59	70 - 130	20	EPA 200.8 Mod	AS
Manganese	1010.0	1562	92.2	1.27	70 - 130	20	EPA 200.8 Mod	AS
Iron	5050.0	4775	94.6	1.53	70 - 130	20	EPA 200.8 Mod	AS
Nickel	1262.5	1197	94.6	0.613	70 - 130	20	EPA 200.8 Mod	AS
Copper	1262.5	1129	89.0	1.79	70 - 130	20	EPA 200.8 Mod	AS
Zinc	2525.0	2399	95.0	0.0456	70 - 130	20	EPA 200.8 Mod	AS
Arsenic	1010.0	1013	99.2	3.57	70 - 130	20	EPA 200.8 Mod	AS
Selenium	1010.0	1151	102	1.49	70 - 130	20	EPA 200.8 Mod	AS
Molybdenum	505.00	684.8	97.0	0.0426	70 - 130	20	EPA 200.8 Mod	AS
Cadmium	101.00	100.4	98.7	3.45	70 - 130	20	EPA 200.8 Mod	AS
Antimony	50.500	51.11	98.1	0.531	70 - 130	20	EPA 200.8 Mod	AS

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.*

Page 10 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager



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

### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1202063-02

Batch: F202053

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202053-MS/MSD3

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Barium	2020.0	2377	106	0.106	70 - 130	20	EPA 200.8 Mod	AS
Thallium	50.500	53.45	92.3	0.720	70 - 130	20	EPA 200.8 Mod	AS, QB-01
Lead	252.50	219.8	87.0	0.315	70 - 130	20	EPA 200.8 Mod	AS

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 11 of 23  
1202063 Final Report  
02/15/2012



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

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

**SOURCE: 1202063-02**

Batch: F202057

Sequence: 2B06014

Preparation: BrCl Oxidation

Lab Number: F202057-MS/MSD1

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	36.03	102.00	140.9	103	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	141.0	103	0.0816	71 - 125	24	EPA 1631E	

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*

Page 12 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager



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

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

**SOURCE: 1202035-02RE1**

Batch: F202057

Sequence: 2B06014

Preparation: BrCl Oxidation

Lab Number: F202057-MS/MSD2

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	38.97	102.00	144.0	103	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	144.5	103	0.394	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 13 of 23  
 1202063 Final Report  
 02/15/2012



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

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

**SOURCE: 1202063-02RE2**

Batch: F202159

Sequence: 2B15016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202159-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Silver	ND	1.5150	1.891	125	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	1.5150	2.021	133	6.64	70 - 130	20	EPA 200.8 Mod	QM-07

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.*

Page 14 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager



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

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

**SOURCE: 1202063-02RE2**

Batch: F202159

Sequence: 2B15016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202159-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Silver	ND	50.500	45.54	90.2	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	50.500	46.21	91.5	1.46	70 - 130	20	EPA 200.8 Mod	AS

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*

Page 15 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager





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

**RECOVERY AND RPD**

Batch: F202053

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202053-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Beryllium	2.0000	1.891	94.5	85 - 115	EPA 200.8 Mod	
Aluminum	150.00	143.0	95.3	85 - 115	EPA 200.8 Mod	
Chromium	7.0000	6.44	92.0	85 - 115	EPA 200.8 Mod	
Manganese	6.0000	5.77	96.2	85 - 115	EPA 200.8 Mod	
Iron	500.00	454.7	90.9	85 - 115	EPA 200.8 Mod	
Nickel	4.0000	4.02	100	85 - 115	EPA 200.8 Mod	
Copper	4.0000	4.18	105	85 - 115	EPA 200.8 Mod	
Zinc	10.000	10.25	103	85 - 115	EPA 200.8 Mod	
Arsenic	15.000	14.25	95.0	85 - 115	EPA 200.8 Mod	
Selenium	30.000	29.36	97.9	85 - 115	EPA 200.8 Mod	
Molybdenum	2.0000	1.82	91.0	85 - 115	EPA 200.8 Mod	
Cadmium	0.80000	0.828	103	85 - 115	EPA 200.8 Mod	
Antimony	0.80000	0.800	100	85 - 115	EPA 200.8 Mod	
Barium	10.000	9.99	99.9	85 - 115	EPA 200.8 Mod	
Thallium	0.40000	0.420	105	85 - 115	EPA 200.8 Mod	
Lead	1.5000	1.552	103	85 - 115	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	2.0000	1.863	93.1	1.50	85 - 115	20	EPA 200.8 Mod	
Aluminum	150.00	137.5	91.7	3.91	85 - 115	20	EPA 200.8 Mod	
Chromium	7.0000	6.29	89.9	2.39	85 - 115	20	EPA 200.8 Mod	
Manganese	6.0000	5.58	93.0	3.37	85 - 115	20	EPA 200.8 Mod	
Iron	500.00	435.9	87.2	4.22	85 - 115	20	EPA 200.8 Mod	
Nickel	4.0000	3.71	92.9	7.79	85 - 115	20	EPA 200.8 Mod	
Copper	4.0000	4.03	101	3.75	85 - 115	20	EPA 200.8 Mod	
Zinc	10.000	9.89	98.9	3.59	85 - 115	20	EPA 200.8 Mod	
Arsenic	15.000	13.45	89.7	5.77	85 - 115	20	EPA 200.8 Mod	
Selenium	30.000	29.20	97.3	0.548	85 - 115	20	EPA 200.8 Mod	

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.*

Page 16 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager



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

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

**RECOVERY AND RPD**

Batch: F202053

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202053-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
Molybdenum	2.0000	1.77	88.3	3.03	85 - 115	20	EPA 200.8 Mod	
Cadmium	0.80000	0.794	99.2	4.16	85 - 115	20	EPA 200.8 Mod	
Antimony	0.80000	0.784	98.0	2.05	85 - 115	20	EPA 200.8 Mod	
Barium	10.000	9.82	98.2	1.77	85 - 115	20	EPA 200.8 Mod	
Thallium	0.40000	0.407	102	2.98	85 - 115	20	EPA 200.8 Mod	
Lead	1.5000	1.535	102	1.06	85 - 115	20	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 17 of 23  
 1202063 Final Report  
 02/15/2012



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

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

**RECOVERY AND RPD**

Batch: F202057

Sequence: 2B06014

Preparation: BrCl Oxidation

Lab Number: F202057-BS/BSD1

LCS Source: LCS

Analyte	Spike Added (ng/L)	LCS Concentration (ng/L)	LCS % Recovery	Recovery Limits	Method	Notes
Mercury	15.679	15.77	101	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	16.05	102	1.76	80 - 120	24	EPA 1631E	

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*

Page 18 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager



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

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

**RECOVERY AND RPD**

Batch: F202159

Sequence: 2B15016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202159-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Silver	1.5000	2.156	144	85 - 115	EPA 200.8 Mod	QM-12

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	1.5000	2.141	143	0.706	85 - 115	20	EPA 200.8 Mod	QM-12

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 19 of 23  
 1202063 Final Report  
 02/15/2012



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

### PREPARATION BLANKS

Instrument: Hg-16

Sequence: 2B06014

Preparation: BrCl Oxidation

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F202057-BLK1	Mercury	0.04	0.50	ng/L	F202057	EPA 1631E	U
F202057-BLK2	Mercury	0.04	0.50	ng/L	F202057	EPA 1631E	U
F202057-BLK3	Mercury	0.05	0.50	ng/L	F202057	EPA 1631E	U
F202057-BLK4	Mercury	0.10	0.50	ng/L	F202057	EPA 1631E	QB-04, U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 20 of 23  
1202063 Final Report  
02/15/2012



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

## PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F202053-BLK1	Beryllium	0.005	0.060	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Aluminum	-0.04	4.0	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Chromium	-0.02	0.10	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Manganese	-0.002	0.10	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Iron	-0.3	10.0	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Nickel	-0.03	0.10	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Copper	0.008	0.10	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Zinc	0.10	0.20	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Arsenic	-0.07	0.15	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Selenium	-0.02	0.60	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Molybdenum	0.01	0.06	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Cadmium	0.005	0.020	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Antimony	0.019	0.020	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Barium	0.005	0.20	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Thallium	0.028	0.005	µg/L	F202053	EPA 200.8 Moc	QB-10
F202053-BLK1	Lead	0.004	0.040	µg/L	F202053	EPA 200.8 Moc	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 21 of 23  
 1202063 Final Report  
 02/15/2012



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

### PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2B15016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F202159-BLK1	Silver	0.0006	0.020	µg/L	F202159	EPA 200.8 Mod	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.*

Page 22 of 23  
1202063 Final Report  
02/15/2012

Liz Siska, Project Manager



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

## Notes and Definitions

- U Analyte included in the analysis, but not detected
- QR-08 The RPD value for the MS/MSD was outside of acceptance limits. Batch QC acceptable based on matrix duplicate and/or LCS/LCSD RPD values within control limits.
- QM-12 Initial or continuing calibration verification and/or blank spike/blank spike duplicate recoveries above upper control limits. All reported sample concentrations were below the reporting limit.
- QM-07 The spike recovery was outside control limits for the MS and/or MSD. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
- QM-02 The MS and/or MSD recoveries outside acceptance limits, due to spike concentration less than 1 times the sample concentration. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
- QB-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

Frontier Global Sciences, Inc.

A handwritten signature in cursive script that reads "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.*

Page 23 of 23  
1202063 Final Report  
02/15/2012





eastern analytical, inc.  
professional laboratory services

# CHAIN-OF-CUSTODY RECORD

107330  
GZANH  
30

Date/Time  
Composites need start  
and stop dates/times

Matrix

Parameters and Sample Notes

# of containers

Effluent Field Blank	2/2/2012 8:47	aqueous Grab or Comp	AqTotSWLLMetalsSub		1
----------------------	------------------	-------------------------	--------------------	--	---

<input checked="" type="checkbox"/> Sampler confirms ID and parameters are accurate	2/2/2012 9:15	aqueous Grab or Comp	AqTotSWLLMetalsSub/BOD/COD/CyanT/F/NO3/OG1664/SO4/TTDS/SS/V624A/E625/T/Phenis/E609PGB/NH3Cl/PH	Circle preservative/s: HCL HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH MeOH Na <sub>2</sub> S <sub>2</sub> O <sub>8</sub> JCB	18
---	------------------	-------------------------	--	--	----

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 \_\_\_\_\_  
 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, Ti, Zn.  
 Metals analyses require project-specific MS/MSD.  
 Please hold G24/G25/G28 analyses per G24.

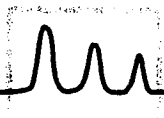
QC deliverables  
 A  A+  B  B+  C  PC

Reporting Options  
 HC  
 EDD PDF  
 EDD email  
 PDF prelim, NO FAX  
 e-mail Login Confirmation  
 NO FAX

Sample collected by: JTS GT  
 Date/Time: 2/2/12 13:00  
 Relinquished by: [Signature]  
 Date/Time: [Signature]  
 Received by: [Signature]

PONumber: verbal  
 Quote No: 1039426  
 Temperature: 5.2 °C  
 Ice present: Yes  No





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



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 107558  
Client Identification: Wastewater Analysis - **Weekly**  
Date Received: 2/9/2012

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](http://www.eailabs.com) for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:  
Solid samples are reported on a dry weight basis, unless otherwise noted  
< : "less than" followed by the reporting limit  
> : "greater than" followed by the reporting limit  
%R : % Recovery

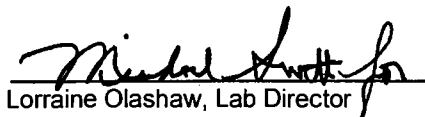
Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

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

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

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

Sincerely,

  
Lorraine Olashaw, Lab Director

2/29/12  
Date

41  
# of pages (excluding cover letter)



# SAMPLE CONDITIONS PAGE

EAI ID#: 107558

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

Client Designation: Wastewater Analysis - *Weekly*

Temperature upon receipt (°C): **20**

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)
107558.01	Effluent Field Blank	2/9/12	2/9/12	aqueous		Adheres to Sample Acceptance Policy
107558.02	Treat Tank Effluent	2/9/12	2/9/12	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



# LABORATORY REPORT

EAI ID#: 107558

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

Client Designation: Wastewater Analysis - *Weekly*

Sample ID: Treat Tank Effluent

Lab Sample ID: 107558.02

Matrix: aqueous

Date Sampled: 2/9/12

Date Received: 2/9/12

pH 7.2

Analysis				
Units	Date	Time	Method	Analyst
SU	2/09/12	10:56	4500H+B	CJJ



# QC REPORT

EAI ID#: 107558

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

Client Designation: Wastewater Analysis - *Weekly*

Parameter Name	Blank	LCS	LCSD	Units	Date of Analysis	Limits	RPD	Method
pH		6.0 (101 %R)	6.0 (101 %R) (0 RPD)	SU	2/9/12	5.95 - 6.07	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.  
\*/I Flagged analyte recoveries deviated from the QA/QC limits.



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

27 February 2012

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

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

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

Sincerely,

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

Liz Siska  
Project Manager



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 200.8

Sample ID	Lab ID	Matrix	Date Sampled	Date Received
Effluent Field Blank	1202140-01	Water	09-Feb-12 00:00	10-Feb-12 09:25
Treat Tank Effluent	1202140-02	Water	09-Feb-12 00:00	10-Feb-12 09:25

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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





## CASE NARRATIVE

### SAMPLE RECEIPT

Samples were received at Frontier Global Sciences (FGS) on February 10th, 2012. The samples were received intact, on-ice with temperatures measured at 2.0 degrees Celsius.

### SAMPLE PREPARATION AND ANALYSIS

Samples were prepared and analyzed for total metals in accordance with EPA Method 200.8 (modified).

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

### ANALYTICAL ISSUES

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

A handwritten signature in cursive script that reads "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.*



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

### CHAIN OF CUSTODY FORMS



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

107558 Title WA 98109  
206-622-6960  
206-622-6870  
info@FrontierGS.com  
http://www.FrontierGS.com

Page 1 of 1

1202140

Client: Eastern Analytical, Inc. Address: 35 Chenell Drive Concord, NH 03301		Contact: Jeff Goggin Phone: 603/228-4570 Fax: 603/228-4571 E-mail: jeffg@eastlabs.com		Project Name: Merrimack Station		Contract/PO: 27780		Analyses Requested		FGS PM: Liz Siska Date: 2/9/12 TAT (business days): 20 (std) 15 @ 5 4 3 2 24 hrs. (For TAT < 10 days, contact PM. Surcharges apply for expedited TAT). Saturday delivery? <input type="checkbox"/> Y <input type="checkbox"/> N (If yes, please contact PM) EOD <input type="checkbox"/> Y <input type="checkbox"/> N QA <input type="checkbox"/> Standard <input type="checkbox"/> High	
Report To: Same		Invoice To: Same		Address:		Address:		Phone: 603/228-4525 Fax: 603/228-4571		Phone: Fax:	
E-mail: CustomerService@eastlabs.com		E-mail: CustomerService@eastlabs.com		E-mail: CustomerService@eastlabs.com		E-mail: CustomerService@eastlabs.com					
No.	Engraved Bottle ID	Sample ID	# of Bottles	Matrix	Date & Time	Sampled By	Field Filtered (Y/N)	Field Preserved: HNO <sub>3</sub> HCl BrC Other (%)	Total Methods	Comments	
1	C-3042	Effluent Field Blank	1	AQ	2/9/12 6:17 PM	N	N	-	X	Metals include As, Cd, Cr, Cu, Pb, Hg, Mo, Ni, Se, Ag, Zn  2) Add'l volume provided for Project-specific MS/MSD  3) Please use EPA 200.8/ulfc. FGD Effluent.  Add Al and Mn per client. 2-10-12 AMB, FGS ALSO: B, Co, and V.	
2	C-3062, C-3022, C-3018	Treat Tank Effluent	3	WW	2/9/12 6:17 PM	N	N	-	X		
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
For Laboratory Use Only			Matrix Codes:		Relinquished By:		Received By:		Received By:		
COC Seal: N/A	Comments:	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		Name: <i>Greg Thompson</i>		Name: <i>Chris Johnson</i>		Name: <i>ALEXA BAIRD (AMS), FGS</i>		Name: <i>AMS 2-10-12</i>	
Cooler Temp: 2.0	72 X46 59901			Organization: <i>EA1</i>		Organization: <i>EAS</i>		Organization: <i>FGS</i>		Organization: <i>FGS</i>	
Carrier: UPS	9210 8582			Date & Time: 2/9/12 09:52		Date & Time: 2/9/12 09:52		Date & Time: 2-10-12 10:31		Date & Time: 2-10-12 10:31	
VTSR: 00-25	710-0368			Tracking number:							
# of Coolers: 1 (one)											
Sample Disposal: <input type="checkbox"/> Return (shipping fees may apply) <input type="checkbox"/> Standard Disposal - 30 Days after report <input type="checkbox"/> 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: _____					

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*

Liz Siska, Project Manager



## ANALYTICAL RESULTS

### Effluent Field Blank

Matrix: Water

Laboratory ID: 1202140-01

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Aluminum	ND	0.4	4.0	µg/L	1	F202131	2B18016	02/17/12	EPA 200.8 Mod	U
Arsenic	ND	0.05	0.15	µg/L	1	F202131	2B18016	02/17/12	EPA 200.8 Mod	U
Cadmium	ND	0.004	0.020	µg/L	1	F202215	2B21010	02/21/12	EPA 200.8 Mod	U
Chromium	ND	0.009	0.10	µg/L	1	F202131	2B18016	02/17/12	EPA 200.8 Mod	U
Copper	ND	0.01	0.10	µg/L	1	F202131	2B18016	02/17/12	EPA 200.8 Mod	QM-12, U
Lead	ND	0.004	0.040	µg/L	1	F202131	2B18016	02/17/12	EPA 200.8 Mod	U
Manganese	ND	0.007	0.10	µg/L	1	F202131	2B18016	02/17/12	EPA 200.8 Mod	U
Mercury	ND	0.08	0.50	ng/L	1	F202196	2B17024	02/17/12	EPA 1631E	U
Molybdenum	ND	0.006	0.06	µg/L	1	F202131	2B18016	02/17/12	EPA 200.8 Mod	U
Nickel	ND	0.008	0.10	µg/L	1	F202131	2B18016	02/17/12	EPA 200.8 Mod	U
Selenium	ND	0.19	0.60	µg/L	1	F202131	2B18016	02/17/12	EPA 200.8 Mod	QM-12, U
Silver	ND	0.006	0.020	µg/L	1	F202149	2B15001	02/14/12	EPA 200.8 Mod	QM-12, U
Zinc	ND	0.02	0.20	µg/L	1	F202215	2B21010	02/21/12	EPA 200.8 Mod	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



## ANALYTICAL RESULTS

### Treat Tank Effluent

Matrix: Water

Laboratory ID: 1202140-02

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Aluminum	ND	22.2	200	µg/L	50	F202131	2B18016	02/17/12	EPA 200.8 Mod	U
Arsenic	ND	2.55	7.50	µg/L	50	F202131	2B18016	02/17/12	EPA 200.8 Mod	U
Cadmium	ND	0.208	1.00	µg/L	50	F202215	2B21010	02/21/12	EPA 200.8 Mod	U
Chromium	ND	0.45	5.00	µg/L	50	F202131	2B18016	02/17/12	EPA 200.8 Mod	U
Copper	ND	0.50	5.00	µg/L	50	F202131	2B18016	02/17/12	EPA 200.8 Mod	QM-12, U
Lead	ND	0.195	2.00	µg/L	50	F202131	2B18016	02/17/12	EPA 200.8 Mod	U
Manganese	1730	0.37	5.00	µg/L	50	F202131	2B18016	02/17/12	EPA 200.8 Mod	
Mercury	20.9	0.17	1.01	ng/L	2	F202196	2B17024	02/17/12	EPA 1631E	
Molybdenum	110	0.30	3.00	µg/L	50	F202131	2B18016	02/17/12	EPA 200.8 Mod	
Nickel	12.6	0.40	5.00	µg/L	50	F202131	2B18016	02/17/12	EPA 200.8 Mod	
Selenium	82.2	9.69	30.0	µg/L	50	F202131	2B24005	02/23/12	EPA 200.8 Mod	
Silver	ND	0.300	1.00	µg/L	50	F202149	2B15001	02/14/12	EPA 200.8 Mod	QM-12, U
Zinc	ND	0.82	10.0	µg/L	50	F202215	2B21010	02/21/12	EPA 200.8 Mod	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



### MATRIX DUPLICATES/TRIPPLICATES

SOURCE: 1202140-02RE1

Batch: F202196

Sequence: 2B17024

Preparation: BrCl Oxidation

Lab Number: F202196-DUP1

Analyte	Sample Concentration ng/L	Duplicate Concentration ng/L	MRL	% RPD	RPD Limit	Method	Notes
Mercury	24.34	22.57	10.1	7.52	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

**SOURCE: 1202140-02**

**Batch:** F202131

**Sequence:** 2B18016

**Preparation:** Closed Vessel Nitric Oven Digestion

**Lab Number:** F202131-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Aluminum	48.4	151.50	199.9	100	70 - 130	EPA 200.8 Mod	
Chromium	1.07	7.0700	8.66	107	70 - 130	EPA 200.8 Mod	
Manganese	1735	6.0600	1712	-373	70 - 130	EPA 200.8 Mod	QM-02
Nickel	12.62	4.0400	17.66	125	70 - 130	EPA 200.8 Mod	
Copper	0.83	4.0400	5.07	105	70 - 130	EPA 200.8 Mod	
Zinc	2.32	10.100	81.69	786	70 - 130	EPA 200.8 Mod	QM-07
Arsenic	5.61	15.150	21.94	108	70 - 130	EPA 200.8 Mod	
Selenium	97.17	30.300	123.0	85.2	70 - 130	EPA 200.8 Mod	
Molybdenum	110.1	2.0200	111.5	71.9	70 - 130	EPA 200.8 Mod	
Lead	ND	1.5150	1.567	103	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Aluminum	151.50	203.2	102	1.64	70 - 130	20	EPA 200.8 Mod	
Chromium	7.0700	8.56	106	1.15	70 - 130	20	EPA 200.8 Mod	
Manganese	6.0600	1727	-131	0.852	70 - 130	20	EPA 200.8 Mod	QM-02
Nickel	4.0400	16.18	88.1	8.76	70 - 130	20	EPA 200.8 Mod	
Copper	4.0400	4.84	99.3	4.59	70 - 130	20	EPA 200.8 Mod	
Zinc	10.100	16.88	144	131	70 - 130	20	EPA 200.8 Mod	QM-07, QR-08
Arsenic	15.150	24.85	127	12.4	70 - 130	20	EPA 200.8 Mod	
Selenium	30.300	135.1	125	9.38	70 - 130	20	EPA 200.8 Mod	
Molybdenum	2.0200	112.5	119	0.846	70 - 130	20	EPA 200.8 Mod	
Lead	1.5150	1.468	96.9	6.56	70 - 130	20	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

**SOURCE: 1202140-02**

**Batch:** F202131

**Sequence:** 2B18016

**Preparation:** Closed Vessel Nitric Oven Digestion

**Lab Number:** F202131-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Aluminum	48.4	10100	10380	102	70 - 130	EPA 200.8 Mod	AS
Chromium	1.07	1010.0	1060	105	70 - 130	EPA 200.8 Mod	AS
Manganese	1735	1010.0	2770	102	70 - 130	EPA 200.8 Mod	AS
Nickel	12.62	1262.5	1303	102	70 - 130	EPA 200.8 Mod	AS
Copper	0.83	1262.5	1253	99.2	70 - 130	EPA 200.8 Mod	AS
Zinc	2.32	2525.0	2530	100	70 - 130	EPA 200.8 Mod	AS
Arsenic	5.61	1010.0	1073	106	70 - 130	EPA 200.8 Mod	AS
Selenium	97.17	1010.0	1127	102	70 - 130	EPA 200.8 Mod	AS
Molybdenum	110.1	505.00	630.5	103	70 - 130	EPA 200.8 Mod	AS
Lead	ND	252.50	251.4	99.5	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Aluminum	10100	10120	99.8	2.52	70 - 130	20	EPA 200.8 Mod	AS
Chromium	1010.0	1050	104	0.947	70 - 130	20	EPA 200.8 Mod	AS
Manganese	1010.0	2755	101	0.548	70 - 130	20	EPA 200.8 Mod	AS
Nickel	1262.5	1302	102	0.101	70 - 130	20	EPA 200.8 Mod	AS
Copper	1262.5	1258	99.6	0.384	70 - 130	20	EPA 200.8 Mod	AS
Zinc	2525.0	2511	99.3	0.770	70 - 130	20	EPA 200.8 Mod	AS
Arsenic	1010.0	1092	108	1.73	70 - 130	20	EPA 200.8 Mod	AS
Selenium	1010.0	1169	106	3.69	70 - 130	20	EPA 200.8 Mod	AS
Molybdenum	505.00	616.8	100	2.18	70 - 130	20	EPA 200.8 Mod	AS
Lead	252.50	249.9	99.0	0.581	70 - 130	20	EPA 200.8 Mod	AS

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

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

**SOURCE: 1202140-02RE1**

Batch: F202149

Sequence: 2B15001

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202149-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Silver	ND	1.5180	1.529	101	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	1.5180	1.577	104	3.13	70 - 130	20	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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





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

**SOURCE: 1202140-02RE1**

Batch: F202149

Sequence: 2B15001

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202149-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Silver	ND	50.500	44.17	87.5	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	50.500	43.81	86.8	0.808	70 - 130	20	EPA 200.8 Mod	AS

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



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

**SOURCE: 1202223-02**

**Batch:** F202196

**Sequence:** 2B17024

**Preparation:** BrCl Oxidation

**Lab Number:** F202196-MS/MSD1

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	39.63	102.00	145.3	104	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	143.6	102	1.12	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

**SOURCE: 1202140-02RE1**

Batch: F202196

Sequence: 2B17024

Preparation: BrCl Oxidation

Lab Number: F202196-MS/MSD2

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	24.34	71.400	96.61	101	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	71.400	96.20	101	0.422	71 - 125	24	EPA 1631E	

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



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

**SOURCE: 1202140-02RE1**

**Batch:** F202215

**Sequence:** 2B21010

**Preparation:** Closed Vessel Nitric Oven Digestion

**Lab Number:** F202215-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Zinc	ND	10.100	9.65	95.5	70 - 130	EPA 200.8 Mod	
Cadmium	0.216	0.80800	1.142	115	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Zinc	10.100	9.99	98.9	3.47	70 - 130	20	EPA 200.8 Mod	
Cadmium	0.80800	1.189	120	4.07	70 - 130	20	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

**SOURCE: 1202140-02RE1**

**Batch:** F202215

**Sequence:** 2B21010

**Preparation:** Closed Vessel Nitric Oven Digestion

**Lab Number:** F202215-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Zinc	ND	2525.0	2297	91.0	70 - 130	EPA 200.8 Mod	AS
Cadmium	0.216	101.00	87.31	86.2	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Zinc	2525.0	2300	91.1	0.162	70 - 130	20	EPA 200.8 Mod	AS
Cadmium	101.00	89.53	88.4	2.50	70 - 130	20	EPA 200.8 Mod	AS

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



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

**RECOVERY AND RPD**

Batch: F202131

Sequence: 2B18016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202131-BS/BS1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Aluminum	150.00	145.9	97.3	85 - 115	EPA 200.8 Mod	
Chromium	7.0000	6.94	99.1	85 - 115	EPA 200.8 Mod	
Manganese	6.0000	5.91	98.5	85 - 115	EPA 200.8 Mod	
Nickel	4.0000	4.19	105	85 - 115	EPA 200.8 Mod	
Copper	4.0000	4.40	110	85 - 115	EPA 200.8 Mod	
Zinc	10.000	11.13	111	85 - 115	EPA 200.8 Mod	
Arsenic	15.000	15.05	100	85 - 115	EPA 200.8 Mod	
Selenium	30.000	30.61	102	85 - 115	EPA 200.8 Mod	
Molybdenum	2.0000	1.93	96.6	85 - 115	EPA 200.8 Mod	
Lead	1.5000	1.560	104	85 - 115	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Aluminum	150.00	147.3	98.2	0.925	85 - 115	20	EPA 200.8 Mod	
Chromium	7.0000	6.94	99.1	0.0117	85 - 115	20	EPA 200.8 Mod	
Manganese	6.0000	6.00	99.9	1.48	85 - 115	20	EPA 200.8 Mod	
Nickel	4.0000	4.23	106	1.04	85 - 115	20	EPA 200.8 Mod	
Copper	4.0000	4.43	111	0.541	85 - 115	20	EPA 200.8 Mod	
Zinc	10.000	10.92	109	1.97	85 - 115	20	EPA 200.8 Mod	
Arsenic	15.000	14.83	98.9	1.46	85 - 115	20	EPA 200.8 Mod	
Selenium	30.000	32.03	107	4.53	85 - 115	20	EPA 200.8 Mod	
Molybdenum	2.0000	1.91	95.4	1.17	85 - 115	20	EPA 200.8 Mod	
Lead	1.5000	1.586	106	1.66	85 - 115	20	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

**RECOVERY AND RPD**

Batch: F202149

Sequence: 2B15001

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202149-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Silver	1.5000	1.709	114	85 - 115	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	1.5000	1.738	116	1.68	85 - 115	20	EPA 200.8 Mod	QM-12

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

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

**RECOVERY AND RPD**

Batch: F202196

Sequence: 2B17024

Preparation: BrCl Oxidation

Lab Number: F202196-BS/BS1

LCS Source: LCS

Analyte	Spike Added (ng/L)	LCS Concentration (ng/L)	LCS % Recovery	Recovery Limits	Method	Notes
Mercury	15.679	16.27	104	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	16.20	103	0.396	80 - 120	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

**RECOVERY AND RPD**

Batch: F202215

Sequence: 2B21010

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202215-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Zinc	10.000	9.99	99.9	85 - 115	EPA 200.8 Mod	
Cadmium	0.80000	0.892	112	85 - 115	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Zinc	10.000	9.93	99.3	0.528	85 - 115	20	EPA 200.8 Mod	
Cadmium	0.80000	0.897	112	0.517	85 - 115	20	EPA 200.8 Mod	

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

### PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2B15001

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F202149-BLK1	Silver	-0.0002	0.020	µg/L	F202149	EPA 200.8 Mod	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



### PREPARATION BLANKS

Instrument: Hg-16

Sequence: 2B17024

Preparation: BrCl Oxidation

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F202196-BLK1	Mercury	0.04	0.50	ng/L	F202196	EPA 1631E	U
F202196-BLK2	Mercury	0.04	0.50	ng/L	F202196	EPA 1631E	U
F202196-BLK3	Mercury	0.05	0.50	ng/L	F202196	EPA 1631E	U
F202196-BLK4	Mercury	0.08	0.50	ng/L	F202196	EPA 1631E	QB-04, U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

### PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2B18016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F202131-BLK1	Aluminum	0.09	4.0	µg/L	F202131	EPA 200.8 Moc	U
F202131-BLK1	Chromium	-0.02	0.10	µg/L	F202131	EPA 200.8 Moc	U
F202131-BLK1	Manganese	0.004	0.10	µg/L	F202131	EPA 200.8 Moc	U
F202131-BLK1	Nickel	0.004	0.10	µg/L	F202131	EPA 200.8 Moc	U
F202131-BLK1	Copper	0.005	0.10	µg/L	F202131	EPA 200.8 Moc	U
F202131-BLK1	Zinc	0.07	0.20	µg/L	F202131	EPA 200.8 Moc	U
F202131-BLK1	Arsenic	-0.10	0.15	µg/L	F202131	EPA 200.8 Moc	U
F202131-BLK1	Selenium	-0.06	0.60	µg/L	F202131	EPA 200.8 Moc	U
F202131-BLK1	Molybdenum	0.01	0.06	µg/L	F202131	EPA 200.8 Moc	U
F202131-BLK1	Lead	0.002	0.040	µg/L	F202131	EPA 200.8 Moc	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



### PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2B21010

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F202215-BLK1	Zinc	-0.03	0.20	µg/L	F202215	EPA 200.8 Moc	U
F202215-BLK1	Cadmium	-0.001	0.020	µg/L	F202215	EPA 200.8 Moc	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



## Notes and Definitions

- U Analyte included in the analysis, but not detected
- QR-08 The RPD value for the MS/MSD was outside of acceptance limits. Batch QC acceptable based on matrix duplicate and/or LCS/LCSD RPD values within control limits.
- QM-12 Initial or continuing calibration verification and/or blank spike/blank spike duplicate recoveries above upper control limits. All reported sample concentrations were below the reporting limit.
- QM-07 The spike recovery was outside control limits for the MS and/or MSD. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
- QM-02 The MS and/or MSD recoveries outside acceptance limits, due to spike concentration less than 1 times the sample concentration. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
- QB-04 The blank was preserved to 2% BrCl rather than 1%. The control limit for blanks preserved to greater than 1% BrCl is the preservation percentage multiplied by the MRL.
- AS This MS and/or MSD is an analytical spike and/or an analytical spike duplicate.
- DET Analyte Detected
- MDL Minimum Detection Limit
- MRL Minimum Reporting Limit
- ND Analyte Not Detected at or above the reporting limit
- wet Sample results reported on a wet weight basis
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- RSD Relative Standard Deviation

Frontier Global Sciences, Inc.

A handwritten signature in cursive script that reads "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.*



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

27 February 2012

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

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

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

Sincerely,

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

Liz Siska  
Project Manager



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 200.8

Sample ID	Lab ID	Matrix	Date Sampled	Date Received
Effluent Field Blank	1202140-01	Water	09-Feb-12 00:00	10-Feb-12 09:25
Treat Tank Effluent	1202140-02	Water	09-Feb-12 00:00	10-Feb-12 09:25

Frontier Global Sciences, Inc.

A handwritten signature in cursive script that reads "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.*





## CASE NARRATIVE

### SAMPLE RECEIPT

Samples were received at Frontier Global Sciences (FGS) on February 10th, 2012. The samples were received intact, on-ice with temperatures measured at 2.0 degrees Celsius.

### SAMPLE PREPARATION AND ANALYSIS

Samples were prepared and analyzed for total metals in accordance with EPA Method 200.8 (modified).

### ANALYTICAL ISSUES

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.

A handwritten signature in cursive script that reads "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.*



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

### CHAIN OF CUSTODY FORMS

1202140



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

1202140  
107558  
Seattle WA 98109  
206-622-6960  
206-622-6870  
info@FrontierGS.com  
http://www.FrontierGS.com

Page 1 of 1

Client: Eastern Analytical, Inc. Address: 25 Chenell Drive Concord, NH 03301		Contact: Jeff Goye Phone: 603-228-2820 Fax: 603-228-4571 E-mail: jeffgoye@ealabs.com		Project Name: Merrimack Station/ Contract/PO: 277FO		Report To: Same Invoice To: Same Address:		Phone: 603-228-2825 Fax: 603-228-4571 E-mail: CustomerService@ealabs.com		Field Preserved: HNO <sub>3</sub> HCl BrO <sub>2</sub> Other (%)		Analyses Requested		FGS PM: Liz Siska Date: 2/9/12 TAT (business days): 20 (std) 15 (C) 5 4 3 2 24 hrs. (For TAT < 10 days, contact PM. Surcharges apply for expedited TAT) Saturday delivery? <input type="checkbox"/> Y <input type="checkbox"/> N (If yes, please contact PM) EOD <input type="checkbox"/> Y <input type="checkbox"/> N QA <input type="checkbox"/> Standard <input type="checkbox"/> High			
No.	Engraved Bottle ID	Sample ID	# of Bottles	Matrix	Date & Time	Sampled By	Field Filtered (Y/N)	Field Preserved: HNO <sub>3</sub> HCl BrO <sub>2</sub> Other (%)	Total Metals	Comments							
1	C-3042	Effluent Field Blank	1	AW	2/9/12	GT/DN	N	1	X	Metals include As, Cd, Cr, Cu, Pb, Hg, Mo, Ni, Se, Ag, Zn  2) Add'l volume provided for Project-specific ASD/MSD  3) Please use EPA 200.9/10c. FGD Effluent.  Acid Al and Mn per client 2-10-12 AMB, FGS also B, Ce, and V							
2	C-3062, C-3012, C-3018	Treat Tank Effluent	3	AW	2/9/12	GT/DN	N	1	X								
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
For Laboratory Use Only			Matrix Codes:			Relinquished By:		Received By:		Received By:							
COC Seal: N/A			Comments: 1/2 X46 59901			Name: Jeff Goye		Name: Chris Johnson		Name: ALEXA BARR (AMB), FGS							
Cooler Temp: 2.0			Carrier: UPS			Organization: EAL		Organization: EAS		Organization: FGS							
VTSR: 01/25			# of Coolers: 1 (one)			Date & Time: 2/9/12 09:52		Date & Time: 2/9/12 09:52		Date & Time: 2-10-12 10:31							
Sample Disposal: <input type="checkbox"/> Return (shipping fees may apply) <input type="checkbox"/> Standard Disposal - 30 Days after report <input type="checkbox"/> 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: _____					

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*

Liz Siska, Project Manager



### ANALYTICAL RESULTS

#### Effluent Field Blank

Matrix: Water

Laboratory ID: 1202140-01

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Boron	ND	0.21	3.00	µg/L	1	F202131	2B18016	02/17/12	EPA 200.8 Mod	QB-02, QM-12, U
Cobalt	ND	0.007	0.10	µg/L	1	F202131	2B18016	02/17/12	EPA 200.8 Mod	U
Vanadium	ND	0.01	0.10	µg/L	1	F202131	2B18016	02/17/12	EPA 200.8 Mod	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

## ANALYTICAL RESULTS

### Treat Tank Effluent

Matrix: Water

Laboratory ID: 1202140-02

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Boron	357000	412	6000	µg/L	2000	F202131	2B24005	02/23/12	EPA 200.8 Mod	
Cobalt	ND	0.34	5.00	µg/L	50	F202131	2B18016	02/17/12	EPA 200.8 Mod	U
Vanadium	ND	0.68	5.00	µg/L	50	F202131	2B18016	02/17/12	EPA 200.8 Mod	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

**SOURCE: 1202140-02**

Batch: F202131

Sequence: 2B18016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202131-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Vanadium	1.21	5.0500	8.07	136	70 - 130	EPA 200.8 Mod	QM-07
Cobalt	0.76	5.0500	5.83	100	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Vanadium	5.0500	6.58	106	20.2	70 - 130	20	EPA 200.8 Mod	QR-08
Cobalt	5.0500	6.06	105	3.84	70 - 130	20	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

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

**SOURCE: 1202140-02**

**Batch:** F202131

**Sequence:** 2B18016

**Preparation:** Closed Vessel Nitric Oven Digestion

**Lab Number:** F202131-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Vanadium	1.21	1010.0	1097	108	70 - 130	EPA 200.8 Mod	AS
Cobalt	0.76	505.00	517.4	102	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Vanadium	1010.0	1052	104	4.20	70 - 130	20	EPA 200.8 Mod	AS
Cobalt	505.00	518.3	102	0.187	70 - 130	20	EPA 200.8 Mod	AS

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

**SOURCE: 1202140-02RE2**

**Batch:** F202131

**Sequence:** 2B24005

**Preparation:** Closed Vessel Nitric Oven Digestion

**Lab Number:** F202131-MS/MSD5

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Boron	356800	75.750	356500	-478	70 - 130	EPA 200.8 Mod	QM-02

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Boron	75.750	359700	3820	0.909	70 - 130	20	EPA 200.8 Mod	QM-02

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*

Liz Siska, Project Manager



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

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

**SOURCE: 1202140-02RE2**

Batch: F202131

Sequence: 2B24005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202131-MS/MSD6

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Boron	356800	161600	530100	107	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Boron	161600	497000	86.8	6.43	70 - 130	20	EPA 200.8 Mod	AS

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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





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

**RECOVERY AND RPD**

Batch: F202131

Sequence: 2B18016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202131-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Boron	75.000	76.23	102	85 - 115	EPA 200.8 Mod	
Vanadium	5.0000	4.57	91.4	85 - 115	EPA 200.8 Mod	
Cobalt	5.0000	5.06	101	85 - 115	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Boron	75.000	77.22	103	1.29	85 - 115	20	EPA 200.8 Mod	
Vanadium	5.0000	4.93	98.6	7.59	85 - 115	20	EPA 200.8 Mod	
Cobalt	5.0000	5.15	103	1.81	85 - 115	20	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

### PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2B18016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F202131-BLK1	Boron	1.13	3.00	µg/L	F202131	EPA 200.8 Moc	U
F202131-BLK1	Vanadium	-0.06	0.10	µg/L	F202131	EPA 200.8 Moc	U
F202131-BLK1	Cobalt	0.0001	0.10	µg/L	F202131	EPA 200.8 Moc	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

## Notes and Definitions

- U Analyte included in the analysis, but not detected
- QR-08 The RPD value for the MS/MSD was outside of acceptance limits. Batch QC acceptable based on matrix duplicate and/or LCS/LCSD RPD values within control limits.
- QM-12 Initial or continuing calibration verification and/or blank spike/blank spike duplicate recoveries above upper control limits. All reported sample concentrations were below the reporting limit.
- QM-07 The spike recovery was outside control limits for the MS and/or MSD. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
- QM-02 The MS and/or MSD recoveries outside acceptance limits, due to spike concentration less than 1 times the sample concentration. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
- QB-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.
- 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

Frontier Global Sciences, Inc.



Liz Siska, Project Manager

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



eastern analytical, inc.

# CHAIN-OF-CUSTODY RECORD

107558

professional laboratory services

GLANH

41

### Date/Time

Composites need start and stop dates/times

Sample IDs

Matrix

Parameters and Sample Notes

# of containers

Effluent Field Blank

2/9/12

aqueous

Grab or Comp

AqTotSWLLMetalsSub

1

Sampler confirms ID and parameters are accurate

Circle preservative/s: HCL, HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>, NaOH, MeOH, Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>

Dissolved Sample Field Filtered

Treat Tank Effluent

2/9/12

aqueous

Grab or Comp

AqTotSWLLMetalsSub/pH

4

Sampler confirms ID and parameters are accurate

Circle preservative/s: HCL, HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>, NaOH, MeOH, Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>

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.**

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)

Email/Address: paul.pepler@gza.com

Results Needed by: Preferred date \_\_\_\_\_

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

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

### Reporting Options

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

PONumber: 02259252

Quote No: 1009476

Temperature 20 °C

Ice present Yes  No

Samples Collected by: ST/PA

Relinquished by: [Signature] Date/Time: 2/9/12 09:50 Received by: [Signature]

- QC deliverables
- A
  - A+
  - B
  - B+
  - C
  - PC

Relinquished by \_\_\_\_\_ Date/Time \_\_\_\_\_ Received by \_\_\_\_\_

Eastern Analytical, Inc. 25 Chenell Dr. Concord, NH 03301

Phone: (603)228-0525 1-800-287-0525

Fax: (603)228-4591





**1) Please provide the following information with regard to the offsite disposal of FGD WWTS effluent from Merrimack Station:**

**(b) (4) Any analyses that PSNH or its consultants have prepared concerning whether or not the FGD WWTS effluent would either cause any water quality exceedances in the water body (or bodies) ultimately receiving the wastewater or would cause any permit violations by the facilities receiving the FGD WWTS effluent.**

1(b) (4) PSNH attaches analytical data specific to the offsite disposal of FGD treated wastewater effluent from Merrimack Station provided to various POTWs. The information is grouped by town and by date. Please note that a spreadsheet containing **projected** data that was provided to the City of Concord POTW well in advance of actual operation of the FGD WWTS is included.









January 16, 2012  
File No. 04.0029307.00



Mr. Dana Clement  
Superintendent  
Allentown Wastewater Treatment Facility  
35 Canal Street  
Allentown, New Hampshire 03275

Re: Industrial Wastewater Discharge Monitoring  
Public Service of New Hampshire (PSNH)  
Merrimack Station  
Bow, New Hampshire

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

Dear Dana:

On behalf of PSNH, GZA GeoEnvironmental, Inc. is pleased to submit the attached Analytical Report from PSNH's technologically advanced wastewater treatment system (WWTS). The WWTS has now been operating in accordance with the design criteria for several weeks. The attached analytical results obtained from sampling on January 5, 2012 are representative of the Flue Gas Desulfurization (FGD) treated wastewater generated. The characteristics of the treated wastewater are expected to be consistent going forward.

In consideration of available representative analytical data, we respectfully request that the Town accept the attached analytical report to satisfy the first month sampling requirements as established in PSNH's Industrial Discharge Permit (IDP). Specifically, we request the sampling frequency be for metals and selenium be reduced to monthly as outlined in PSNH's IDP. Additionally, we request this data satisfy the requirement to sample the "first load."

#### **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 the Environmental Protection Agency's (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. Standard Operating Procedure: Inductively Coupled Plasma/Mass Spectrometry for Trace Element Analysis in Flue Gas Desulfurization Wastewaters (30 pp, 174K)

We trust that this submittal adequately address your informational needs. Should you have any questions, please contact me at 232-8744.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

A handwritten signature in black ink that reads "Ronald A. Breton". The signature is written in a cursive, flowing style.

Ronald A. Breton, P.E.  
Principal

RAB/tmd

p:\04\jobs\0029300s\04.0029307.00\work\sampling and reporting\reports\final 29307.00 cover letters 011612.docx

Attachment(s)

**SUMMARY ANALYTICAL DATA**  
 Public Service Company of New Hampshire  
 Merrimack Station  
 Bow, New Hampshire

PARAMETER	RESULTS (mg/L) 1/05/2012
Alkalinity	180
Aluminum	0.0411
Ammonia	0.92
Antimony	0.000520
Arsenic	0.00498
Barium	0.300
Beryllium	0.000522
BOD	< 6
Cadmium	0.000207
Calcium	5,050
Chloride	11,000
Chlorine (Total Residual)	< 0.05
Chromium (T)	< 0.00050
COD	130
Copper	< 0.00050
Cyanide (T)	0.02
Fluoride	10
Iron	< 0.050
Lead	< 0.000200
Manganese	0.293
Mercury	0.0000105
Molybdenum	0.140
Nitrate	100
Nickel	0.00803
O&G	< 5
pH	7.3
Selenium	0.074
Silver	< 0.000100
Sodium	277.4
Sulfate	1,200
Sulfide	< 0.1
Sulfite	< 2
TDS	21,000
Thallium	0.00664
TSS	14
TTO	ND (1)
Zinc	< 0.001
VOC EPA 624	(2)
Semi VOCs 625	ND (3)
Phenolic Compounds	< 0.3
PCBs	ND (4)

NOTES:

1. No TTO compounds were detected above 0.01 mg/L.
2. One compound was detected by Method 624: Toluene at 2 µg/L.
3. Semi VOCs were not detected by Method 625 above detection limits (1 µg/L and 5 µg/L depending on parameter and 50 µg/L for benzoic acid).
4. PCB compounds analyzed by method 608 were not detected at concentrations greater than 0.3 µg/L.

Arthur Auclair  
Northeast Utilities  
97 River Road  
Bow, NH 03304



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 106677  
Client Identification: Merrimack Station  
Date Received: 1/5/2012

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](http://www.eailabs.com) for a copy of our NELAP certificate and accredited parameters.

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

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


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

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

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

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

Sincerely,

  
Lorraine Olashaw, Lab Director

1.13.12  
Date

44  
# of pages (excluding cover letter)



# SAMPLE CONDITIONS PAGE

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Temperature upon receipt (°C): **4.7**

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)
106677.01	Treat Tank Eff Composite	1/5/12	1/5/12	aqueous		Adheres to Sample Acceptance Policy
106677.02	Treat Tank Eff Grab	1/5/12	1/5/12	aqueous		Adheres to Sample Acceptance Policy
106677.03	Treat Tank Eff Grab	1/5/12	1/5/12	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



# LABORATORY REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Sample ID: Treat Tank Eff Grab

**Lab Sample ID:** 106677.02  
**Matrix:** aqueous  
**Date Sampled:** 1/5/12  
**Date Received:** 1/5/12  
**Units:** ug/l  
**Date of Analysis:** 1/6/12  
**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) 98 %R  
 1,2-Dichlorobenzene-d4 (surr) 90 %R  
 Toluene-d8 (surr) 100 %R





# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**Client Designation: **Merrimack Station**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Chloromethane	< 5	19 (97 %R)	21 (105 %R) (8 RPD)	1/6/2012	ug/l	0 - 273	20	624
Vinyl chloride	< 2	18 (91 %R)	20 (101 %R) (10 RPD)	1/6/2012	ug/l	0 - 251	20	624
Bromomethane	< 2	21 (105 %R)	23 (113 %R) (7 RPD)	1/6/2012	ug/l	0 - 242	20	624
Chloroethane	< 5	19 (95 %R)	20 (101 %R) (6 RPD)	1/6/2012	ug/l	14 - 230	20	624
Trichlorofluoromethane	< 5	17 (84 %R)	18 (88 %R) (5 RPD)	1/6/2012	ug/l	17 - 181	20	624
Acrolein	< 50	< 50 (%R N/A)	< 50 (%R) ( RPD)	1/6/2012	ug/l			624
Acetone	< 50	< 50 (78 %R)	< 50 (90 %R) (14 RPD)	1/6/2012	ug/l			624
1,1-Dichloroethene	< 1	17 (83 %R)	18 (89 %R) (7 RPD)	1/6/2012	ug/l	0 - 234	20	624
Methylene chloride	< 5	18 (88 %R)	19 (93 %R) (6 RPD)	1/6/2012	ug/l	0 - 221	20	624
Carbon disulfide	< 5	17 (%R)	19 (%R) ( RPD)	1/6/2012	ug/l			624
Acrylonitrile	< 50	< 50 (%R)	< 50 (%R) ( RPD)	1/6/2012	ug/l			624
Methyl-t-butyl ether(MTBE)	< 10	20 (%R)	20 (%R) ( RPD)	1/6/2012	ug/l			624
trans-1,2-Dichloroethene	< 2	18 (89 %R)	18 (92 %R) (3 RPD)	1/6/2012	ug/l	54 - 156	20	624
Vinyl acetate	< 10	30 (%R)	30 (%R) ( RPD)	1/6/2012	ug/l			624
1,1-Dichloroethane	< 2	19 (93 %R)	20 (98 %R) (5 RPD)	1/6/2012	ug/l	59 - 155	20	624
cis-1,2-Dichloroethene	< 2	19 (%R)	20 (%R) ( RPD)	1/6/2012	ug/l			624
2-Butanone(MEK)	< 10	20 (%R)	20 (%R) ( RPD)	1/6/2012	ug/l			624
Chloroform	< 2	19 (94 %R)	20 (99 %R) (5 RPD)	1/6/2012	ug/l	51 - 138	20	624
1,1,1-Trichloroethane	< 2	18 (91 %R)	19 (97 %R) (6 RPD)	1/6/2012	ug/l	52 - 162	20	624
Carbon tetrachloride	< 2	18 (91 %R)	19 (95 %R) (4 RPD)	1/6/2012	ug/l	70 - 140	20	624
Benzene	< 1	19 (97 %R)	20 (102 %R) (5 RPD)	1/6/2012	ug/l	37 - 151	20	624
1,2-Dichloroethane	< 2	18 (91 %R)	19 (94 %R) (3 RPD)	1/6/2012	ug/l	49 - 155	20	624
Trichloroethene	< 2	19 (93 %R)	20 (98 %R) (5 RPD)	1/6/2012	ug/l	71 - 157	20	624
1,2-Dichloropropane	< 2	19 (95 %R)	20 (98 %R) (3 RPD)	1/6/2012	ug/l	0 - 210	20	624
Bromodichloromethane	< 2	19 (96 %R)	20 (100 %R) (4 RPD)	1/6/2012	ug/l	35 - 155	20	624
2-Chloroethylvinylether	< 2	23 (115 %R)	24 (121 %R) (5 RPD)	1/6/2012	ug/l	0 - 305	20	624
4-Methyl-2-pentanone(MIBK)	< 10	20 (%R)	20 (%R) ( RPD)	1/6/2012	ug/l			624
cis-1,3-Dichloropropene	< 2	22 (109 %R)	23 (113 %R) (4 RPD)	1/6/2012	ug/l	0 - 227	20	624
Toluene	< 1	20 (101 %R)	21 (103 %R) (2 RPD)	1/6/2012	ug/l	47 - 150	20	624
trans-1,3-Dichloropropene	< 2	18 (90 %R)	19 (93 %R) (3 RPD)	1/6/2012	ug/l	17 - 183	20	624
1,1,2-Trichloroethane	< 2	20 (100 %R)	21 (104 %R) (4 RPD)	1/6/2012	ug/l	52 - 150	20	624
2-Hexanone	< 10	20 (%R)	20 (%R) ( RPD)	1/6/2012	ug/l			624
Tetrachloroethene	< 2	20 (100 %R)	21 (106 %R) (6 RPD)	1/6/2012	ug/l	64 - 148	20	624
Dibromochloromethane	< 2	20 (102 %R)	21 (104 %R) (2 RPD)	1/6/2012	ug/l	53 - 149	20	624
Chlorobenzene	< 2	20 (98 %R)	20 (100 %R) (2 RPD)	1/6/2012	ug/l	37 - 160	20	624
Ethylbenzene	< 1	20 (101 %R)	21 (105 %R) (4 RPD)	1/6/2012	ug/l	37 - 162	20	624
mp-Xylene	< 1	40 (101 %R)	43 (106 %R) (5 RPD)	1/6/2012	ug/l	70 - 130	20	624
o-Xylene	< 1	21 (104 %R)	22 (109 %R) (5 RPD)	1/6/2012	ug/l	70 - 130	20	624
Styrene	< 1	21 (%R)	22 (%R) ( RPD)	1/6/2012	ug/l			624
Bromoform	< 2	18 (88 %R)	18 (90 %R) (2 RPD)	1/6/2012	ug/l	45 - 169	20	624
1,1,2,2-Tetrachloroethane	< 2	20 (99 %R)	20 (100 %R) (1 RPD)	1/6/2012	ug/l	46 - 157	20	624
1,3-Dichlorobenzene	< 1	20 (100 %R)	21 (104 %R) (4 RPD)	1/6/2012	ug/l	59 - 156	20	624
1,4-Dichlorobenzene	< 1	20 (98 %R)	20 (102 %R) (4 RPD)	1/6/2012	ug/l	18 - 190	20	624
1,2-Dichlorobenzene	< 1	20 (98 %R)	20 (102 %R) (4 RPD)	1/6/2012	ug/l	18 - 190	20	624
4-Bromofluorobenzene (surr)	100 %R	101 %R	102 %R	1/6/2012	% Rec	70 - 130		624



# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
1,2-Dichlorobenzene-d4 (surr)	93 %R	90 %R	89 %R	1/6/2012	% Rec	70 - 130		624
Toluene-d8 (surr)	100 %R	102 %R	102 %R	1/6/2012	% 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.  
\*! Flagged analyte recoveries deviated from the QA/QC limits. Any impact to data is addressed below.



# LABORATORY REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Sample ID: Treat Tank Eff Grab

Lab Sample ID: 106677.02  
Matrix: aqueous  
Date Sampled: 1/5/12  
Date Received: 1/5/12  
Units: ug/l  
Date of Extraction/Preparation: 1/6/12  
Date of Analysis: 1/6/12  
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



# LABORATORY REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Sample ID: Treat Tank Eff Grab

Lab Sample ID: 106677.02  
Matrix: aqueous  
Date Sampled: 1/5/12  
Date Received: 1/5/12  
Units: ug/l  
Date of Extraction/Preparation: 1/6/12  
Date of Analysis: 1/6/12  
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) 33 %R  
Phenol-d6 (surr) 24 %R  
2,4,6-Tribromophenol (surr) 90 %R  
Nitrobenzene-D5 (surr) 71 %R  
2-Fluorobiphenyl (surr) 72 %R  
p-Terphenyl-D14 (surr) 84 %R



# QC REPORT

EAI ID#: 106677

Client: Northeast Utilities

Batch ID: 734507-32510/A010512E6251

Client Designation: Merrimack Station

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Phenol	< 1	14 (27 %R)	14 (29 %R) (7 RPD)	1/5/2012	ug/l	15 - 130	20	625mod
2-Chlorophenol	< 1	29 (59 %R)	30 (60 %R) (2 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
2,4-Dichlorophenol	< 1	35 (70 %R)	36 (72 %R) (3 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
2,4,5-Trichlorophenol	< 1	18 (72 %R)	19 (75 %R) (4 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
2,4,6-Trichlorophenol	< 1	34 (68 %R)	36 (71 %R) (4 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
Pentachlorophenol	< 5	34 (68 %R)	39 (78 %R) (14 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
2-Nitrophenol	< 1	35 (70 %R)	37 (73 %R) (4 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
4-Nitrophenol	< 5	16 (32 %R)	17 (35 %R) (9 RPD)	1/5/2012	ug/l	15 - 130	20	625mod
2,4-Dinitrophenol	< 5	38 (75 %R)	40 (81 %R) (8 RPD)	1/5/2012	ug/l	15 - 130	20	625mod
2-Methylphenol	< 1	15 (61 %R)	16 (64 %R) (5 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
3/4-Methylphenol	< 1	13 (53 %R)	14 (54 %R) (2 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
2,4-Dimethylphenol	< 1	33 (66 %R)	34 (67 %R) (2 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
4-Chloro-3-methylphenol	< 1	36 (73 %R)	36 (73 %R) (0 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
4,6-Dinitro-2-methylphenol	< 5	39 (77 %R)	41 (81 %R) (5 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
Benzoic Acid	< 50	< 50 (31 %R)	< 50 (34 %R) (9 RPD)	1/5/2012	ug/l	15 - 140	20	625mod
N-Nitrosodimethylamine	< 1	12 (46 %R)	12 (47 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
n-Nitroso-di-n-propylamine	< 1	17 (67 %R)	17 (69 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
n-Nitrosodiphenylamine	< 1	22 (90 %R)	23 (90 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
bis(2-Chloroethyl)ether	< 1	16 (63 %R)	16 (64 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
bis(2-chloroisopropyl)ether	< 1	15 (61 %R)	15 (62 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
bis(2-Chloroethoxy)methane	< 1	17 (69 %R)	18 (70 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
1,3-Dichlorobenzene	< 1	13 (52 %R)	13 (52 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
1,4-Dichlorobenzene	< 1	13 (52 %R)	13 (52 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
1,2-Dichlorobenzene	< 1	14 (54 %R)	14 (55 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
1,2,4-Trichlorobenzene	< 1	14 (57 %R)	14 (58 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
2-Chloronaphthalene	< 1	16 (63 %R)	16 (65 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
4-Chlorophenyl-phenylether	< 1	18 (71 %R)	18 (72 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
4-Bromophenyl-phenylether	< 1	19 (75 %R)	19 (75 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Hexachloroethane	< 1	11 (43 %R)	11 (43 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Hexachlorobutadiene	< 1	10 (40 %R)	10 (42 %R) (5 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Hexachlorocyclopentadiene	< 5	* 9 (37 %R)	10 (41 %R) (10 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Hexachlorobenzene	< 1	18 (73 %R)	19 (78 %R) (7 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
4-Chloroaniline	< 1	20 (80 %R)	20 (80 %R) (0 RPD)	1/5/2012	ug/l	15 - 140	20	625mod
2-Nitroaniline	< 5	17 (67 %R)	18 (71 %R) (6 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
3-Nitroaniline	< 1	18 (73 %R)	19 (76 %R) (4 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
4-Nitroaniline	< 1	18 (73 %R)	19 (77 %R) (5 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzyl alcohol	< 5	16 (65 %R)	17 (67 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Nitrobenzene	< 1	16 (65 %R)	17 (68 %R) (5 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Isophorone	< 1	20 (79 %R)	20 (81 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
2,4-Dinitrotoluene	< 1	20 (81 %R)	21 (85 %R) (5 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
2,6-Dinitrotoluene	< 1	19 (75 %R)	20 (79 %R) (5 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzidine (estimated)	< 5	23 (92 %R)	20 (81 %R) (13 RPD)	1/5/2012	ug/l	15 - 168	20	625mod
3,3'-Dichlorobenzidine	< 1	19 (75 %R)	19 (76 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Pyridine	< 5	11 (45 %R)	11 (46 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Azobenzene	< 1	18 (71 %R)	18 (71 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod



# QC REPORT

EAI ID#: 106677

Client: Northeast Utilities

Batch ID: 734507-32510/A010512E6251

Client Designation: Merrimack Station

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Carbazole	< 1	20 (79 %R)	20 (81 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Dimethylphthalate	< 1	18 (73 %R)	18 (74 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Diethylphthalate	< 1	19 (76 %R)	19 (77 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Di-n-butylphthalate	< 5	19 (77 %R)	19 (76 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Butylbenzylphthalate	< 1	19 (76 %R)	19 (77 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
bis(2-Ethylhexyl)phthalate	< 5	19 (76 %R)	19 (76 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Di-n-octylphthalate	< 1	18 (73 %R)	19 (75 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Dibenzofuran	< 1	16 (66 %R)	17 (67 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Naphthalene	< 1	17 (67 %R)	17 (67 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
2-Methylnaphthalene	< 1	16 (62 %R)	16 (62 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Acenaphthylene	< 1	16 (63 %R)	16 (65 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Acenaphthene	< 1	17 (70 %R)	18 (71 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Fluorene	< 1	17 (70 %R)	18 (71 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Phenanthrene	< 1	19 (74 %R)	19 (76 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Anthracene	< 1	19 (77 %R)	19 (77 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Fluoranthene	< 1	19 (75 %R)	19 (76 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Pyrene	< 1	18 (73 %R)	18 (73 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzo[a]anthracene	< 1	19 (75 %R)	19 (76 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Chrysene	< 1	19 (77 %R)	19 (77 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzo[b]fluoranthene	< 1	19 (75 %R)	19 (77 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzo[k]fluoranthene	< 1	19 (77 %R)	20 (79 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzo[a]pyrene	< 1	19 (76 %R)	19 (77 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Indeno[1,2,3-cd]pyrene	< 1	19 (78 %R)	19 (77 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Dibenz[a,h]anthracene	< 1	20 (80 %R)	19 (77 %R) (4 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzo[g,h,i]perylene	< 1	20 (79 %R)	19 (77 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
2-Fluorophenol (surr)	39 %R	39 %R	39 %R	1/5/2012	% Rec	21 - 110	20	625mod
Phenol-d6 (surr)	28 %R	28 %R	29 %R	1/5/2012	% Rec	15 - 94	20	625mod
2,4,6-Tribromophenol (surr)	76 %R	92 %R	82 %R	1/5/2012	% Rec	15 - 110	20	625mod
Nitrobenzene-D5 (surr)	76 %R	75 %R	77 %R	1/5/2012	% Rec	35 - 114	20	625mod
2-Fluorobiphenyl (surr)	77 %R	73 %R	75 %R	1/5/2012	% Rec	43 - 116	20	625mod
p-Terphenyl-D14 (surr)	89 %R	95 %R	90 %R	1/5/2012	% 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.

Hexachlorocyclopentadiene exhibited recovery below acceptance limits in the LCS. Hexachlorocyclopentadiene was not detected in the sample.



# LABORATORY REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

---

Sample ID:	Treat Tank Eff Grab
Lab Sample ID:	106677.02
Matrix:	aqueous
Date Sampled:	1/5/12
Date Received:	1/5/12
Units:	mg/L
Date of Extraction/Prep:	1/9/12
Date of Analysis:	1/9/12
Analyst:	LAS
Method:	1664A
Dilution Factor:	1
Oil & Grease (HEM)	< 5



# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Oil & Grease (HEM)	< 5	37 (93 %R)	33 (82 %R) (13 RPD)	1/9/2012	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. Any impact to data is addressed below.





# LABORATORY REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Sample ID: Treat Tank Eff  
Grab

Lab Sample ID: 106677.02  
Matrix: aqueous  
Date Sampled: 1/5/12  
Date Received: 1/5/12  
Units: ug/l  
Date of Extraction/Prep: 1/6/12  
Date of Analysis: 1/6/12  
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)	81 %R
DCB (surr)	96 %R



# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Batch ID: 734508-43146/A010612E608P1

Client Designation: **Merrimack Station**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
PCB-1016	< 0.3	2.0 (101 %R)	2.1 (106 %R) (5 RPD)	1/6/2012	ug/l	40 - 140	20	608
PCB-1221	< 0.3	< 0.3 (%R N/A)	< 0.3 (%R N/A) (RPD N/A)	1/6/2012	ug/l			608
PCB-1232	< 0.3	< 0.3 (%R N/A)	< 0.3 (%R N/A) (RPD N/A)	1/6/2012	ug/l			608
PCB-1242	< 0.3	< 0.3 (%R N/A)	< 0.3 (%R N/A) (RPD N/A)	1/6/2012	ug/l			608
PCB-1248	< 0.3	< 0.3 (%R N/A)	< 0.3 (%R N/A) (RPD N/A)	1/6/2012	ug/l			608
PCB-1254	< 0.3	< 0.3 (%R N/A)	< 0.3 (%R N/A) (RPD N/A)	1/6/2012	ug/l			608
PCB-1260	< 0.3	2.0 (102 %R)	2.1 (105 %R) (3 RPD)	1/6/2012	ug/l	40 - 140	20	608
TMX (surr)	84 %R	88 %R	90 %R	1/6/2012	% Rec	30 - 150		608
DCB (surr)	95 %R	101 %R	100 %R	1/6/2012	% 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#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Sample ID: Treat Tank Eff Composite

Lab Sample ID: 106677.01

Matrix: aqueous

Date Sampled: 1/5/12

Date Received: 1/5/12

Solids Suspended	14
Solids Dissolved	21000
Fluoride	10
Sulfate	1200
Chloride	11000
Nitrate-N	100
Alkalinity Total (CaCO3)	180
Ammonia-N	0.92
BOD	< 6
COD	130
pH	7.3

Units	Analysis			Method	Analyst
	Date	Time			
mg/L	01/10/12	15:40	2540D	DLS	
mg/L	01/11/12	13:15	2540C	DLS	
mg/L	01/11/12	11:23	300.0	KL	
mg/L	01/11/12	11:23	300.0	KL	
mg/L	01/10/12	12:17	4500CIE	DLS	
mg/L	01/06/12	12:57	353.2	DLS	
mg/L	01/11/12	9:40	2320B	SEL	
mg/L	01/10/12	8:30	4500NH3D	SEL	
mg/L	01/06/12	14:05	5210B	SKC	
mg/L	01/12/12	10:20	H8000	SKC	
SU	01/05/12	15:10	4500H+B	NZ	

Sample ID: Treat Tank Eff Grab

Lab Sample ID: 106677.02

Matrix: aqueous

Date Sampled: 1/5/12

Date Received: 1/5/12

Cyanide Total	0.02
Sulfide	< 0.1
Sulfite	< 2
Total Residual Chlorine	< 0.05
Total Phenols	< 0.3

Units	Analysis			Method	Analyst
	Date	Time			
mg/L	01/11/12	8:45	4500CNE	KJR	
mg/L	01/11/12	13:20	8131HACH	KJR	
mg/L	01/05/12	17:30	377.1	JL	
mg/L	01/05/12	16:50	4500CIG	NZ	
mg/L	01/09/12	9:00	420.1	JCC	

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



# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Parameter Name	Blank	LCS	LCSD	Units	Date of Analysis	Limits	RPD	Method
Solids Suspended	< 5	90 (90 %R)	93 (93 %R) (3 RPD)	mg/L	1/10/12	90 - 110	20	2540D
Solids Dissolved	< 5	970 (97 %R)	NA	mg/L	1/11/12	85 - 115		2540C
Fluoride	< 0.1	2.0 (101 %R)	2.0 (101 %R) (0 RPD)	mg/L	1/11/12	90 - 110	20	300.0
Sulfate	< 1	21 (106 %R)	21 (103 %R) (3 RPD)	mg/L	1/11/12	90 - 110	20	300.0
Chloride	< 1	26 (103 %R)	26 (103 %R) (0 RPD)	mg/L	1/10/12	90 - 110	20	4500CIE
Nitrate-N	< 0.05	5.3 (106 %R)	5.3 (106 %R) (0 RPD)	mg/L	1/6/12	90 - 110	20	353.2
Alkalinity Total (CaCO3)	< 1	10 (99 %R)	10 (100 %R) (1 RPD)	mg/L	1/11/12	85 - 115	20	2320B
Cyanide Total	< 0.02	0.27 (106 %R)	0.23 (91 %R) (15 RPD)	mg/L	1/11/12	85 - 115	20	4500CNE
Ammonia-N	< 0.05	2.0 (100 %R)	2.1 (105 %R) (5 RPD)	mg/L	1/10/12	90 - 110	20	4500NH3DN
Sulfide	< 0.1	0.4 (98 %R)	0.4 (90 %R) (9 RPD)	mg/L	1/11/12	80 - 120	20	8131HAČH
Sulfite	< 2	NA	NA	mg/L	1/5/12			377.1
Total Residual Chlorine	< 0.05	0.88 (101 %R)	0.87 (100 %R) (1 RPD)	mg/L	1/5/12	80 - 120	20	4500CIG
BOD	< 6	430 (109 %R)	390 (97 %R) (12 RPD)	mg/L	1/6/12	84 - 115	20	5210B
COD	< 10	100 (101 %R)	100 (98 %R) (3 RPD)	mg/L	1/12/12	85 - 115	20	H8000
Total Phenols	< 0.05	0.28 (112 %R)	0.27 (106 %R) (6 RPD)	mg/L	1/9/12	85 - 115	20	420.1
pH		6.0 (101 %R)	6.05 (101 %R) (0 RPD)	SU	1/5/12	5.95 - 6.07	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.



# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Parameter Name	Duplicate Parent ID	Duplicate Parent	Duplicate	Units	Date of Analysis	RPD	Method
Solids Suspended	106692.03	180	160 (13 RPD)	mg/L	1/10/12	20	2540D
Solids Dissolved		NA	NA	mg/L	1/11/12		2540C
Fluoride		NA	NA	mg/L	1/11/12	20	300.0
Sulfate		NA	NA	mg/L	1/11/12	20	300.0
Chloride		NA	NA	mg/L	1/10/12	20	4500CIE
Nitrate-N		NA	NA	mg/L	1/6/12	20	353.2
Alkalinity Total (CaCO3)		NA	NA	mg/L	1/11/12	20	2320B
Cyanide Total		NA	NA	mg/L	1/11/12	20	4500CNE
Ammonia-N	106627.02	13	13 (2 RPD)	mg/L	1/10/12	20	4500NH3D
Sulfide		NA	NA	mg/L	1/11/12	20	8131HACH
Sulfite	106677.02	< 2	< 2 (RPD N/A)	mg/L	1/5/12	20	377.1
Total Residual Chlorine		NA	NA	mg/L	1/5/12	20	4500CIG
BOD	106657.02	410	400 (3 RPD)	mg/L	1/6/12	20	5210B
COD		NA	NA	mg/L	1/12/12	20	H8000
Total Phenols		NA	NA	mg/L	1/9/12	20	420.1
pH	106649.01	6.3	6.3 (0 RPD)	SU	1/5/12	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.



# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Parameter Name	MS/MSD Parent ID	MS/MSD Parent	Matrix Spike	MSD	Date of Analysis	Units	Limits	RPD	Method
Solids Suspended		NA	NA	NA	mg/L	1/10/12		20	2540D
Solids Dissolved		NA	NA	NA	mg/L	1/11/12			2540C
Fluoride		NA	NA	NA	mg/L	1/11/12		20	300.0
Sulfate		NA	NA	NA	mg/L	1/11/12		20	300.0
Chloride	106632.02	11	22 (110 %R)	22 (109 %R) (1 RPD)	mg/L	1/10/12	80-120	20	4500CIE
Nitrate-N	106678.01	1.2	12 (110 %R)	12 (109 %R) (1 RPD)	mg/L	1/6/12	80-120	20	353.2
Alkalinity Total (CaCO3)	106607.01	29	48 (98 %R)	NA	mg/L	1/11/12	80-120	20	2320B
Cyanide Total	106677.02	0.02	0.25 (93 %R)	0.23 (86 %R) (8 RPD)	mg/L	1/11/12	75-125	20	4500CNE
Ammonia-N	106627.02	13	16 (115 %R)	15 (85 %R) (30 RPD)	mg/L	1/10/12	80-120	20	4500NH3
Sulfide		NA	NA	NA	mg/L	1/11/12		20	8131HAC
Sulfite		NA	NA	NA	mg/L	1/5/12			377.1
Total Residual Chlorine		NA	NA	NA	mg/L	1/5/12		20	4500CIG
BOD	106657.02	410	760 (82 %R)	NA	mg/L	1/6/12	75-125	20	5210B
COD	106677.01	130	220 (92 %R)	230 (99 %R) (7 RPD)	mg/L	1/12/12	80-120	20	H8000
Total Phenols	106677.02	< 0.3	0.4 (42 %R)	0.4 (42 %R) (133 RPD)	mg/L	1/9/12	80-120	20	420.1
pH		NA	NA	NA	SU	1/5/12		10	4500H+B

Total Phenols: The MS and MSD recoveries were below acceptance criteria even when the parent sample was diluted indicating a matrix interference.

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.



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

11 January 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,

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

Liz Siska  
Project Manager



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
Treat Tank Eff Composite	1201073-01	Water	05-Jan-12 10:00	06-Jan-12 09:50
Treat Tank Eff Grab	1201073-02	Water	05-Jan-12 08:00	06-Jan-12 09:50

Frontier Global Sciences, Inc.

A handwritten signature in cursive script that reads "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.*

Page 1 of 26  
1201073 Final Report  
01/11/2012





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

## CASE NARRATIVE

### SAMPLE RECEIPT

Samples were received at Frontier Global Sciences (FGS) on January 6th, 2012. The samples were received intact, on-ice with temperatures measured at 3.4 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 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, Inc.

A handwritten signature in cursive script that reads "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.*

Page 2 of 26  
1201073 Final Report  
01/11/2012



### CHAIN OF CUSTODY FORMS

1201073



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

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

Page 1 of 1

1201073

Client: <i>Alaska Dept of Environmental Conservation</i>		Contact: <i>Paula Brown</i>		Analysis Requested: <i>PCB, PAH, HCB, PCBs</i>		
Address: <i>1000 1st Ave</i>		Phone: <i>907-475-1234</i>		TAT (business days): <i>30 (std)</i>		
Project Name: <i>Alaska Dept of Environmental Conservation</i>		E-mail: <i>paula.brown@alaska.gov</i>		TAT for 10 days (including SAT): <i>45 10 5 40 2 24 hrs.</i>		
Report Title: <i>Alaska Dept of Environmental Conservation</i>		Contract POC: <i>JJG</i>		Security delivery? <input type="checkbox"/> Y <input checked="" type="checkbox"/> N		
Address: <i>1000 1st Ave</i>		Invoice To: <i>Alaska Dept of Environmental Conservation</i>		Prints, electronic files <input type="checkbox"/> Y <input checked="" type="checkbox"/> N		
City: <i>Juneau</i>		State: <i>AK</i>		QA <input type="checkbox"/> Standard <input type="checkbox"/> High		
Country: <i>USA</i>		Comments:				
No.	Engraved Bottle ID	Sample ID	Bottles	Matrix	Date & Time	Comments
1	<i>1-2012-01</i>	<i>1000 1st Ave</i>	<i>1</i>	<i>Water</i>	<i>1/12/12</i>	<i>1) Matrix: 1000 1st Ave</i>
2	<i>1-2012-01</i>	<i>1000 1st Ave</i>	<i>1</i>	<i>Water</i>	<i>1/12/12</i>	<i>2) Matrix: 1000 1st Ave</i>
3	<i>1-2012-01</i>	<i>1000 1st Ave</i>	<i>1</i>	<i>Water</i>	<i>1/12/12</i>	<i>3) Matrix: 1000 1st Ave</i>
4						
5						
6						
7						
8						
9						
10						
11						
12						
For Laboratory Use Only		Matrix Codes:		Retrieved By:		
PCB Swab: <i>NO</i>		PAH: <i>Free Water</i>		Name: <i>Liz Siska</i>		
Cooler Temp: <i>5-10</i>		WW: <i>Waste Water</i>		Name: <i>Liz Siska</i>		
Carrier: <i>UPS</i>		SS: <i>Sediment</i>		Organization: <i>EAI</i>		
TWR: <i>6850</i>		PS: <i>Plant and Animal Tissue</i>		Date & Time: <i>01/12/12</i>		
# of Coolers: <i>1</i>		HC: <i>Hydrocarbon</i>		Date & Time: <i>01/12/12</i>		
Comments: <i>110-4422</i>		IR: <i>Trace</i>		Date & Time: <i>01/12/12</i>		
Sample Disposal:		OT: <i>Other</i>		By signing, you endorse that you agree with FG's terms and conditions, and that you authorize FG to perform the specified analyses.		
<input type="checkbox"/> Return (shipping fees may apply)				Customer Approval: <i>[Signature]</i> Date: <i>01/12/12</i>		
<input type="checkbox"/> Standard Disposal - 30 Days after report						
<input type="checkbox"/> Retain for _____ weeks after report (storage fees may apply)						

Rec'd by: *Alexa Trahan, FG-S 1-6-12, 11:07*

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.

Page 3 of 26  
 1201073 Final Report  
 01/11/2012



## ANALYTICAL RESULTS

### Treat Tank Eff Composite

Matrix: Water

Laboratory ID: 1201073-01

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Aluminum	41.1	2.2	20.0	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Antimony	0.520	0.023	0.100	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Barium	300	0.14	1.00	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Beryllium	0.522	0.114	0.300	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Cadmium	0.207	0.021	0.100	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Calcium	5050000	16200	200000	µg/L	5000	F201077	2A10015	01/10/12	FGS-054	
Chromium	ND	0.04	0.50	µg/L	5	F201062	2A10002	01/09/12	FGS-054	U
Copper	ND	0.05	0.50	µg/L	5	F201062	2A10002	01/09/12	FGS-054	U
Iron	ND	6.5	50.0	µg/L	5	F201062	2A10002	01/09/12	FGS-054	U
Lead	ND	0.020	0.200	µg/L	5	F201062	2A10002	01/09/12	FGS-054	U
Manganese	293	0.74	10.0	µg/L	100	F201062	2A10002	01/09/12	FGS-054	
Molybdenum	140	0.03	0.30	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Nickel	8.03	0.04	0.50	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Silver	ND	0.030	0.100	µg/L	5	F201062	2A10002	01/09/12	FGS-054	U
Sodium	277000	115	2000	µg/L	100	F201062	2A10002	01/09/12	FGS-054	
Thallium	6.64	0.006	0.025	µg/L	5	F201062	2A10002	01/09/12	FGS-054	QB-01
Zinc	ND	0.08	1.00	µg/L	5	F201062	2A10002	01/09/12	FGS-054	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 4 of 26  
 1201073 Final Report  
 01/11/2012



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

## ANALYTICAL RESULTS

### Treat Tank Eff Grab

Matrix: Water

Laboratory ID: 1201073-02

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Arsenic	4.98	1.02	3.00	µg/L	20	F201062	2A10015	01/10/12	FGS-054	
Mercury	10.5	0.34	2.02	ng/L	4	F201063	2A09010	01/09/12	EPA 1631E	FB-1631
Selenium	74.0	3.88	12.0	µg/L	20	F201062	2A10015	01/10/12	FGS-054	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 5 of 26  
1201073 Final Report  
01/11/2012



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

### MATRIX DUPLICATES/TRIPPLICATES

SOURCE: 1201073-02

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-DUP1

Analyte	Sample Concentration ng/L	Duplicate Concentration ng/L	MRL	% RPD	RPD Limit	Method	Notes
Mercury	10.48	10.54	2.02	0.617	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 6 of 26  
1201073 Final Report  
01/11/2012



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

**SOURCE: 1201073-01**

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201062-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Beryllium	0.522	2.0200	2.676	107	75 - 135	FGS-054	
Aluminum	41.1	151.50	210.7	112	80 - 115	FGS-054	
Chromium	0.47	7.0700	8.59	115	85 - 115	FGS-054	
Iron	ND	505.00	563.6	112	75 - 125	FGS-054	
Nickel	8.03	4.0400	11.98	97.7	68 - 134	FGS-054	
Copper	0.29	4.0400	4.00	91.8	51 - 145	FGS-054	
Zinc	0.27	10.100	9.10	87.4	46 - 146	FGS-054	
Arsenic	5.32	15.150	22.17	111	85 - 115	FGS-054	
Selenium	71.73	30.300	100.6	95.3	59 - 149	FGS-054	
Molybdenum	140.3	2.0200	142.1	88.8	80 - 115	FGS-054	
Silver	ND	1.5150	1.216	80.3	74 - 119	FGS-054	
Cadmium	0.207	0.80800	1.076	108	84 - 113	FGS-054	
Antimony	0.520	0.80800	1.360	104	79 - 122	FGS-054	
Barium	300.0	10.100	305.0	49.8	80 - 120	FGS-054	QM-02
Thallium	6.645	0.40400	6.882	58.7	64 - 137	FGS-054	QB-01, QM-02
Lead	ND	1.5150	1.635	108	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	2.639	105	1.39	75 - 135	20	FGS-054	
Aluminum	151.50	213.8	114	1.50	80 - 115	20	FGS-054	
Chromium	7.0700	8.59	115	0.0611	85 - 115	20	FGS-054	
Iron	505.00	553.8	110	1.76	75 - 125	20	FGS-054	
Nickel	4.0400	12.20	103	1.83	68 - 134	20	FGS-054	
Copper	4.0400	3.95	90.7	1.15	51 - 145	20	FGS-054	
Zinc	10.100	8.87	85.2	2.51	46 - 146	20	FGS-054	
Arsenic	15.150	22.81	115	2.84	85 - 115	20	FGS-054	
Selenium	30.300	110.8	129	9.65	59 - 149	20	FGS-054	
Molybdenum	2.0200	143.5	159	0.993	80 - 115	20	FGS-054	QM-02
Silver	1.5150	1.226	81.0	0.852	74 - 119	20	FGS-054	
Cadmium	0.80800	0.956	92.7	11.8	84 - 113	20	FGS-054	

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*

Page 7 of 26  
 1201073 Final Report  
 01/11/2012

Liz Siska, Project Manager



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

### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1201073-01

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201062-MS/MSD1

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Antimony	0.80800	1.373	106	0.924	79 - 122	20	FGS-054	
Barium	10.100	307.1	71.1	0.703	80 - 120	20	FGS-054	QM-02
Thallium	0.40400	6.918	67.6	0.520	64 - 137	20	FGS-054	QB-01
Lead	1.5150	1.580	104	3.44	72 - 143	20	FGS-054	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 8 of 26  
1201073 Final Report  
01/11/2012



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

**SOURCE: 1201073-01RE1**

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201062-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Sodium	277400	505.00	264500	-2560	75 - 125	FGS-054	QM-02
Manganese	293.1	6.0600	287.1	-98.7	80 - 120	FGS-054	QM-02

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Sodium	505.00	270000	-1460	2.06	75 - 125	20	FGS-054	QM-02
Manganese	6.0600	289.7	-55.3	0.912	80 - 120	20	FGS-054	QM-02

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 9 of 26  
 1201073 Final Report  
 01/11/2012





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

**SOURCE: 1201073-01**

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201062-MS/MSD3

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Beryllium	0.522	10.100	10.96	103	75 - 135	FGS-054	AS
Aluminum	41.1	2020.0	2166	105	80 - 115	FGS-054	AS
Chromium	0.47	202.00	230.0	114	85 - 115	FGS-054	AS
Iron	ND	1010.0	1103	109	75 - 125	FGS-054	AS
Nickel	8.03	252.50	255.1	97.8	68 - 134	FGS-054	AS
Copper	0.29	252.50	224.5	88.8	51 - 145	FGS-054	AS
Zinc	0.27	505.00	422.7	83.7	46 - 146	FGS-054	AS
Arsenic	5.32	202.00	235.0	114	85 - 115	FGS-054	AS
Selenium	71.73	202.00	287.2	107	59 - 149	FGS-054	AS
Molybdenum	140.3	101.00	244.7	103	80 - 115	FGS-054	AS
Silver	ND	10.100	8.224	81.4	74 - 119	FGS-054	AS
Cadmium	0.207	20.200	19.18	93.9	84 - 113	FGS-054	AS
Antimony	0.520	10.100	11.16	105	79 - 122	FGS-054	AS
Barium	300.0	404.00	775.3	118	80 - 120	FGS-054	AS
Thallium	6.645	10.100	17.46	107	64 - 137	FGS-054	AS, QB-01
Lead	ND	50.500	51.95	103	72 - 143	FGS-054	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	10.100	11.25	106	2.66	75 - 135	20	FGS-054	AS
Aluminum	2020.0	2171	105	0.234	80 - 115	20	FGS-054	AS
Chromium	202.00	231.3	114	0.528	85 - 115	20	FGS-054	AS
Iron	1010.0	1112	110	0.802	75 - 125	20	FGS-054	AS
Nickel	252.50	255.9	98.2	0.346	68 - 134	20	FGS-054	AS
Copper	252.50	225.5	89.2	0.424	51 - 145	20	FGS-054	AS
Zinc	505.00	425.5	84.2	0.647	46 - 146	20	FGS-054	AS
Arsenic	202.00	236.5	114	0.629	85 - 115	20	FGS-054	AS
Selenium	202.00	287.0	107	0.0540	59 - 149	20	FGS-054	AS
Molybdenum	101.00	246.7	105	0.806	80 - 115	20	FGS-054	AS
Silver	10.100	8.290	82.1	0.798	74 - 119	20	FGS-054	AS
Cadmium	20.200	19.31	94.6	0.670	84 - 113	20	FGS-054	AS
Antimony	10.100	11.31	107	1.29	79 - 122	20	FGS-054	AS

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.*



### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1201073-01

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201062-MS/MSD3

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Barium	404.00	779.8	119	0.575	80 - 120	20	FGS-054	AS
Thallium	10.100	17.56	108	0.595	64 - 137	20	FGS-054	AS, QB-01
Lead	50.500	52.16	103	0.399	72 - 143	20	FGS-054	AS

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 11 of 26  
1201073 Final Report  
01/11/2012



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

**SOURCE: 1201073-01RE1**

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201062-MS/MSD4

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Sodium	277400	202000	474400	97.5	75 - 125	FGS-054	AS
Manganese	293.1	2020.0	2396	104	80 - 120	FGS-054	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Sodium	202000	480300	100	1.25	75 - 125	20	FGS-054	AS
Manganese	2020.0	2405	105	0.346	80 - 120	20	FGS-054	AS

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.*

Page 12 of 26  
 1201073 Final Report  
 01/11/2012

Liz Siska, Project Manager



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

**SOURCE: 1201073-02**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-MS/MSD1

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	10.48	20.400	31.36	102	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	20.400	27.08	81.4	14.7	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 13 of 26  
 1201073 Final Report  
 01/11/2012



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

**SOURCE: 1112278-02**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-MS/MSD2

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	7.61	20.400	27.86	99.2	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	20.400	28.37	102	1.82	71 - 125	24	EPA 1631E	

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.*

Page 14 of 26  
 1201073 Final Report  
 01/11/2012

Liz Siska, Project Manager



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

**SOURCE: 1201029-01**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-MS/MSD3

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	5.34	10.200	15.58	100	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	14.07	85.6	10.2	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 15 of 26  
 1201073 Final Report  
 01/11/2012



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

**SOURCE: 1201030-02**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-MS/MSD4

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	5.54	10.200	14.82	91.0	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	14.61	89.0	1.40	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 16 of 26  
 1201073 Final Report  
 01/11/2012



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

**SOURCE: 1201073-01RE2**

Batch: F201077

Sequence: 2A10015

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201077-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Calcium	5052000	1515.0	5067000	1010	70 - 130	FGS-054	QM-02

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Calcium	1515.0	5034000	-1190	0.660	70 - 130	20	FGS-054	QM-02

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 17 of 26  
 1201073 Final Report  
 01/11/2012





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

**SOURCE: 1201073-01RE2**

**Batch:** F201077

**Sequence:** 2A10015

**Preparation:** Closed Vessel Nitric Oven Digestion

**Lab Number:** F201077-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Calcium	5052000	10100000	15570000	104	70 - 130	FGS-054	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Calcium	10100000	15550000	104	0.125	70 - 130	20	FGS-054	

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.*

Page 18 of 26  
 1201073 Final Report  
 01/11/2012

Liz Siska, Project Manager



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

**RECOVERY AND RPD**

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201062-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Beryllium	2.0000	2.039	102	75 - 135	FGS-054	
Sodium	500.00	487	97.4	80 - 120	FGS-054	
Aluminum	150.00	152.4	102	85 - 115	FGS-054	
Calcium	1500.0	1550	103	80 - 120	FGS-054	
Chromium	7.0000	6.82	97.4	85 - 115	FGS-054	
Manganese	6.0000	6.03	101	85 - 115	FGS-054	
Iron	500.00	481.5	96.3	80 - 120	FGS-054	
Nickel	4.0000	4.06	102	68 - 134	FGS-054	
Copper	4.0000	4.15	104	51 - 145	FGS-054	
Zinc	10.000	10.16	102	46 - 146	FGS-054	
Arsenic	15.000	15.38	103	85 - 115	FGS-054	
Selenium	30.000	31.50	105	59 - 149	FGS-054	
Molybdenum	2.0000	1.97	98.3	85 - 115	FGS-054	
Silver	1.5000	1.569	105	74 - 119	FGS-054	
Cadmium	0.80000	0.850	106	84 - 113	FGS-054	
Antimony	0.80000	0.866	108	79 - 122	FGS-054	
Barium	10.000	10.41	104	85 - 115	FGS-054	
Thallium	0.40000	0.433	108	64 - 134	FGS-054	
Lead	1.5000	1.611	107	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	2.078	104	1.91	75 - 135	20	FGS-054	
Sodium	500.00	496	99.2	1.88	80 - 120	20	FGS-054	
Aluminum	150.00	154.4	103	1.28	85 - 115	20	FGS-054	
Calcium	1500.0	1583	106	2.10	80 - 120	20	FGS-054	
Chromium	7.0000	6.95	99.3	1.90	85 - 115	20	FGS-054	
Manganese	6.0000	6.15	103	1.97	85 - 115	20	FGS-054	
Iron	500.00	494.6	98.9	2.69	80 - 120	20	FGS-054	

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.*

Page 19 of 26  
 1201073 Final Report  
 01/11/2012

Liz Siska, Project Manager



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

**RECOVERY AND RPD**

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201062-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS Recovery %	% RPD	Recovery Limits	RPD Limit	Method	Notes
Nickel	4.0000	4.15	104	2.20	68 - 134	20	FGS-054	
Copper	4.0000	4.28	107	3.01	51 - 145	20	FGS-054	
Zinc	10.000	10.52	105	3.48	46 - 146	20	FGS-054	
Arsenic	15.000	15.69	105	2.00	85 - 115	20	FGS-054	
Selenium	30.000	32.57	109	3.35	59 - 149	20	FGS-054	
Molybdenum	2.0000	1.93	96.6	1.72	85 - 115	20	FGS-054	
Silver	1.5000	1.557	104	0.768	74 - 119	20	FGS-054	
Cadmium	0.80000	0.868	108	2.04	84 - 113	20	FGS-054	
Antimony	0.80000	0.872	109	0.661	79 - 122	20	FGS-054	
Barium	10.000	10.54	105	1.25	85 - 115	20	FGS-054	
Thallium	0.40000	0.443	111	2.27	64 - 134	20	FGS-054	
Lead	1.5000	1.641	109	1.85	72 - 143	20	FGS-054	

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.*

Page 20 of 26  
 1201073 Final Report  
 01/11/2012

Liz Siska, Project Manager



LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE

RECOVERY AND RPD

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-BS/BSD1

LCS Source: Nist 1641d

Analyte	Spike Added (ng/L)	LCS Concentration (ng/L)	LCS % Recovery	Recovery Limits	Method	Notes
Mercury	15.679	15.50	98.8	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	15.95	102	2.89	80 - 120	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 21 of 26  
 1201073 Final Report  
 01/11/2012



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

**RECOVERY AND RPD**

Batch: F201077

Sequence: 2A10015

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201077-BS/BS1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Calcium	1500.0	1517	101	80 - 120	FGS-054	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Calcium	1500.0	1571	105	3.47	80 - 120	20	FGS-054	

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.*

Page 22 of 26  
 1201073 Final Report  
 01/11/2012

Liz Siska, Project Manager



### PREPARATION BLANKS

Instrument: Hg-17

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F201063-BLK1	Mercury	-0.009	0.50	ng/L	F201063	EPA 1631E	U
F201063-BLK2	Mercury	-0.006	0.50	ng/L	F201063	EPA 1631E	U
F201063-BLK3	Mercury	-0.02	0.50	ng/L	F201063	EPA 1631E	U
F201063-BLK4	Mercury	0.03	0.50	ng/L	F201063	EPA 1631E	U, QB-04
F201063-BLK5	Mercury	0.11	0.52	ng/L	F201063	EPA 1631E	U, QB-06

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 23 of 26  
1201073 Final Report  
01/11/2012

## PREPARATION BLANKS

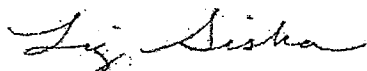
Instrument: ICPMS-6

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F201062-BLK1	Beryllium	0.0002	0.060	µg/L	F201062	FGS-054	U
F201062-BLK1	Sodium	0.09	20	µg/L	F201062	FGS-054	U
F201062-BLK1	Aluminum	0.09	4.0	µg/L	F201062	FGS-054	U
F201062-BLK1	Calcium	0.5	40	µg/L	F201062	FGS-054	U
F201062-BLK1	Chromium	0.03	0.10	µg/L	F201062	FGS-054	U
F201062-BLK1	Manganese	-0.002	0.10	µg/L	F201062	FGS-054	U
F201062-BLK1	Iron	-0.06	10.0	µg/L	F201062	FGS-054	U
F201062-BLK1	Nickel	0.004	0.10	µg/L	F201062	FGS-054	U
F201062-BLK1	Copper	-0.0003	0.10	µg/L	F201062	FGS-054	U
F201062-BLK1	Zinc	0.04	0.20	µg/L	F201062	FGS-054	U
F201062-BLK1	Arsenic	-0.07	0.15	µg/L	F201062	FGS-054	U
F201062-BLK1	Selenium	0.003	0.60	µg/L	F201062	FGS-054	U
F201062-BLK1	Molybdenum	0.005	0.06	µg/L	F201062	FGS-054	U
F201062-BLK1	Silver	0.0002	0.020	µg/L	F201062	FGS-054	U
F201062-BLK1	Cadmium	-0.00002	0.020	µg/L	F201062	FGS-054	U
F201062-BLK1	Antimony	-0.0003	0.020	µg/L	F201062	FGS-054	U
F201062-BLK1	Barium	-0.04	0.20	µg/L	F201062	FGS-054	U
F201062-BLK1	Thallium	0.007	0.005	µg/L	F201062	FGS-054	QB-10
F201062-BLK1	Lead	0.003	0.040	µg/L	F201062	FGS-054	U

Frontier Global Sciences, Inc.



Liz Siska, Project Manager

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

Page 24 of 26  
1201073 Final Report  
01/11/2012



### PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2A10015

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F201077-BLK1	Calcium	0.2	40	µg/L	F201077	FGS-054	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.*

Page 25 of 26  
1201073 Final Report  
01/11/2012

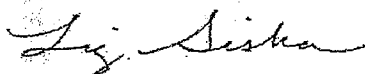
Liz Siska, Project Manager



## 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-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-06 The blank was preserved to 5% BrCl rather than 1%. The control limit for blanks preserved to greater than 1% BrCl is the preservation percentage multiplied by the MRL.
- 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-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.
- FB-1631 Required equipment/field/filter blank not submitted by the client. The sample has been analyzed according to 1631E, but does not meet 1631E criteria
- 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

Frontier Global Sciences, Inc.



Liz Siska, Project Manager

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

Page 26 of 26  
1201073 Final Report  
01/11/2012



VIA EMAIL

February 9, 2012  
File No. 04.0029307.00



Mr. Dana Clement  
Superintendent  
Allenstown Wastewater Treatment Facility  
35 Canal Street  
Allenstown, New Hampshire 03275

Re: Wastewater Discharge Monitoring Report  
Treated Wastewater  
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 Dana:

On behalf of Public Service of New Hampshire (PSNH), GZA GeoEnvironmental, Inc. is pleased to submit the attached Wastewater Discharge Monitoring Report for sampling conducted on January 26, 2012, as required to satisfy round 2 of 4 of the initial weekly sampling requirements as outlined in Industrial Discharge Permit (IDP) No. HWIU-PSNH.

The attached **Table 1** summarizes the analytical results for all required parameters as outlined Part 2 Section A of the IDP. The attached **Analytical Data Report**, however, contains a more comprehensive list of parameters.

#### **ANALYTICAL DISCUSSION**

Flue Gas Desulfurization (FGD) wastewater requires specialized analytical techniques to overcome matrix interference for certain analysis of trace metals. To assist you in evaluating this issue further, we offer an excerpt below from the United States Environmental Protection Agency (EPA) web site and a link to their draft Standard Operating Procedure (SOP) for trace metals analysis of FGD wastewater 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

Copyright © 2012 GZA GeoEnvironmental, Inc.

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 an 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 SOP. 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](http://water.epa.gov/scitech/wastetech/guide/upload/steam_draft_sop.pdf), EPA May 2011.

Considering that specialized analytical techniques are necessary to overcome matrix interference for certain analysis of trace metals in FGD wastewater, we recommend any analysis on FGD wastewater be conducted in accordance with the EPA draft SOP for trace metals analysis of FGD wastewater.

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.

A handwritten signature in black ink that reads 'Ronald A. Breton'.

Ronald A. Breton, P.E.  
Principal

RAB:mm

P:\04\jobs\0029300s\04.0029307.00\Work\SAMPLING AND REPORTING\REPORTS\Allenstown\FINAL 04.0029307 Atown DATA RPT 020912.docx

Attachments: Wastewater Discharge Monitoring Report  
Analytical Data report

**WASTEWATER DISCHARGE MONITORING REPORT**

**WASTEWATER DISCHARGE MONITORING REPORT  
ALLENSTOWN WASTEWATER TREATMENT FACILITY**

Public Service of New Hampshire - Merrimack Station  
Industrial Discharge Permit - Class I  
Permit No. HWIU-PSNH  
Issued November 10, 2011  
Expires November 9, 2012

Permitted Flow 100,000 gallons per day

**FLOW DATA**

Daily Flow Rate (gallons)	15,852 (average)
Monitoring Period Flow (gallons)	110,967 (1/19/12 - 1/26/12)

**FACILITY INFORMATION**

Company Name Public Service Company of New Hampshire - Merrimack Station  
Company Owner Public Service Company of New Hampshire  
Facility Address 97 River Road  
Facility Contact Harold Keyes  
Telephone (603) 224-4081

**MONITORING REPORT**

Submittal Date 2/9/2012  
Monitoring Point End of treatment process  
Reporting Period First Month

**SAMPLE ANALYSIS**

Certified Analytical Laboratory Eastern Analytical Inc. (EAI) Certification Number 1012  
Authorized Representative Lorraine Olashaw  
Analytical Subcontractor Frontier Global Sciences Certification Number E87575

**SAMPLE COLLECTION**

Sampler Jeff Gagne (EAD)  
Sample Type Grab  
Sample Date 1/26/2012 Sample Time 10:00 AM  
pH 7.6

**CATEGORICAL PRETREATMENT STANDARDS**

40 CFR 423.16: Steam Electric Power Generating Category  
NOTE: There are no numerical pretreatment standards for this source

**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  
2/9/2012  
Date

**SUMMARY ANALYTICAL DATA**  
**Treated FGD Wastewater**  
Public Service Company of New Hampshire  
Merrimack Station  
Bow, New Hampshire

<b>PARAMETER</b>	<b>RESULTS (mg/L) 01/26/2012 EAI/Frontier</b>
Arsenic	0.00956
Cadmium	0.000587
Chromium (T)	< 0.00200
Copper	0.00261
Lead	< 0.000800
Mercury	0.0000122
Molybdenum	0.373
Nickel	0.00776
Selenium	0.104
Silver	< 0.000400
Zinc	< 0.00400

**Note:**

The analytical results and the flow data from the monitoring period indicate that the estimated pollutant mass in the discharge is below mass limits outlined in IDP No. HWIU-PSNH.



**ANALYTICAL DATA REPORT**



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



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](http://www.eailabs.com) for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:  
Solid samples are reported on a dry weight basis, unless otherwise noted  
< : "less than" followed by the reporting limit  
> : "greater than" followed by the reporting limit  
%R : % Recovery


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

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

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

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

Sincerely,

  
Lorraine Olashaw, Lab Director

2-8-12  
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



# 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 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



# QC REPORT

EAI ID#: 107170

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



# QC REPORT

EAI ID#: 107170

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.  
\*! Flagged analyte recoveries deviated from the QA/QC limits. Any impact to data is addressed below.



# 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/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



# 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/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





# QC REPORT

EAI ID#: 107170

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



# QC REPORT

EAI ID#: 107170

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.



# 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:	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



# QC REPORT

EAI ID#: 107170

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

Fluoride	6.2
Chloride	9500
Nitrate-N	68
Cyanide Total	0.01
Ammonia-N	1.2
BOD	< 6
COD	180
Total Phenols	< 0.5
pH	7.6

Analysis					
Units	Date	Time	Method	Analyst	
mg/L	2/01/12	13:35	300.0	KL	
mg/L	1/30/12	13:33	4500CIE	DLS	
mg/L	1/27/12	9:15	353.2	DLS	
mg/L	1/31/12	9:15	4500CNE	KJR	
mg/L	1/30/12	15:15	4500NH3D	SEL	
mg/L	1/27/12	17:30	5210B	SKC	
mg/L	2/02/12	16:15	H8000	SKC	
mg/L	1/31/12	9:00	420.1	JCC	
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 2/8/2012 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.





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,

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

Liz Siska  
Project Manager



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, 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.*

Page 1 of 19  
1201361 Final Report  
02/03/2012



## 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, 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.*

Page 2 of 19  
1201361 Final Report  
02/03/2012



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

### CHAIN OF CUSTODY FORMS



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

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

Page 1 of 1

1201361

Client: Eastern Analytical, Inc. Address: 35 Cheney Drive Concord NH 03301		Contact: JACE Gagne Phone: 603/225-4591 Fax: 603/225-4591 E-mail: jace.gagne@ealabs.com		Project Name: American Station		Contract/PO: 67732		Report To: Same		Invoice To: Same		Address: Same		Address: Same		Phone: 603/225-4525 Fax: 603/225-4591		Phone: Fax:		E-mail: CustomerService@ealabs.com		E-mail: CustomerService@ealabs.com		Analyses Requested		FGS PM: Lia. Siska Date: 1/26/12 TAT (business days): 20 (std) 15 (exp) 5 4 3 2 24 hrs. (For TAT = 10 days, contact PM Exchanges apply for expedited TAT) Saturday delivery? <input type="checkbox"/> Y <input type="checkbox"/> N (If yes, please contact PM) EOD <input checked="" type="checkbox"/> Y <input type="checkbox"/> N OA <input type="checkbox"/> Standard <input type="checkbox"/> High	
No.	Engraved Bottle ID	Sample ID	# of Bottles	Matrix	Date & Time	Sampled By	Field Filtered (Y/N)	Field Preserved: HNO <sub>3</sub> HCl BrCl Other (%)	Total Metals	Comments																	
1	C-2024	EAL Lab Field Blank	1	Ass	1/26/2012 09:00	Jace	N	-	X	<p>Metals Include: Al, Sb, As, Ba, Bi, Cd, Cr, Cu, Fe, Pb, Mn, Hg, Mo, Ni, Se, Ag, Ti, Zn</p> <p>Please use certified cell - FGD 4811-1-1</p> <p>Project - Specific metals add sample volume per table.</p>																	
2	C-2024 C-2020	Treat Tank Effluent	3	WW	1/26/2012 09:00	Jace	N	-	X																		
3																											
4																											
5																											
6																											
7																											
8																											
9																											
10																											
11																											
12																											
For Laboratory Use Only		Matrix Codes:		Relinquished By:		Received By:		Received By:																			
COC Seal: 110		Comments: ID: 4422		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		Name: Jace Gagne Organization: Eastern Analytical Date & Time: 1/26/2012 09:00		Name: JENNIFER LACE Organization: EAT Date & Time: 1/26/2012 10:45		Name: WRS Organization: WRS Date & Time: 1/26/12 15:30																	
Cooler Temp: 27°C				Tracking number: 1E X 46 54913 9827 4534																							
Carrier: UPS																											
VTSR: 0927																											
# of Coolers: 1 (C/W)																											
Sample Disposal: <input type="checkbox"/> Return (shipping fees may apply) <input type="checkbox"/> Standard Disposal - 30 Days after report <input type="checkbox"/> 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: <i>Jace Gagne</i>		Date: 01/26/12															

Rec'd @ FGS: A-CO2-C, ALEXA M BATHM, FGS 1-27-12  
VTSR: 0927

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*

Page 3 of 19  
1201361 Final Report  
02/03/2012

Liz Siska, Project Manager



## 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	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 4 of 19  
 1201361 Final Report  
 02/03/2012



## 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

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 5 of 19  
 1201361 Final Report  
 02/03/2012



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

### MATRIX DUPLICATES/TRIPPLICATES

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	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 6 of 19  
1201361 Final Report  
02/03/2012

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

**SOURCE: 1201361-02**

Batch: F201252

Sequence: 2B02001

Preparation: Closed Vessel Nitric Oven Digestion

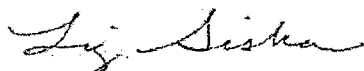
Lab Number: F201252-MS/MSD1

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

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.*



Page 7 of 19  
1201361 Final Report  
02/03/2012

Liz Siska, Project Manager





### 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	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 8 of 19  
1201361 Final Report  
02/03/2012



**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

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.*

Page 9 of 19  
 1201361 Final Report  
 02/03/2012

Liz Siska, Project Manager

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

**SOURCE: 1201361-02**

Batch: F201252

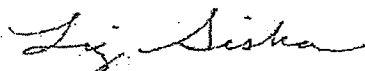
Sequence: 2B02001

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

Frontier Global Sciences, Inc.



Liz Siska, Project Manager

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

Page 10 of 19  
1201361 Final Report  
02/03/2012



**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

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 11 of 19  
 1201361 Final Report  
 02/03/2012



### 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	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 12 of 19  
1201361 Final Report  
02/03/2012



**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	

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.*

Page 13 of 19  
 1201361 Final Report  
 02/03/2012

Liz Siska, Project Manager

**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	

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.*



Page 14 of 19  
1201361 Final Report  
02/03/2012

Liz Siska, Project Manager



**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	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 15 of 19  
 1201361 Final Report  
 02/03/2012





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	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 16 of 19  
 1201361 Final Report  
 02/03/2012

## PREPARATION BLANKS

Instrument: ICPMS-6

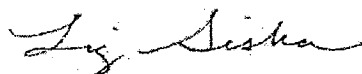
Sequence: 2B02001

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

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.*



Page 17 of 19  
1201361 Final Report  
02/03/2012

Liz Siska, Project Manager



### 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

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

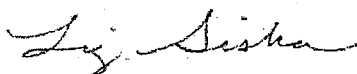
*The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Page 18 of 19  
1201361 Final Report  
02/03/2012

## 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

Frontier Global Sciences, Inc.



Liz Siska, Project Manager

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

Page 19 of 19  
1201361 Final Report  
02/03/2012



eastern analytical, inc.  
Professional laboratory services

# CHAIN-OF-CUSTODY RECORD

107170

53

Sample IDs	Date/Time	Matrix	Parameters and Sample Notes	# of containers
Effluent Field Blank	1/26/12	aqueous Grab or Comp	AqTot/SWLLMetalsSub	1
<input checked="" type="checkbox"/> Sampler confirms ID and parameters are accurate			Circle preservative/s: HCL HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH MEOH Na <sub>2</sub> S <sub>2</sub> O <sub>8</sub> <input checked="" type="checkbox"/> CE	
Treat Tank Effluent	1/26/12	aqueous Grab or Comp	AqTot/SWLLMetalsSub/NH <sub>3</sub> /BOD/C/COD/Cyant/F/NO <sub>3</sub> /OG/1664/V624/A/E625/E608/PCB/TTPhenols / <i>PH</i> *	17
<input checked="" type="checkbox"/> Sampler confirms ID and parameters are accurate			Circle preservative/s: <input checked="" type="checkbox"/> HCL <input checked="" type="checkbox"/> HNO <sub>3</sub> <input checked="" type="checkbox"/> H <sub>2</sub> SO <sub>4</sub> <input checked="" type="checkbox"/> NaOH <input checked="" type="checkbox"/> MEOH Na <sub>2</sub> S <sub>2</sub> O <sub>8</sub> <input checked="" type="checkbox"/> CE	

\* AT Customer's Request, 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.

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)  
Email/Address: paul.pepler@gza.com

Results Needed by: Preferred date 1/28/12  
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, Ti, Zn.  
Metals analyses require project-specific MS/MSD.  
*624, 625, 608 results needed*

Reporting Options  
 HC  
 EDD PDF  
 EDD email  
 PDF prelim, NO FAX  
 e-mail LogIn Confirmation  
 NO FAX  
 PONumber: 02259252  
 Quote No: 45 °C  
 Temperature 10.45  
 Ice present Yes  No   
 Samples collected by: JB JB  
 Relinquished by: [Signature] Date/Time: 1/26/12 10:45  
 Received by: [Signature]



**VIA EMAIL**

February 23, 2012  
File No. 04.0029307.00



Mr. Dana Clement  
Superintendent  
Allentown Wastewater Treatment Facility  
35 Canal Street  
Allentown, New Hampshire 03275

Re: Wastewater Discharge Monitoring Report  
Treated Wastewater  
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 Dana:

On behalf of Public Service of New Hampshire (PSNH), GZA GeoEnvironmental, Inc. is pleased to submit the attached **Wastewater Discharge Monitoring Report** for sampling conducted on February 2, 2012, as required to satisfy the round three of four initial weekly sampling requirement as outlined in Industrial Discharge Permit (IDP) No. HWIU-PSNH.

Table 1 included in the Wastewater Discharge Monitoring Report summarizes the analytical results for all required parameters as outlined Part 2 Section A of the IDP. The attached **Analytical Data Report**, however, contains a more comprehensive list of parameters.

**ANALYTICAL DISCUSSION**

Flue Gas Desulfurization (FGD) wastewater requires specialized analytical techniques to overcome matrix interference for certain analysis of trace metals. To assist you in evaluating this issue further, we offer an excerpt below from the United States Environmental Protection Agency (EPA) web site and a link to their draft Standard Operating Procedure (SOP) for trace metals analysis of FGD wastewater 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

Copyright © 2012 GZA GeoEnvironmental, Inc.

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 an 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 SOP. 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](http://water.epa.gov/scitech/wastetech/guide/upload/steam_draft_sop.pdf), EPA May 2011.

Considering that specialized analytical techniques are necessary to overcome matrix interference for certain analysis of trace metals in FGD wastewater, we recommend any analysis on FGD wastewater be conducted in accordance with the EPA draft SOP for trace metals analysis of FGD wastewater.

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.

A handwritten signature in black ink that reads 'Ronald A. Breton'.

Ronald A. Breton, P.E.  
Principal

RAB:tmd

P:\04Jobs\0029300s\04.0029307.00\Work\SAMPLING AND REPORTING\REPORTS\Allenstown\REPORT\FINAL 04.0029307 Atown 3of4 DATA RPT 022312.docx

Attachments: Wastewater Discharge Monitoring Report  
Analytical Data report



**WASTEWATER DISCHARGE MONITORING REPORT**

**WASTEWATER DISCHARGE MONITORING REPORT  
ALLENSTOWN WASTEWATER TREATMENT FACILITY**

Public Service of New Hampshire - Merrimack Station  
Industrial Discharge Permit - Class I  
Permit No. HWIU-PSNH  
Issued November 10, 2011  
Expires November 9, 2012

Permitted Flow 100,000 gallons per day

**FLOW DATA**

Daily Flow Rate (gallons)	19,744 (average)
Monitoring Period Flow (gallons)	118,466 (1/27/12 - 2/03/12)

**FACILITY INFORMATION**

Company Name Public Service Company of New Hampshire - Merrimack Station  
Company Owner Public Service Company of New Hampshire  
Facility Address 97 River Road  
Facility Contact Harold Keyes  
Telephone (603) 224-4081

**MONITORING REPORT**

Submittal Date 2/23/2012  
Monitoring Point End of treatment process  
Reporting Period First Month

**SAMPLE ANALYSIS**

Certified Analytical Laboratory Eastern Analytical Inc. (EAI) Certification Number 1012  
Authorized Representative Lorraine Olashaw  
Analytical Subcontractor Frontier Global Sciences Certification Number E87575

**SAMPLE COLLECTION**

Sampler Jeff Gagne (EAI)  
Sample Type Grab  
Sample Date 2/2/2012 Sample Time 9:15 AM  
pH 7.4

**CATEGORICAL PRETREATMENT STANDARDS**

40 CFR 423.16: Steam Electric Power Generating Category  
NOTE: There are no numerical pretreatment standards for this source

**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  
2/23/2012  
Date

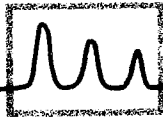
**TABLE 1 - SUMMARY ANALYTICAL DATA**  
**Treated FGD Wastewater**  
 Public Service Company of New Hampshire  
 Merrimack Station  
 Bow, New Hampshire

PARAMETER	RESULTS (mg/L) 2/2/2012 EAI/Frontier
Arsenic	0.0121
Cadmium	< 0.00100
Chromium (T)	< 0.00500
Copper	0.00553
Lead	< 0.00200
Mercury	0.0000360
Molybdenum	0.195
Nickel	< 0.00500
Selenium	0.121
Silver	< 0.00100
Zinc	< 0.0100

**Note:**

The analytical results and the flow data from the monitoring period indicate that the estimated pollutant mass in the discharge is below mass limits outlined in IDP No. HWIU-PSNH.

**ANALYTICAL DATA REPORT**



# eastern analytical

*professional laboratory services*

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



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 107330  
Client Identification: Wastewater Analysis - **Weekly**  
Date Received: 2/2/2012

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](http://www.eailabs.com) for a copy of our NELAP certificate and accredited parameters.

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

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


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

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

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

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

Sincerely,

  
Lorraine Olashaw, Lab Director

2.17.12  
Date

30  
# of pages (excluding cover letter)



# SAMPLE CONDITIONS PAGE

EAI ID#: 107330

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

Client Designation: **Wastewater Analysis - Weekly**

**Temperature upon receipt (°C): 5.2**

**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)
107330.01	Effluent Field Blank	2/2/12	2/2/12	aqueous		Adheres to Sample Acceptance Policy
107330.02	Treat Tank Effluent	2/2/12	2/2/12	aqueous		624, 625 and 608 placed on hold, then cancelled at customer's

*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.**

[www.eailabs.com](http://www.eailabs.com)

Phone: (603) 228-0525



# LABORATORY REPORT

EAI ID#: 107330

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

Client Designation: Wastewater Analysis - *Weekly*

Sample ID: Treat Tank  
Effluent

Lab Sample ID: 107330.02  
Matrix: aqueous  
Date Sampled: 2/2/12  
Date Received: 2/2/12  
Units: mg/L  
Date of Extraction/Prep: 2/8/12  
Date of Analysis: 2/8/12  
Analyst: LAS  
Method: 1664A  
Dilution Factor: 1

Oil & Grease (HEM) < 5





# QC REPORT

EAI ID#: 107330

Client: GZA GeoEnvironmental, Inc. (NH)

Batch ID: 734541-34922/A020812OG1661

Client Designation: Wastewater Analysis - *Weekly*

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Oil & Grease (HEM)	< 5	36 (91 %R)	36 (90 %R) (1 RPD)	2/8/2012	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#: 107330

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

Client Designation: Wastewater Analysis - *Weekly*

Sample ID: Treat Tank Effluent

Lab Sample ID: 107330.02

Matrix: aqueous

Date Sampled: 2/2/12

Date Received: 2/2/12

Solids Suspended	6
Solids Dissolved	19000
Fluoride	2.9
Sulfate	1200
Chloride	9300
Nitrate-N	65
Cyanide Total	< 0.01
Ammonia-N	1.1
BOD	< 6
COD	140
Total Phenols	< 0.5
pH	7.4

Analysis				
Units	Date	Time	Method	Analyst
mg/L	2/03/12	10:45	2540D	DLS
mg/L	2/03/12	10:45	2540C	DLS
mg/L	2/08/12	15:01	300.0	KL
mg/L	2/08/12	14:46	300.0	KL
mg/L	2/03/12	10:35	4500CIE	DLS
mg/L	2/03/12	10:32	353.2	DLS
mg/L	2/08/12	9:30	4500CNE	KJR
mg/L	2/09/12	9:00	4500NH3D	SEL
mg/L	2/03/12	11:20	5210B	KJR
mg/L	2/07/12	16:00	H8000	SKC
mg/L	2/08/12	2:00	420.1	JCC
SU	2/02/12	16:30	4500H+B	KJR

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



# QC REPORT

EAI ID#: 107330

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

Client Designation: Wastewater Analysis - *Weekly*

Parameter Name	Blank	LCS	LCSD	Units	Date of Analysis	Limits	RPD	Method
Solids Suspended	< 2	95 (95 %R)	94 (94 %R) (1 RPD)	mg/L	2/3/12	90 - 110	20	2540D
Solids Dissolved	< 5	990 (99 %R)	NA	mg/L	2/3/12	85 - 115	20	2540C
Fluoride	< 0.1	2.0 (99 %R)	2.0 (99 %R) (0 RPD)	mg/L	2/8/12	90 - 110	20	300.0
Sulfate	< 1	20 (100 %R)	20 (101 %R) (1 RPD)	mg/L	2/8/12	90 - 110	20	300.0
Chloride	< 1	24 (96 %R)	24 (97 %R) (1 RPD)	mg/L	2/3/12	90 - 110	20	4500CIE
Nitrate-N	< 0.5	4.9 (99 %R)	4.9 (98 %R) (1 RPD)	mg/L	2/3/12	90 - 110	20	353.2
Cyanide Total	< 0.02	0.25 (100 %R)	NA	mg/L	2/8/12	85 - 115	20	4500CNE
Ammonia-N	< 0.05	2.2 (109 %R)	2.2 (110 %R) (1 RPD)	mg/L	2/9/12	90 - 110	20	4500NH3DN
BOD	< 6	420 (104 %R)	420 (104 %R) (0 RPD)	mg/L	2/3/12	84 - 115	20	5210B
COD	< 10	100 (103 %R)	100 (101 %R) (2 RPD)	mg/L	2/7/12	85 - 115	20	H8000
Total Phenols	< 0.05	0.22 (87 %R)	0.22 (89 %R) (2 RPD)	mg/L	2/8/12	85 - 115	20	420.1
pH		6.05 (101 %R)	6.07 (101 %R) (0 RPD)	SU	2/2/12	5.95 - 6.07	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.



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

15 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,

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

Liz Siska  
Project Manager



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-3015 Effluent Field Blank	1202063-01	Water	02-Feb-12 08:47	03-Feb-12 09:30
Treat Tank Effluent	1202063-02	Water	02-Feb-12 09:15	03-Feb-12 09:30

Frontier Global Sciences, Inc.

A handwritten signature in cursive script that reads "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.*

Page 1 of 23  
1202063 Final Report  
02/15/2012



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

## CASE NARRATIVE

### SAMPLE RECEIPT

Samples were received at Frontier Global Sciences (FGS) on February 3rd, 2012. The samples were received intact, on-ice with temperatures measured at 10.6 degrees Celsius.

### SAMPLE PREPARATION AND ANALYSIS

Samples were prepared and analyzed for total metals in accordance with EPA Method 200.8 (modified).

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

### ANALYTICAL ISSUES

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

A handwritten signature in cursive script that reads "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.*

Page 2 of 23  
1202063 Final Report  
02/15/2012



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

### CHAIN OF CUSTODY FORMS

1202063



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

414 Pon

107330

J9

50

Fax: 206-622-6870

info@FrontierGS.com

http://www.FrontierGS.com

Page 1 of 1

1202063

Client: Eastern Analytical, Inc Address: 25 Church Drive Concord NH 03301		Contact: Jeff Griggs Phone: 603 410-7880 Fax: 603 228-4571 E-mail: jeffg@ealilabs.com		Sampled By	Field Filtered (Y/N)	Field Preserved: HNO <sub>3</sub> , HCl, BrCl Other (%)	Total Metals	Analyses Requested				FGS PM: Liz Siska
Project Name: Merrimack Station		Contract/PO:										Date: 2/2/2012
Report To: same		Invoice To: same										TAT (business days): 20 (std) 15 (0 5 4 3 2 24 hrs. (For TAT < 10 days, contact PM. Surcharges apply for expedited TAT). Saturday delivery? <input type="checkbox"/> Y <input type="checkbox"/> N (If yes, please contact PM)
Address: same		Address: same										EDD <input type="checkbox"/> Y <input type="checkbox"/> N QA <input type="checkbox"/> Standard <input type="checkbox"/> High
Phone: 603 228 0625 Fax: 603 228 4571		Phone: Fax:										
E-mail: customer.service@ealilabs.com		E-mail: customer.service@ealilabs.com										
No.	Engraved Bottle ID	Sample ID	# of Bottles	Matrix	Date & Time	Sampled By	Field Filtered (Y/N)	Field Preserved: HNO <sub>3</sub> , HCl, BrCl Other (%)	Total Metals	Comments		
1	C-3015	Effluent Field Blank	1	AQ	2/3/12 08:47	JB/GT	N	-	X	1) Metals Include: Al, Sb, As, Ba, Bi, Cd, Cr, Cu, Fe, Pb, Mn, Hg, Mo, Ni, Se, Ag, Ti, Zn 2) Please use Gillian cells, FGD effluent. 3) Project specific M/ASD add? sample volume provided		
2	C-3024 C-3027 C-3023	Treat Tank Effluent	3	WW	2/3/12 09:15	JB/GT	N	-	X			
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												

For Laboratory Use Only		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: Trip OT: Other		Relinquished By:	Received By:	Received By:
COC Seal: NO	Comments: TID: 0268			Name: Jim Blackwell	Name: CHRIS WINDS	Name: ALEXA RAHM
Cooler Temp: 10.6 C				Organization: Eastern Analytical	Organization: EAI	Organization: FGS
Carrier: UPS				Date & Time: 2/2/12 13:00	Date & Time: 2/2/12 13:00	Date & Time: 2-3-12
VTSR: 0930				Tracking number: 1Z X46 549 01 9628 9755 14:31		
# of Coolers: 1 (one)				By signing, you declare that you agree with FGS' terms and conditions, and that you authorize FGS to perform the specified analyses.		
Sample Disposal: <input type="checkbox"/> Return (shipping fees may apply) <input type="checkbox"/> Standard Disposal - 30 Days after report <input type="checkbox"/> Retain for _____ weeks after report (storage fees may apply)				Customer Approval: _____ Date: _____		

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 3 of 23  
 1202063 Final Report  
 02/15/2012

### CHAIN OF CUSTODY FORMS

FGS Work Order: 1202063 Sample Receipt Checklist

Client: Eastern Analytical Date & Time Received: 2-3-12 09:30 Date Logged In: 2-3-12 14:31

Project: Neurotransmitter Studies Received By: Alexandra Beckman

SDG: \_\_\_\_\_ # of Coolers Received: 1 (one) FGS PW: \_\_\_\_\_ Other (specify): \_\_\_\_\_

Samples Arrived By: X Shipping Service: \_\_\_\_\_ Courier: \_\_\_\_\_ Hand: \_\_\_\_\_

Tracking/Label Number(s): UPS 1Z X46 5A9 01 9628 9755

Cooler Information

	Yes	No	NA	Comments
The coolers do not appear to be tampered with:		<input checked="" type="checkbox"/>		
Custody seals are present and intact:			<input checked="" type="checkbox"/>	<u>None used</u>
Custody seals signed by:			<input checked="" type="checkbox"/>	

Thermal Preservation: X Loose Ice \_\_\_\_\_ Gel/Ice Pack \_\_\_\_\_ Name (Ambient) \_\_\_\_\_ Other (specify) \_\_\_\_\_

Thermometer ID: 0268 Correction Factor (CF): 7.04 degrees C

Cooler #	Temp °C	Temp °C
Cooler 1:	<u>10.6</u>	°C
Cooler 2:	°C	°C
Cooler 3:	°C	°C
Cooler 4:	°C	°C
Cooler 5:	°C	°C

Cooler #	Temp °C	Temp °C
Cooler 6:	°C	°C
Cooler 7:	°C	°C
Cooler 8:	°C	°C
Cooler 9:	°C	°C
Cooler 10:	°C	°C
Cooler 11:	°C	°C
Cooler 12:	°C	°C
Cooler 13:	°C	°C
Cooler 14:	°C	°C
Cooler 15:	°C	°C

Chain of Custody

COC is present and includes the following information for each sample:

	Yes	No	NA	Comments
Sample ID/Sample Description:	<input checked="" type="checkbox"/>			
Date and Time of Sample Collection:	<input checked="" type="checkbox"/>			
Sampler By:	<input checked="" type="checkbox"/>			
Preservation Type:	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
Requested Analyses:	<input checked="" type="checkbox"/>			
Required Signatures:	<input checked="" type="checkbox"/>			
Internal chain of custody required:			<input checked="" type="checkbox"/>	

Sample Condition/Integrity

	Yes	No	NA	Comments
Sample containers were received intact:	<input checked="" type="checkbox"/>			
Sample labels are present and legible:	<input checked="" type="checkbox"/>			
Sample ID on container matches COC:	<input checked="" type="checkbox"/>			
Correct sample containers used for requested analyses:	<input checked="" type="checkbox"/>			
Samples received within holding time:	<input checked="" type="checkbox"/>			
Sample volume sufficient for requested analysis:	<input checked="" type="checkbox"/>			
Correct preservative used for requested analyses:			<input checked="" type="checkbox"/>	
pH of samples checked and within method requirements:			<input checked="" type="checkbox"/>	
If pH adjusted by laboratory, noted in logbook:			<input checked="" type="checkbox"/>	

Anomalous/Non-conformances: N/A

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

Discussion/Resolution: \_\_\_\_\_

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.

Page 4 of 23  
1202063 Final Report  
02/15/2012





## ANALYTICAL RESULTS

### C-3015 Effluent Field Blank

Matrix: Water

Laboratory ID: 1202063-01

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Aluminum	ND	0.4	4.0	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Antimony	ND	0.005	0.020	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Arsenic	ND	0.05	0.15	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Barium	ND	0.03	0.20	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Beryllium	ND	0.023	0.060	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Cadmium	ND	0.004	0.020	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Chromium	ND	0.009	0.10	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Copper	ND	0.01	0.10	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Iron	ND	1.3	10.0	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Lead	ND	0.004	0.040	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Manganese	0.12	0.007	0.10	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Mercury	ND	0.08	0.50	ng/L	1	F202057	2B06014	02/06/12	EPA 1631E	U
Molybdenum	ND	0.006	0.06	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Nickel	ND	0.008	0.10	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Selenium	ND	0.19	0.60	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Silver	ND	0.006	0.020	µg/L	1	F202159	2B15016	02/15/12	EPA 200.8 Mod	QM-12, U
Thallium	ND	0.001	0.005	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	QB-02, U
Zinc	ND	0.02	0.20	µg/L	1	F202053	2B15001	02/14/12	EPA 200.8 Mod	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.*

Page 5 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager



## ANALYTICAL RESULTS

### Treat Tank Effluent

Matrix: Water

Laboratory ID: 1202063-02

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Aluminum	218	22.2	200	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Antimony	1.55	0.230	1.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Arsenic	12.1	2.55	7.50	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Barium	243	1.35	10.0	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Beryllium	ND	1.14	3.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Cadmium	ND	0.208	1.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Chromium	ND	0.45	5.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Copper	5.53	0.50	5.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Iron	ND	65.0	500	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Lead	ND	0.195	2.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Manganese	631	0.37	5.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Mercury	36.0	0.84	5.05	ng/L	10	F202057	2B06014	02/06/12	EPA 1631E	
Molybdenum	195	0.30	3.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Nickel	ND	0.40	5.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Selenium	121	9.69	30.0	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Silver	ND	0.300	1.00	µg/L	50	F202159	2B15016	02/15/12	EPA 200.8 Mod	QM-12, U
Thallium	6.85	0.056	0.250	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	QB-01
Zinc	ND	0.82	10.0	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 6 of 23  
 1202063 Final Report  
 02/15/2012



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

### MATRIX DUPLICATES/TRIPPLICATES

SOURCE: 1202063-02

Batch: F202057

Sequence: 2B06014

Preparation: BrCl Oxidation

Lab Number: F202057-DUP1

Analyte	Sample Concentration ng/L	Duplicate Concentration ng/L	MRL	% RPD	RPD Limit	Method	Notes
Mercury	36.03	36.21	5.05	0.482	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 7 of 23  
1202063 Final Report  
02/15/2012



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

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1202063-02

Batch: F202053

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202053-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	2.062	102	70 - 130	EPA 200.8 Mod	
Aluminum	217.7	151.50	355.1	90.7	70 - 130	EPA 200.8 Mod	
Chromium	2.05	7.0700	9.47	105	70 - 130	EPA 200.8 Mod	
Manganese	631.1	6.0600	611.0	-331	70 - 130	EPA 200.8 Mod	QM-02
Iron	ND	505.00	474.3	93.9	70 - 130	EPA 200.8 Mod	
Nickel	3.25	4.0400	7.58	107	70 - 130	EPA 200.8 Mod	
Copper	5.53	4.0400	9.39	95.7	70 - 130	EPA 200.8 Mod	
Zinc	0.99	10.100	12.68	116	70 - 130	EPA 200.8 Mod	
Arsenic	12.06	15.150	24.53	82.3	70 - 130	EPA 200.8 Mod	
Selenium	121.3	30.300	145.2	79.1	70 - 130	EPA 200.8 Mod	
Molybdenum	195.2	2.0200	192.5	-135	70 - 130	EPA 200.8 Mod	QM-02
Cadmium	0.623	0.80800	1.437	101	70 - 130	EPA 200.8 Mod	
Antimony	1.549	0.80800	2.358	100	70 - 130	EPA 200.8 Mod	
Barium	243.3	10.100	251.4	79.3	70 - 130	EPA 200.8 Mod	
Thallium	6.848	0.40400	7.126	68.9	70 - 130	EPA 200.8 Mod	QB-01
Lead	ND	1.5150	1.334	88.0	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	2.0200	2.025	100	1.80	70 - 130	20	EPA 200.8 Mod	
Aluminum	151.50	338.6	79.8	4.77	70 - 130	20	EPA 200.8 Mod	
Chromium	7.0700	9.09	99.6	4.12	70 - 130	20	EPA 200.8 Mod	
Manganese	6.0600	612.2	-311	0.200	70 - 130	20	EPA 200.8 Mod	QM-02
Iron	505.00	464.8	92.0	2.03	70 - 130	20	EPA 200.8 Mod	
Nickel	4.0400	8.13	121	7.06	70 - 130	20	EPA 200.8 Mod	
Copper	4.0400	9.35	94.8	0.415	70 - 130	20	EPA 200.8 Mod	
Zinc	10.100	10.13	90.4	22.4	70 - 130	20	EPA 200.8 Mod	QR-08
Arsenic	15.150	25.77	90.5	4.92	70 - 130	20	EPA 200.8 Mod	
Selenium	30.300	139.9	61.4	3.76	70 - 130	20	EPA 200.8 Mod	QM-02
Molybdenum	2.0200	190.9	-213	0.823	70 - 130	20	EPA 200.8 Mod	QM-02
Cadmium	0.80800	1.230	75.2	15.5	70 - 130	20	EPA 200.8 Mod	
Antimony	0.80800	2.316	95.0	1.77	70 - 130	20	EPA 200.8 Mod	

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*

Page 8 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager



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

### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1202063-02

Batch: F202053

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202053-MS/MSD1

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Barium	10.100	250.6	71.7	0.305	70 - 130	20	EPA 200.8 Mod	
Thallium	0.40400	6.963	28.6	2.31	70 - 130	20	EPA 200.8 Mod	QM-02, QB-01
Lead	1.5150	1.403	92.6	5.09	70 - 130	20	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 9 of 23  
1202063 Final Report  
02/15/2012



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

**SOURCE: 1202063-02**

Batch: F202053

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202053-MS/MSD3

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Beryllium	ND	50.500	42.91	85.0	70 - 130	EPA 200.8 Mod	AS
Aluminum	217.7	10100	9206	89.0	70 - 130	EPA 200.8 Mod	AS
Chromium	2.05	1010.0	1006	99.4	70 - 130	EPA 200.8 Mod	AS
Manganese	631.1	1010.0	1582	94.2	70 - 130	EPA 200.8 Mod	AS
Iron	ND	5050.0	4849	96.0	70 - 130	EPA 200.8 Mod	AS
Nickel	3.25	1262.5	1190	94.0	70 - 130	EPA 200.8 Mod	AS
Copper	5.53	1262.5	1149	90.6	70 - 130	EPA 200.8 Mod	AS
Zinc	0.99	2525.0	2401	95.0	70 - 130	EPA 200.8 Mod	AS
Arsenic	12.06	1010.0	1050	103	70 - 130	EPA 200.8 Mod	AS
Selenium	121.3	1010.0	1168	104	70 - 130	EPA 200.8 Mod	AS
Molybdenum	195.2	505.00	685.1	97.0	70 - 130	EPA 200.8 Mod	AS
Cadmium	0.623	101.00	96.95	95.4	70 - 130	EPA 200.8 Mod	AS
Antimony	1.549	50.500	50.84	97.6	70 - 130	EPA 200.8 Mod	AS
Barium	243.3	2020.0	2379	106	70 - 130	EPA 200.8 Mod	AS
Thallium	6.848	50.500	53.06	91.5	70 - 130	EPA 200.8 Mod	AS, QB-01
Lead	ND	252.50	220.5	87.3	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	50.500	43.37	85.9	1.08	70 - 130	20	EPA 200.8 Mod	AS
Aluminum	10100	9221	89.1	0.164	70 - 130	20	EPA 200.8 Mod	AS
Chromium	1010.0	990.2	97.8	1.59	70 - 130	20	EPA 200.8 Mod	AS
Manganese	1010.0	1562	92.2	1.27	70 - 130	20	EPA 200.8 Mod	AS
Iron	5050.0	4775	94.6	1.53	70 - 130	20	EPA 200.8 Mod	AS
Nickel	1262.5	1197	94.6	0.613	70 - 130	20	EPA 200.8 Mod	AS
Copper	1262.5	1129	89.0	1.79	70 - 130	20	EPA 200.8 Mod	AS
Zinc	2525.0	2399	95.0	0.0456	70 - 130	20	EPA 200.8 Mod	AS
Arsenic	1010.0	1013	99.2	3.57	70 - 130	20	EPA 200.8 Mod	AS
Selenium	1010.0	1151	102	1.49	70 - 130	20	EPA 200.8 Mod	AS
Molybdenum	505.00	684.8	97.0	0.0426	70 - 130	20	EPA 200.8 Mod	AS
Cadmium	101.00	100.4	98.7	3.45	70 - 130	20	EPA 200.8 Mod	AS
Antimony	50.500	51.11	98.1	0.531	70 - 130	20	EPA 200.8 Mod	AS

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.*

Page 10 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager



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

### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1202063-02

Batch: F202053

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202053-MS/MSD3

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Barium	2020.0	2377	106	0.106	70 - 130	20	EPA 200.8 Mod	AS
Thallium	50.500	53.45	92.3	0.720	70 - 130	20	EPA 200.8 Mod	AS, QB-01
Lead	252.50	219.8	87.0	0.315	70 - 130	20	EPA 200.8 Mod	AS

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

Page 11 of 23  
1202063 Final Report  
02/15/2012



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

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

**SOURCE: 1202063-02**

Batch: F202057

Sequence: 2B06014

Preparation: BrCl Oxidation

Lab Number: F202057-MS/MSD1

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	36.03	102.00	140.9	103	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	141.0	103	0.0816	71 - 125	24	EPA 1631E	

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.*

Page 12 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager





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

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

**SOURCE: 1202035-02RE1**

Batch: F202057

Sequence: 2B06014

Preparation: BrCl Oxidation

Lab Number: F202057-MS/MSD2

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	38.97	102.00	144.0	103	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	144.5	103	0.394	71 - 125	24	EPA 1631E	

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*

Page 13 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager



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

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

**SOURCE: 1202063-02RE2**

Batch: F202159

Sequence: 2B15016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202159-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Silver	ND	1.5150	1.891	125	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	1.5150	2.021	133	6.64	70 - 130	20	EPA 200.8 Mod	QM-07

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

Page 14 of 23  
 1202063 Final Report  
 02/15/2012



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

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

**SOURCE: 1202063-02RE2**

Batch: F202159

Sequence: 2B15016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202159-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Silver	ND	50.500	45.54	90.2	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	50.500	46.21	91.5	1.46	70 - 130	20	EPA 200.8 Mod	AS

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 15 of 23  
 1202063 Final Report  
 02/15/2012



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

**RECOVERY AND RPD**

Batch: F202053

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202053-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Beryllium	2.0000	1.891	94.5	85 - 115	EPA 200.8 Mod	
Aluminum	150.00	143.0	95.3	85 - 115	EPA 200.8 Mod	
Chromium	7.0000	6.44	92.0	85 - 115	EPA 200.8 Mod	
Manganese	6.0000	5.77	96.2	85 - 115	EPA 200.8 Mod	
Iron	500.00	454.7	90.9	85 - 115	EPA 200.8 Mod	
Nickel	4.0000	4.02	100	85 - 115	EPA 200.8 Mod	
Copper	4.0000	4.18	105	85 - 115	EPA 200.8 Mod	
Zinc	10.000	10.25	103	85 - 115	EPA 200.8 Mod	
Arsenic	15.000	14.25	95.0	85 - 115	EPA 200.8 Mod	
Selenium	30.000	29.36	97.9	85 - 115	EPA 200.8 Mod	
Molybdenum	2.0000	1.82	91.0	85 - 115	EPA 200.8 Mod	
Cadmium	0.80000	0.828	103	85 - 115	EPA 200.8 Mod	
Antimony	0.80000	0.800	100	85 - 115	EPA 200.8 Mod	
Barium	10.000	9.99	99.9	85 - 115	EPA 200.8 Mod	
Thallium	0.40000	0.420	105	85 - 115	EPA 200.8 Mod	
Lead	1.5000	1.552	103	85 - 115	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	2.0000	1.863	93.1	1.50	85 - 115	20	EPA 200.8 Mod	
Aluminum	150.00	137.5	91.7	3.91	85 - 115	20	EPA 200.8 Mod	
Chromium	7.0000	6.29	89.9	2.39	85 - 115	20	EPA 200.8 Mod	
Manganese	6.0000	5.58	93.0	3.37	85 - 115	20	EPA 200.8 Mod	
Iron	500.00	435.9	87.2	4.22	85 - 115	20	EPA 200.8 Mod	
Nickel	4.0000	3.71	92.9	7.79	85 - 115	20	EPA 200.8 Mod	
Copper	4.0000	4.03	101	3.75	85 - 115	20	EPA 200.8 Mod	
Zinc	10.000	9.89	98.9	3.59	85 - 115	20	EPA 200.8 Mod	
Arsenic	15.000	13.45	89.7	5.77	85 - 115	20	EPA 200.8 Mod	
Selenium	30.000	29.20	97.3	0.548	85 - 115	20	EPA 200.8 Mod	

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

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

**RECOVERY AND RPD**

Batch: F202053

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202053-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
Molybdenum	2.0000	1.77	88.3	3.03	85 - 115	20	EPA 200.8 Mod	
Cadmium	0.80000	0.794	99.2	4.16	85 - 115	20	EPA 200.8 Mod	
Antimony	0.80000	0.784	98.0	2.05	85 - 115	20	EPA 200.8 Mod	
Barium	10.000	9.82	98.2	1.77	85 - 115	20	EPA 200.8 Mod	
Thallium	0.40000	0.407	102	2.98	85 - 115	20	EPA 200.8 Mod	
Lead	1.5000	1.535	102	1.06	85 - 115	20	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 17 of 23  
 1202063 Final Report  
 02/15/2012



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

**RECOVERY AND RPD**

Batch: F202057

Sequence: 2B06014

Preparation: BrCl Oxidation

Lab Number: F202057-BS/BSD1

LCS Source: LCS

Analyte	Spike Added (ng/L)	LCS Concentration (ng/L)	LCS % Recovery	Recovery Limits	Method	Notes
Mercury	15.679	15.77	101	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	16.05	102	1.76	80 - 120	24	EPA 1631E	

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.*

Page 18 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager



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

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

**RECOVERY AND RPD**

Batch: F202159

Sequence: 2B15016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202159-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Silver	1.5000	2.156	144	85 - 115	EPA 200.8 Mod	QM-12

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	1.5000	2.141	143	0.706	85 - 115	20	EPA 200.8 Mod	QM-12

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 19 of 23  
 1202063 Final Report  
 02/15/2012



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

### PREPARATION BLANKS

Instrument: Hg-16

Sequence: 2B06014

Preparation: BrCl Oxidation

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F202057-BLK1	Mercury	0.04	0.50	ng/L	F202057	EPA 1631E	U
F202057-BLK2	Mercury	0.04	0.50	ng/L	F202057	EPA 1631E	U
F202057-BLK3	Mercury	0.05	0.50	ng/L	F202057	EPA 1631E	U
F202057-BLK4	Mercury	0.10	0.50	ng/L	F202057	EPA 1631E	QB-04, U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 20 of 23  
1202063 Final Report  
02/15/2012





**PREPARATION BLANKS**

Instrument: ICPMS-6

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F202053-BLK1	Beryllium	0.005	0.060	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Aluminum	-0.04	4.0	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Chromium	-0.02	0.10	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Manganese	-0.002	0.10	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Iron	-0.3	10.0	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Nickel	-0.03	0.10	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Copper	0.008	0.10	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Zinc	0.10	0.20	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Arsenic	-0.07	0.15	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Selenium	-0.02	0.60	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Molybdenum	0.01	0.06	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Cadmium	0.005	0.020	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Antimony	0.019	0.020	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Barium	0.005	0.20	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Thallium	0.028	0.005	µg/L	F202053	EPA 200.8 Moc	QB-10
F202053-BLK1	Lead	0.004	0.040	µg/L	F202053	EPA 200.8 Moc	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 21 of 23  
 1202063 Final Report  
 02/15/2012



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

### PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2B15016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F202159-BLK1	Silver	0.0006	0.020	µg/L	F202159	EPA 200.8 Mod	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

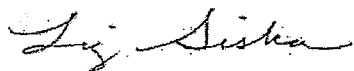
*The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Page 22 of 23  
1202063 Final Report  
02/15/2012

## Notes and Definitions

- U Analyte included in the analysis, but not detected
- QR-08 The RPD value for the MS/MSD was outside of acceptance limits. Batch QC acceptable based on matrix duplicate and/or LCS/LCSD RPD values within control limits.
- QM-12 Initial or continuing calibration verification and/or blank spike/blank spike duplicate recoveries above upper control limits. All reported sample concentrations were below the reporting limit.
- QM-07 The spike recovery was outside control limits for the MS and/or MSD. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
- QM-02 The MS and/or MSD recoveries outside acceptance limits, due to spike concentration less than 1 times the sample concentration. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
- QB-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

Frontier Global Sciences, Inc.



Liz Siska, Project Manager

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

Page 23 of 23  
1202063 Final Report  
02/15/2012



eastern analytical, inc.  
professional/laboratory services

# CHAIN-OF-CUSTODY RECORD

107330

GZANH 03

Date/Time  
Composites need start  
and stop dates/times

Matrix  
Parameters and Sample Notes

# of containers

Sample IDs	Date/Time	Matrix	Parameters and Sample Notes	# of containers
Effluent Field Blank	2/2/2012 8:47	aqueous <u>Grad</u> or Comp	AqTot/SWLLMetalsSub	1
<input checked="" type="checkbox"/> Sampler confirms ID and parameters are accurate			Circle preservative/s: HCL HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH MEQH Na <sub>2</sub> S <sub>2</sub> O <sub>8</sub> <u>PCB</u>	Dissolved Sample Field Filtered <input type="checkbox"/>
Treat Tank Effluent	2/2/2012 9:15	aqueous <u>Grad</u> or Comp	AqTot/SWLLMetalsSub/BOD/COD/CyanT/F/NO3/OG1664/SO4/TDS/TSS/V624V/E625/T/Phenols/E609F/GB/NH3/Cl/PH	13
<input checked="" type="checkbox"/> Sampler confirms ID and parameters are accurate			Circle preservative/s: <u>HCl</u> HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH MEQH Na <sub>2</sub> S <sub>2</sub> O <sub>8</sub> <u>PCB</u>	Dissolved Sample Field Filtered <input type="checkbox"/>

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)  
 Email/Address: paul.pepler@gza.com

Results Needed by: Preferred date \_\_\_\_\_  
 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, Ti, Zn. Metals analyses require project-specific MS/MSD.  
 Please hold G24/G25/G05 analysis per GZA.

QC deliverables  
 A  A+  B  B+  C  PC

Reporting Options  
 HC  
 EDD PDF  
 EDD email  
 PDF prelim, NO FAX  
 e-mail Login Confirmation  
 NO FAX

Sample collected by: JR GT  
 Relinquished by: [Signature]  
 Date/Time: 2/2/12 13:00  
 Received by: [Signature]

PONumber: 02259252  
 Quote No: 1009476  
 Temperature: 5.2 °C  
 Ice present Yes  No

**VIA EMAIL**

March 9, 2012  
File No. 04.0029307.00



Mr. Dana Clement  
Superintendent  
Allentown Wastewater Treatment Facility  
35 Canal Street  
Allentown, New Hampshire 03275

Re: Wastewater Discharge Monitoring Report  
Treated Wastewater  
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 Dana:

On behalf of Public Service of New Hampshire (PSNH), GZA GeoEnvironmental, Inc. is pleased to submit the attached **Wastewater Discharge Monitoring Report** for sampling conducted on February 9, 2012, as required to satisfy the round four of four initial weekly sampling requirement as outlined in Industrial Discharge Permit (IDP) No. HWIU-PSNH.

Table 1 included in the Wastewater Discharge Monitoring Report summarizes the analytical results for all required parameters as outlined Part 2 Section A of the IDP. The attached **Analytical Data Report**, however, contains a more comprehensive list of parameters.

**ANALYTICAL DISCUSSION**

Flue Gas Desulfurization (FGD) wastewater requires specialized analytical techniques to overcome matrix interference for certain analysis of trace metals. To assist you in evaluating this issue further, we offer an excerpt below from the United States Environmental Protection Agency (EPA) web site and a link to their draft Standard Operating Procedure (SOP) for trace metals analysis of FGD wastewater 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 an 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 SOP. 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](http://water.epa.gov/scitech/wastetech/guide/upload/steam_draft_sop.pdf), EPA May 2011.

Considering that specialized analytical techniques are necessary to overcome matrix interference for certain analysis of trace metals in FGD wastewater, we recommend any analysis on FGD wastewater be conducted in accordance with the EPA draft SOP for trace metals analysis of FGD wastewater.

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.

A handwritten signature in black ink that reads 'Ronald A. Breton'.

Ronald A. Breton, P.E.  
Principal

RAB:tmd

P:\04Jobs\0029300\04.0029307.00\Work\SAMPLING AND REPORTING\REPORTS\Allenstown\REPORT\FINAL 04.0029307 Atown 4of4 DATA RPT 030812.docx

Attachments: Wastewater Discharge Monitoring Report  
Analytical Data report

**WASTEWATER DISCHARGE MONITORING REPORT**

**WASTEWATER DISCHARGE MONITORING REPORT  
ALLENSTOWN WASTEWATER TREATMENT FACILITY**

Public Service of New Hampshire - Merrimack Station  
Industrial Discharge Permit - Class I  
Permit No. HWIU-PSNH  
Issued November 10, 2011  
Expires November 9, 2012

Permitted Flow 100,000 gallons per day

**FLOW DATA**

Daily Flow Rate (gallons)	9,600	(average of actual discharge days)
Monitoring Period Flow (gallons)	47,999	(2/04/12 - 2/09/12)



**FACILITY INFORMATION**

Company Name Public Service Company of New Hampshire - Merrimack Station  
Company Owner Public Service Company of New Hampshire  
Facility Address 97 River Road  
Facility Contact Harold Keyes  
Telephone (603) 224-4081

**MONITORING REPORT**

Submittal Date 3/9/2012  
Monitoring Point End of treatment process  
Reporting Period First Month

**SAMPLE ANALYSIS**

Certified Analytical Laboratory Eastern Analytical Inc. (EAI) Certification Number 1012  
Authorized Representative Lorraine Olashaw  
Analytical Subcontractor Frontier Global Sciences Certification Number E87575

**SAMPLE COLLECTION**

Sampler Jeff Gagne (EAI)  
Sample Type Grab  
Sample Date 2/9/2012 Sample Time 9:15 AM  
pH 7.2

**CATEGORICAL PRETREATMENT STANDARDS**

40 CFR 423.16: Steam Electric Power Generating Category  
NOTE: There are no numerical pretreatment standards for this source

**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

3/7/2012  
Date

**TABLE 1 - SUMMARY ANALYTICAL DATA**

**Treated FGD Wastewater**

Public Service Company of New Hampshire

Merrimack Station

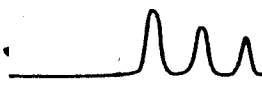
Bow, New Hampshire

<b>PARAMETER</b>	<b>RESULTS (mg/L) 2/9/2012 EAI/Frontier</b>
Arsenic	< 0.00750
Cadmium	< 0.00100
Chromium (T)	< 0.00500
Copper	< 0.00500
Lead	< 0.00200
Mercury	0.0000209
Molybdenum	0.110
Nickel	0.0126
Selenium	0.0822
Silver	< 0.00100
Zinc	< 0.0100

**Note:**

The analytical results and the flow data from the monitoring period indicate that the estimated pollutant mass in the discharge is below mass limits outlined in IDP No. HWIU-PSNH.

**ANALYTICAL DATA REPORT**



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



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 107558  
Client Identification: Wastewater Analysis - **Weekly**  
Date Received: 2/9/2012

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](http://www.eailabs.com) for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:  
Solid samples are reported on a dry weight basis, unless otherwise noted  
< : "less than" followed by the reporting limit  
> : "greater than" followed by the reporting limit  
%R : % Recovery

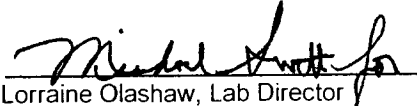
Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

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

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

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

Sincerely,

  
Lorraine Olashaw, Lab Director

2/29/12  
Date

41  
# of pages (excluding cover letter)



# SAMPLE CONDITIONS PAGE

EAI ID#: 107558

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

Client Designation: Wastewater Analysis - *Weekly*

Temperature upon receipt (°C): **20**

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)
107558.01	Effluent Field Blank	2/9/12	2/9/12	aqueous		Adheres to Sample Acceptance Policy
107558.02	Treat Tank Effluent	2/9/12	2/9/12	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



# LABORATORY REPORT

EAI ID#: 107558

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

Client Designation: Wastewater Analysis - *Weekly*

Sample ID: Treat Tank Effluent

Lab Sample ID: 107558.02

Matrix: aqueous

Date Sampled: 2/9/12

Date Received: 2/9/12

pH 7.2

Analysis				
Units	Date	Time	Method	Analyst
SU	2/09/12	10:56	4500H+B	CJJ



# QC REPORT

EAI ID#: 107558

Client: GZA GeoEnvironmental, Inc. (NH)

Client Designation: Wastewater Analysis - *Weekly*

Parameter Name	Blank	LCS	LCSD	Units	Date of Analysis	Limits	RPD	Method
pH		6.0 (101 %R)	6.0 (101 %R) (0 RPD)	SU	2/9/12	5.95 - 6.07	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.



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

27 February 2012

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

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

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

Sincerely,

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

Liz Siska  
Project Manager





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 200.8

Sample ID	Lab ID	Matrix	Date Sampled	Date Received
Effluent Field Blank	1202140-01	Water	09-Feb-12 00:00	10-Feb-12 09:25
Treat Tank Effluent	1202140-02	Water	09-Feb-12 00:00	10-Feb-12 09:25

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



## CASE NARRATIVE

### SAMPLE RECEIPT

Samples were received at Frontier Global Sciences (FGS) on February 10th, 2012. The samples were received intact, on-ice with temperatures measured at 2.0 degrees Celsius.

### SAMPLE PREPARATION AND ANALYSIS

Samples were prepared and analyzed for total metals in accordance with EPA Method 200.8 (modified).

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

### ANALYTICAL ISSUES

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

A handwritten signature in cursive script that reads "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.*



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

### CHAIN OF CUSTODY FORMS

12.02140



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

Seattle WA 98109  
 107558 206 622-6960  
 206 622 6870  
 info@frontiergs.com  
 http://www.FrontierGS.com

Page 1 of 1

12.02.14.0

Client: Eastern Analytical, Inc. Address: 25 C. Bennett Drive Camden, NH 03821		Contact: Jack Conroy Phone: 603 882 1234 Fax: 603 882 1234 E-mail: jack@eastanalytical.com Contract#PO: 27780		Report To: Same Address: Same		Invoice To: Same Address: Same		Phone: Fax:		E-mail: CustomerService@eastanalytical.com		E-mail: CustomerService@eastanalytical.com		Analyses Requested		FGS PM LIA S&P Date: 2/9/12 TAT (business days): 20 (S&P) 15 (L) 5 4 3 2 24 hrs. For TAT < 10 days, contact FGS charges apply for expedited TAT Saturday delivery? (Y) N (N) If yes, please contact FGS CBI (Y) (N) QA (S) Standard (I) High					
No	Engraved Bottle ID	Sample ID	# of Bottles	Matrix	Date & Time	Sampled By	FSU Filtered (Y/N)	Field Preserved: (Y/N) (H) (B) (O) (R) (S)	Total Metals	Comments											
1	C-3042	Effluent Field Plant	1	AQ	2/9/12	JS/DA	N	-	X	Metals include: As, Cd, Cr, Cu, Pb, Hg, Mo, Ni, Se, Ag, Zn 2) All volumes provided for project specific use/MSD 3) Please use EPA 200.8/100 FGD effluent. Add Al and Aln per client 2-10-12 PMB, FGS FGS, B, C, and V											
2	C-3062, C-3012 C-3018	Treat Tank Effluent	3	WW	2/9/12	JS/DA	N	-	X												
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					
For Laboratory Use Only		Matrix Codes:		Relinquished By:		Received By:															
COC Seal: N/A	Comments:	FW: Fresh Water	WW: Waste Water	SB: Sea and Brackish Water	SS: Soil and Sediment	TS: Plant and Animal Tissue	HC: Hydrocarbons	TR: Trip	OT: Other	Name: Chris Johnson	Organization: EAS	Name: Alex Banni (AKS)	Organization: FGS	Date & Time: 2/9/12 09:50	Date & Time: 2-10-12 10:51						
Cooler Temp: 2.0	Carrier: LPS	VTSR: 11.25	# of Coolers: 1 (one)	Date & Time: 2/9/12 09:50		Date & Time: 2/9/12 09:50															
Sample Disposal: <input type="checkbox"/> Return (shipping fees may apply) <input type="checkbox"/> Standard Disposal - 30 Days after report <input type="checkbox"/> 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: _____	

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.



## ANALYTICAL RESULTS

### Effluent Field Blank

Matrix: Water

Laboratory ID: 1202140-01

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Aluminum	ND	0.4	4.0	µg/L	1	F202131	2B18016	02/17/12	EPA 200.8 Mod	U
Arsenic	ND	0.05	0.15	µg/L	1	F202131	2B18016	02/17/12	EPA 200.8 Mod	U
Cadmium	ND	0.004	0.020	µg/L	1	F202215	2B21010	02/21/12	EPA 200.8 Mod	U
Chromium	ND	0.009	0.10	µg/L	1	F202131	2B18016	02/17/12	EPA 200.8 Mod	U
Copper	ND	0.01	0.10	µg/L	1	F202131	2B18016	02/17/12	EPA 200.8 Mod	QM-12, U
Lead	ND	0.004	0.040	µg/L	1	F202131	2B18016	02/17/12	EPA 200.8 Mod	U
Manganese	ND	0.007	0.10	µg/L	1	F202131	2B18016	02/17/12	EPA 200.8 Mod	U
Mercury	ND	0.08	0.50	ng/L	1	F202196	2B17024	02/17/12	EPA 1631E	U
Molybdenum	ND	0.006	0.06	µg/L	1	F202131	2B18016	02/17/12	EPA 200.8 Mod	U
Nickel	ND	0.008	0.10	µg/L	1	F202131	2B18016	02/17/12	EPA 200.8 Mod	U
Selenium	ND	0.19	0.60	µg/L	1	F202131	2B18016	02/17/12	EPA 200.8 Mod	QM-12, U
Silver	ND	0.006	0.020	µg/L	1	F202149	2B15001	02/14/12	EPA 200.8 Mod	QM-12, U
Zinc	ND	0.02	0.20	µg/L	1	F202215	2B21010	02/21/12	EPA 200.8 Mod	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



## ANALYTICAL RESULTS

### Treat Tank Effluent

Matrix: Water

Laboratory ID: 1202140-02

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Aluminum	ND	22.2	200	µg/L	50	F202131	2B18016	02/17/12	EPA 200.8 Mod	U
Arsenic	ND	2.55	7.50	µg/L	50	F202131	2B18016	02/17/12	EPA 200.8 Mod	U
Cadmium	ND	0.208	1.00	µg/L	50	F202215	2B21010	02/21/12	EPA 200.8 Mod	U
Chromium	ND	0.45	5.00	µg/L	50	F202131	2B18016	02/17/12	EPA 200.8 Mod	U
Copper	ND	0.50	5.00	µg/L	50	F202131	2B18016	02/17/12	EPA 200.8 Mod	QM-12, U
Lead	ND	0.195	2.00	µg/L	50	F202131	2B18016	02/17/12	EPA 200.8 Mod	U
<b>Manganese</b>	<b>1730</b>	0.37	5.00	µg/L	50	F202131	2B18016	02/17/12	EPA 200.8 Mod	
<b>Mercury</b>	<b>20.9</b>	0.17	1.01	ng/L	2	F202196	2B17024	02/17/12	EPA 1631E	
<b>Molybdenum</b>	<b>110</b>	0.30	3.00	µg/L	50	F202131	2B18016	02/17/12	EPA 200.8 Mod	
<b>Nickel</b>	<b>12.6</b>	0.40	5.00	µg/L	50	F202131	2B18016	02/17/12	EPA 200.8 Mod	
<b>Selenium</b>	<b>82.2</b>	9.69	30.0	µg/L	50	F202131	2B24005	02/23/12	EPA 200.8 Mod	
Silver	ND	0.300	1.00	µg/L	50	F202149	2B15001	02/14/12	EPA 200.8 Mod	QM-12, U
Zinc	ND	0.82	10.0	µg/L	50	F202215	2B21010	02/21/12	EPA 200.8 Mod	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



### MATRIX DUPLICATES/TRIPPLICATES

SOURCE: 1202140-02RE1

Batch: F202196

Sequence: 2B17024

Preparation: BrCl Oxidation

Lab Number: F202196-DUP1

Analyte	Sample Concentration ng/L	Duplicate Concentration ng/L	MRL	% RPD	RPD Limit	Method	Notes
Mercury	24.34	22.57	10.1	7.52	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

**SOURCE: 1202140-02**

Batch: F202131

Sequence: 2B18016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202131-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Aluminum	48.4	151.50	199.9	100	70 - 130	EPA 200.8 Mod	
Chromium	1.07	7.0700	8.66	107	70 - 130	EPA 200.8 Mod	
Manganese	1735	6.0600	1712	-373	70 - 130	EPA 200.8 Mod	QM-02
Nickel	12.62	4.0400	17.66	125	70 - 130	EPA 200.8 Mod	
Copper	0.83	4.0400	5.07	105	70 - 130	EPA 200.8 Mod	
Zinc	2.32	10.100	81.69	786	70 - 130	EPA 200.8 Mod	QM-07
Arsenic	5.61	15.150	21.94	108	70 - 130	EPA 200.8 Mod	
Selenium	97.17	30.300	123.0	85.2	70 - 130	EPA 200.8 Mod	
Molybdenum	110.1	2.0200	111.5	71.9	70 - 130	EPA 200.8 Mod	
Lead	ND	1.5150	1.567	103	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Aluminum	151.50	203.2	102	1.64	70 - 130	20	EPA 200.8 Mod	
Chromium	7.0700	8.56	106	1.15	70 - 130	20	EPA 200.8 Mod	
Manganese	6.0600	1727	-131	0.852	70 - 130	20	EPA 200.8 Mod	QM-02
Nickel	4.0400	16.18	88.1	8.76	70 - 130	20	EPA 200.8 Mod	
Copper	4.0400	4.84	99.3	4.59	70 - 130	20	EPA 200.8 Mod	
Zinc	10.100	16.88	144	131	70 - 130	20	EPA 200.8 Mod	QM-07, QR-08
Arsenic	15.150	24.85	127	12.4	70 - 130	20	EPA 200.8 Mod	
Selenium	30.300	135.1	125	9.38	70 - 130	20	EPA 200.8 Mod	
Molybdenum	2.0200	112.5	119	0.846	70 - 130	20	EPA 200.8 Mod	
Lead	1.5150	1.468	96.9	6.56	70 - 130	20	EPA 200.8 Mod	

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*

Liz Siska, Project Manager



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

**SOURCE: 1202140-02**

Batch: F202131

Sequence: 2B18016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202131-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Aluminum	48.4	10100	10380	102	70 - 130	EPA 200.8 Mod	AS
Chromium	1.07	1010.0	1060	105	70 - 130	EPA 200.8 Mod	AS
Manganese	1735	1010.0	2770	102	70 - 130	EPA 200.8 Mod	AS
Nickel	12.62	1262.5	1303	102	70 - 130	EPA 200.8 Mod	AS
Copper	0.83	1262.5	1253	99.2	70 - 130	EPA 200.8 Mod	AS
Zinc	2.32	2525.0	2530	100	70 - 130	EPA 200.8 Mod	AS
Arsenic	5.61	1010.0	1073	106	70 - 130	EPA 200.8 Mod	AS
Selenium	97.17	1010.0	1127	102	70 - 130	EPA 200.8 Mod	AS
Molybdenum	110.1	505.00	630.5	103	70 - 130	EPA 200.8 Mod	AS
Lead	ND	252.50	251.4	99.5	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Aluminum	10100	10120	99.8	2.52	70 - 130	20	EPA 200.8 Mod	AS
Chromium	1010.0	1050	104	0.947	70 - 130	20	EPA 200.8 Mod	AS
Manganese	1010.0	2755	101	0.548	70 - 130	20	EPA 200.8 Mod	AS
Nickel	1262.5	1302	102	0.101	70 - 130	20	EPA 200.8 Mod	AS
Copper	1262.5	1258	99.6	0.384	70 - 130	20	EPA 200.8 Mod	AS
Zinc	2525.0	2511	99.3	0.770	70 - 130	20	EPA 200.8 Mod	AS
Arsenic	1010.0	1092	108	1.73	70 - 130	20	EPA 200.8 Mod	AS
Selenium	1010.0	1169	106	3.69	70 - 130	20	EPA 200.8 Mod	AS
Molybdenum	505.00	616.8	100	2.18	70 - 130	20	EPA 200.8 Mod	AS
Lead	252.50	249.9	99.0	0.581	70 - 130	20	EPA 200.8 Mod	AS

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





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

**SOURCE: 1202140-02RE1**

Batch: F202149

Sequence: 2B15001

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202149-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Silver	ND	1.5180	1.529	101	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	1.5180	1.577	104	3.13	70 - 130	20	EPA 200.8 Mod	

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



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

**SOURCE: 1202140-02RE1**

Batch: F202149

Sequence: 2B15001

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202149-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Silver	ND	50.500	44.17	87.5	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	50.500	43.81	86.8	0.808	70 - 130	20	EPA 200.8 Mod	AS

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

**SOURCE: 1202223-02**

**Batch:** F202196

**Sequence:** 2B17024

**Preparation:** BrCl Oxidation

**Lab Number:** F202196-MS/MSD1

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	39.63	102.00	145.3	104	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	143.6	102	1.12	71 - 125	24	EPA 1631E	

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



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

**SOURCE: 1202140-02RE1**

Batch: F202196

Sequence: 2B17024

Preparation: BrCl Oxidation

Lab Number: F202196-MS/MSD2

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	24.34	71.400	96.61	101	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	71.400	96.20	101	0.422	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

**SOURCE: 1202140-02RE1**

Batch: F202215

Sequence: 2B21010

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202215-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Zinc	ND	10.100	9.65	95.5	70 - 130	EPA 200.8 Mod	
Cadmium	0.216	0.80800	1.142	115	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Zinc	10.100	9.99	98.9	3.47	70 - 130	20	EPA 200.8 Mod	
Cadmium	0.80800	1.189	120	4.07	70 - 130	20	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

**SOURCE: 1202140-02RE1**

Batch: F202215

Sequence: 2B21010

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202215-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Zinc	ND	2525.0	2297	91.0	70 - 130	EPA 200.8 Mod	AS
Cadmium	0.216	101.00	87.31	86.2	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Zinc	2525.0	2300	91.1	0.162	70 - 130	20	EPA 200.8 Mod	AS
Cadmium	101.00	89.53	88.4	2.50	70 - 130	20	EPA 200.8 Mod	AS

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



LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE

RECOVERY AND RPD

Batch: F202131

Sequence: 2B18016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202131-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Aluminum	150.00	145.9	97.3	85 - 115	EPA 200.8 Mod	
Chromium	7.0000	6.94	99.1	85 - 115	EPA 200.8 Mod	
Manganese	6.0000	5.91	98.5	85 - 115	EPA 200.8 Mod	
Nickel	4.0000	4.19	105	85 - 115	EPA 200.8 Mod	
Copper	4.0000	4.40	110	85 - 115	EPA 200.8 Mod	
Zinc	10.0000	11.13	111	85 - 115	EPA 200.8 Mod	
Arsenic	15.0000	15.05	100	85 - 115	EPA 200.8 Mod	
Selenium	30.0000	30.61	102	85 - 115	EPA 200.8 Mod	
Molybdenum	2.0000	1.93	96.6	85 - 115	EPA 200.8 Mod	
Lead	1.5000	1.560	104	85 - 115	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Aluminum	150.00	147.3	98.2	0.925	85 - 115	20	EPA 200.8 Mod	
Chromium	7.0000	6.94	99.1	0.0117	85 - 115	20	EPA 200.8 Mod	
Manganese	6.0000	6.00	99.9	1.48	85 - 115	20	EPA 200.8 Mod	
Nickel	4.0000	4.23	106	1.04	85 - 115	20	EPA 200.8 Mod	
Copper	4.0000	4.43	111	0.541	85 - 115	20	EPA 200.8 Mod	
Zinc	10.0000	10.92	109	1.97	85 - 115	20	EPA 200.8 Mod	
Arsenic	15.0000	14.83	98.9	1.46	85 - 115	20	EPA 200.8 Mod	
Selenium	30.0000	32.03	107	4.53	85 - 115	20	EPA 200.8 Mod	
Molybdenum	2.0000	1.91	95.4	1.17	85 - 115	20	EPA 200.8 Mod	
Lead	1.5000	1.586	106	1.66	85 - 115	20	EPA 200.8 Mod	

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



LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE

RECOVERY AND RPD

Batch: F202149

Sequence: 2B15001

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202149-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Silver	1.5000	1.709	114	85 - 115	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	1.5000	1.738	116	1.68	85 - 115	20	EPA 200.8 Mod	QM-12

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





LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE

RECOVERY AND RPD

Batch: F202196

Sequence: 2B17024

Preparation: BrCl Oxidation

Lab Number: F202196-BS/BSDI

LCS Source: LCS

Analyte	Spike Added (ng/L)	LCS Concentration (ng/L)	LCS % Recovery	Recovery Limits	Method	Notes
Mercury	15.679	16.27	104	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	16.20	103	0.396	80 - 120	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

**RECOVERY AND RPD**

Batch: F202215

Sequence: 2B21010

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202215-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Zinc	10.000	9.99	99.9	85 - 115	EPA 200.8 Mod	
Cadmium	0.80000	0.892	112	85 - 115	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Zinc	10.000	9.93	99.3	0.528	85 - 115	20	EPA 200.8 Mod	
Cadmium	0.80000	0.897	112	0.517	85 - 115	20	EPA 200.8 Mod	

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



### PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2B15001

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F202149-BLK1	Silver	-0.0002	0.020	µg/L	F202149	EPA 200.8 Moc	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

## PREPARATION BLANKS

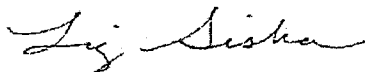
Instrument: Hg-16

Sequence: 2B17024

Preparation: BrCl Oxidation

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F202196-BLK1	Mercury	0.04	0.50	ng/L	F202196	EPA 1631E	U
F202196-BLK2	Mercury	0.04	0.50	ng/L	F202196	EPA 1631E	U
F202196-BLK3	Mercury	0.05	0.50	ng/L	F202196	EPA 1631E	U
F202196-BLK4	Mercury	0.08	0.50	ng/L	F202196	EPA 1631E	QB-04, U

Frontier Global Sciences, Inc.



Liz Siska, Project Manager

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



### PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2B18016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F202131-BLK1	Aluminum	0.09	4.0	µg/L	F202131	EPA 200.8 Moc	U
F202131-BLK1	Chromium	-0.02	0.10	µg/L	F202131	EPA 200.8 Moc	U
F202131-BLK1	Manganese	0.004	0.10	µg/L	F202131	EPA 200.8 Moc	U
F202131-BLK1	Nickel	0.004	0.10	µg/L	F202131	EPA 200.8 Moc	U
F202131-BLK1	Copper	0.005	0.10	µg/L	F202131	EPA 200.8 Moc	U
F202131-BLK1	Zinc	0.07	0.20	µg/L	F202131	EPA 200.8 Moc	U
F202131-BLK1	Arsenic	-0.10	0.15	µg/L	F202131	EPA 200.8 Moc	U
F202131-BLK1	Selenium	-0.06	0.60	µg/L	F202131	EPA 200.8 Moc	U
F202131-BLK1	Molybdenum	0.01	0.06	µg/L	F202131	EPA 200.8 Moc	U
F202131-BLK1	Lead	0.002	0.040	µg/L	F202131	EPA 200.8 Moc	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



### PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2B21010

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F202215-BLK1	Zinc	-0.03	0.20	µg/L	F202215	EPA 200.8 Moc	U
F202215-BLK1	Cadmium	-0.001	0.020	µg/L	F202215	EPA 200.8 Moc	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

## Notes and Definitions

- U Analyte included in the analysis, but not detected
- QR-08 The RPD value for the MS/MSD was outside of acceptance limits. Batch QC acceptable based on matrix duplicate and/or LCS/LCSD RPD values within control limits.
- QM-12 Initial or continuing calibration verification and/or blank spike/blank spike duplicate recoveries above upper control limits. All reported sample concentrations were below the reporting limit.
- QM-07 The spike recovery was outside control limits for the MS and/or MSD. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
- QM-02 The MS and/or MSD recoveries outside acceptance limits, due to spike concentration less than 1 times the sample concentration. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
- QB-04 The blank was preserved to 2% BrCl rather than 1%. The control limit for blanks preserved to greater than 1% BrCl is the preservation percentage multiplied by the MRL.
- AS This MS and/or MSD is an analytical spike and/or an analytical spike duplicate.
- DET Analyte Detected
- MDL Minimum Detection Limit
- MRL Minimum Reporting Limit
- ND Analyte Not Detected at or above the reporting limit
- wet Sample results reported on a wet weight basis
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- RSD Relative Standard Deviation

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

27 February 2012

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

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

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

Sincerely,

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

Liz Siska  
Project Manager





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 200.8

Sample ID	Lab ID	Matrix	Date Sampled	Date Received
Effluent Field Blank	1202140-01	Water	09-Feb-12 00:00	10-Feb-12 09:25
Treat Tank Effluent	1202140-02	Water	09-Feb-12 00:00	10-Feb-12 09:25

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



## CASE NARRATIVE

### SAMPLE RECEIPT

Samples were received at Frontier Global Sciences (FGS) on February 10th, 2012. The samples were received intact, on-ice with temperatures measured at 2.0 degrees Celsius.

### SAMPLE PREPARATION AND ANALYSIS

Samples were prepared and analyzed for total metals in accordance with EPA Method 200.8 (modified).

### ANALYTICAL ISSUES

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.

A handwritten signature in cursive script that reads "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.*



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

### CHAIN OF CUSTODY FORMS

1202140



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

107558  
 Seattle WA 98109  
 206-622-6960  
 206-622-6870  
 info@frontiergs.com  
 http://www.frontiergs.com

Page 1 of 1

1202140

Client: <u>Eastern Analytical, Inc</u> Address: <u>250 Bennett Blvd</u> <u>Camas WA 98607</u> Project Name: <u>Mechanic Station</u> Report to: <u>Same</u> Address: Phone: <u>425 255 2525</u> Fax: <u>425 255 2521</u> E-mail: <u>CustomerService@frontiergs.com</u>		Contact: <u>Steve George</u> Phone: <u>425 255 2525</u> Fax: <u>425 255 2521</u> E-mail: <u>steve@frontiergs.com</u> Contract ID: <u>27780</u> Invoice to: <u>same</u> Address: Phone: Fax: E-mail: <u>CustomerService@frontiergs.com</u>		Analyzes Requested Date: <u>2/9/12</u> TAT (business days): <u>20</u> (std) <u>15</u> (0) 5 4 3 2 24 hrs. For TAT < 10 days, contact FGS Shipping apply for expedited TAT Saturday delivery? <input type="checkbox"/> Y <input type="checkbox"/> N (If yes, please to call FGS) FOB: <input type="checkbox"/> Y <input type="checkbox"/> N QA: <input type="checkbox"/> Standard <input type="checkbox"/> High							
No.	Engraved Bottle ID	Sample ID	# of Bottles	Matrix	Date & Time	Sampled By	Field Analyzed (Y/N)	Field Preserved: (Y/N) (C) (B) (O) Other (P)	Total Methods	Comment:	
1	C-3042	Effluent Field Blank	1	Air	2/9/12	ST/24	N	-	X	Metals Include: As, Cd, Cr, Cu, Pb, Hg, Mo, Ni, Se, Ag, Zn 1) Add'l volume provided for project specific analysis 2) Please use EPA 200.8/100 FGD effluent. Add Al and Aln per C110117 2-10-12 AM/B, FGS Also B, Co, and V	
2	C-3062, C-3062	Treat Tank Effluent	3	WW	2/9/12	ST/24	N	-	X		
3	C-3018										
4											
5											
6											
7											
8											
9											
10											
11											
12											
For Laboratory Use Only COC Seal: <u>N3</u> Cooler Temp: <u>2.0</u> Carrier: <u>WAS</u> VTGR: <u>WAS</u> # of Coolers: <u>1 (one)</u>		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: Trip OT: Other		Released By: <u>[Signature]</u> Name: <u>Chris Johnson</u> Organization: <u>EAT</u> Date & Time: <u>2/9/12 09:30</u> Tracking number:		Received By: <u>[Signature]</u> Name: <u>Chris Johnson</u> Organization: <u>EAT</u> Date & Time: <u>2/9/12 09:30</u>		Received By: <u>[Signature]</u> Name: <u>Chris Johnson</u> Organization: <u>FGS</u> Date & Time: <u>2-10-12 10:31</u>			
Sample Disposal: <input type="checkbox"/> Return (shipping fees may apply) <input type="checkbox"/> Standard Disposal - 30 Days after report <input type="checkbox"/> Return 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: _____					

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.



### ANALYTICAL RESULTS

#### Effluent Field Blank

Matrix: Water

Laboratory ID: 1202140-01

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Boron	ND	0.21	3.00	µg/L	1	F202131	2B18016	02/17/12	EPA 200.8 Mod	QB-02, QM-12, U
Cobalt	ND	0.007	0.10	µg/L	1	F202131	2B18016	02/17/12	EPA 200.8 Mod	U
Vanadium	ND	0.01	0.10	µg/L	1	F202131	2B18016	02/17/12	EPA 200.8 Mod	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



### ANALYTICAL RESULTS

#### Treat Tank Effluent

Matrix: Water

Laboratory ID: 1202140-02

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Boron	357000	412	6000	µg/L	2000	F202131	2B24005	02/23/12	EPA 200.8 Mod	
Cobalt	ND	0.34	5.00	µg/L	50	F202131	2B18016	02/17/12	EPA 200.8 Mod	U
Vanadium	ND	0.68	5.00	µg/L	50	F202131	2B18016	02/17/12	EPA 200.8 Mod	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



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

**SOURCE: 1202140-02**

Batch: F202131

Sequence: 2B18016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202131-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Vanadium	1.21	5.0500	8.07	136	70 - 130	EPA 200.8 Mod	QM-07
Cobalt	0.76	5.0500	5.83	100	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Vanadium	5.0500	6.58	106	20.2	70 - 130	20	EPA 200.8 Mod	QR-08
Cobalt	5.0500	6.06	105	3.84	70 - 130	20	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

**SOURCE: 1202140-02**

Batch: F202131

Sequence: 2B18016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202131-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Vanadium	1.21	1010.0	1097	108	70 - 130	EPA 200.8 Mod	AS
Cobalt	0.76	505.00	517.4	102	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Vanadium	1010.0	1052	104	4.20	70 - 130	20	EPA 200.8 Mod	AS
Cobalt	505.00	518.3	102	0.187	70 - 130	20	EPA 200.8 Mod	AS

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



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

**SOURCE: 1202140-02RE2**

Batch: F202131

Sequence: 2B24005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202131-MS/MSD5

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Boron	356800	75.750	356500	-478	70 - 130	EPA 200.8 Mod	QM-02

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Boron	75.750	359700	3820	0.909	70 - 130	20	EPA 200.8 Mod	QM-02

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





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

**SOURCE: 1202140-02RE2**

Batch: F202131

Sequence: 2B24005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202131-MS/MSD6

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Boron	356800	161600	530100	107	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Boron	161600	497000	86.8	6.43	70 - 130	20	EPA 200.8 Mod	AS

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



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

**RECOVERY AND RPD**

Batch: F202131

Sequence: 2B18016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202131-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Boron	75.000	76.23	102	85 - 115	EPA 200.8 Mod	
Vanadium	5.0000	4.57	91.4	85 - 115	EPA 200.8 Mod	
Cobalt	5.0000	5.06	101	85 - 115	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Boron	75.000	77.22	103	1.29	85 - 115	20	EPA 200.8 Mod	
Vanadium	5.0000	4.93	98.6	7.59	85 - 115	20	EPA 200.8 Mod	
Cobalt	5.0000	5.15	103	1.81	85 - 115	20	EPA 200.8 Mod	

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



### PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2B18016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F202131-BLK1	Boron	1.13	3.00	µg/L	F202131	EPA 200.8 Moc	U
F202131-BLK1	Vanadium	-0.06	0.10	µg/L	F202131	EPA 200.8 Moc	U
F202131-BLK1	Cobalt	0.0001	0.10	µg/L	F202131	EPA 200.8 Moc	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

## Notes and Definitions

- U Analyte included in the analysis, but not detected
- QR-08 The RPD value for the MS/MSD was outside of acceptance limits. Batch QC acceptable based on matrix duplicate and/or LCS/LCSD RPD values within control limits.
- QM-12 Initial or continuing calibration verification and/or blank spike/blank spike duplicate recoveries above upper control limits. All reported sample concentrations were below the reporting limit.
- QM-07 The spike recovery was outside control limits for the MS and/or MSD. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
- QM-02 The MS and/or MSD recoveries outside acceptance limits, due to spike concentration less than 1 times the sample concentration. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
- QB-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.
- 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

Frontier Global Sciences, Inc.



Liz Siska, Project Manager

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



eastern analytical, inc.

# CHAIN-OF-CUSTODY RECORD

107558

professional laboratory services

GZANH

Date/Time

Composites need start and stop dates/times

Parameters and Sample Notes

# of containers

Sample IDs	Date/Time	Matrix	Parameters and Sample Notes	# of containers
Effluent Field Blank	2/9/12 08:52	aqueous <input checked="" type="checkbox"/> Grab/Comp	AqTot/SW/LLMetals/Sub Circle preservative/s: HCL, HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , NaOH, MEOH, Na <sub>2</sub> S <sub>2</sub> O <sub>8</sub> <input checked="" type="checkbox"/> (CE)	1
<input type="checkbox"/> Sampler confirms ID and parameters are accurate				
Treat Tank Effluent	2/9/12 09:15	aqueous <input checked="" type="checkbox"/> Grab/Comp	AqTot/SW/LLMetals/Sub/pH Circle preservative/s: HCL, HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , NaOH, MEOH, Na <sub>2</sub> S <sub>2</sub> O <sub>8</sub> <input checked="" type="checkbox"/> (CE)	4
<input type="checkbox"/> Sampler confirms ID and parameters are accurate				

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

EAL 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)

Email/Address: paul.pepler@gza.com

Results Needed by: Preferred date \_\_\_\_\_  
Notes about project: (i.e. Special Limits, Billing Info if different...)

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

QC deliverables

- A  A+  B  B+  C  PC

Reporting Options

- HC
- EDD PDF
- EDD email
- PDF prelin, NO FAX
- e-mail Login Confirmation
- NO FAX

PONumber: 02259252

Quote No: 1009476

Temperature 20 °C

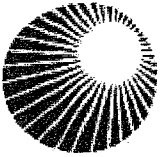
Ice present Yes  No

Samples Collected by: ET/12/12

Relinquished by: *[Signature]* Date/Time 2/9/12 09:50 Received by: *[Signature]*

Relinquished by \_\_\_\_\_ Date/Time \_\_\_\_\_ Received by \_\_\_\_\_





## Northeast Utilities System

Public Service of New Hampshire  
Northeast Utilities System  
Merrimack Station  
97 River Road  
Bow, New Hampshire 03304

Phone (603) 224-4081  
Fax (603) 634-2334

March 30, 2012

Mr. Dana Clement  
Superintendent  
Allenstown Wastewater Treatment Facility  
35 Canal Street  
Allenstown, New Hampshire 03275

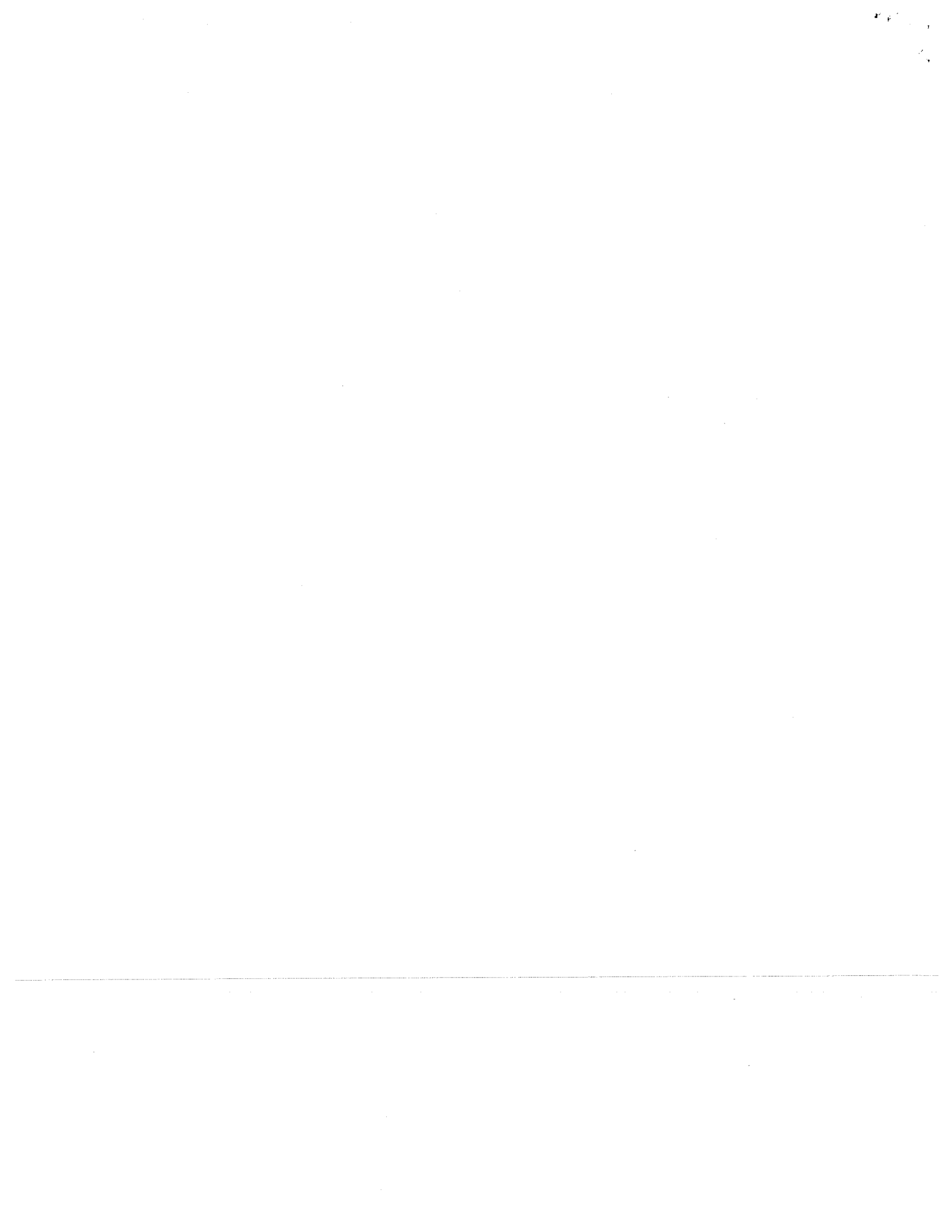
Re: Effluent Screening Level Report  
Treated Wastewater  
Merrimack Station  
Public Service Company of New Hampshire  
Bow, New Hampshire

Dear Dana:

In accordance with Part 3, Section D of Industrial Discharge Permit No. HWIU-PSNH, Public Service Company of New Hampshire (PSNH) hereby notifies the Allenstown Wastewater Treatment Facility (AWTF) of screening level exceedances identified on March 26, 2012. This written report is a follow-up to a verbal notification communicated by Ronald A. Breton of GZA GeoEnvironmental, Inc. (GZA) via voice mail to Dana L. Clement of the AWTF at 8:40 a.m. on March 27, 2012.

As summarized in the attached **Table 1**, an analytical data report prepared by Eastern Analytical, Inc. dated March 26, 2012 from a sampling event conducted at Merrimack Station on March 2, 2012 indicated a cyanide concentration of 0.02 milligrams per liter (mg/L) which exceeds the screening level of 0.01 mg/L; a total dissolved solids (TDS) concentration of 24,000 mg/L which exceeds the screening level of 20,000 mg/L; and a total suspended solids (TSS) concentration of 43 mg/L which exceeds the screening level of 15 mg/L.

PSNH monitors the performance of the wastewater treatment process on a regular basis to optimize removals of contaminants of concern. Cyanide is not inherent to the process, and we suspect it is associated with materials of construction in the relatively new treatment system. TDS is, however, inherent to the wastewater, and existing treatment technologies employed at Merrimack Station are not specifically designed to remove TDS to below the screening level. It is our understanding that TDS is not a pollutant of concern at AWTF and that the Town is able to process moderate concentrations of TDS without environmental or permit concerns. The elevated TSS concentration was unexpected and is likely an artifact of the laboratory procedure caused by the high TDS. Our contract laboratory is currently adding a recommended laboratory step to the TSS method designed specifically to eliminate interferences presented by elevated TDS concentrations that we fully expect will resolve the issue.



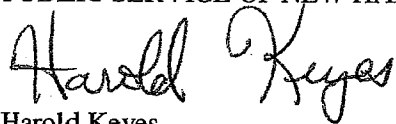


Allenstown Wastewater Treatment Facility  
Page 2  
March 30, 2012

We trust that this submittal adequately addresses your informational needs. We look forward to discussing this issue further, including the possibility of adjusting certain screening levels. Should you have any questions, please contact Ron Breton at 232-8744 or me at 224-4081.

Sincerely,

PUBLIC SERVICE OF NEW HAMPSHIRE



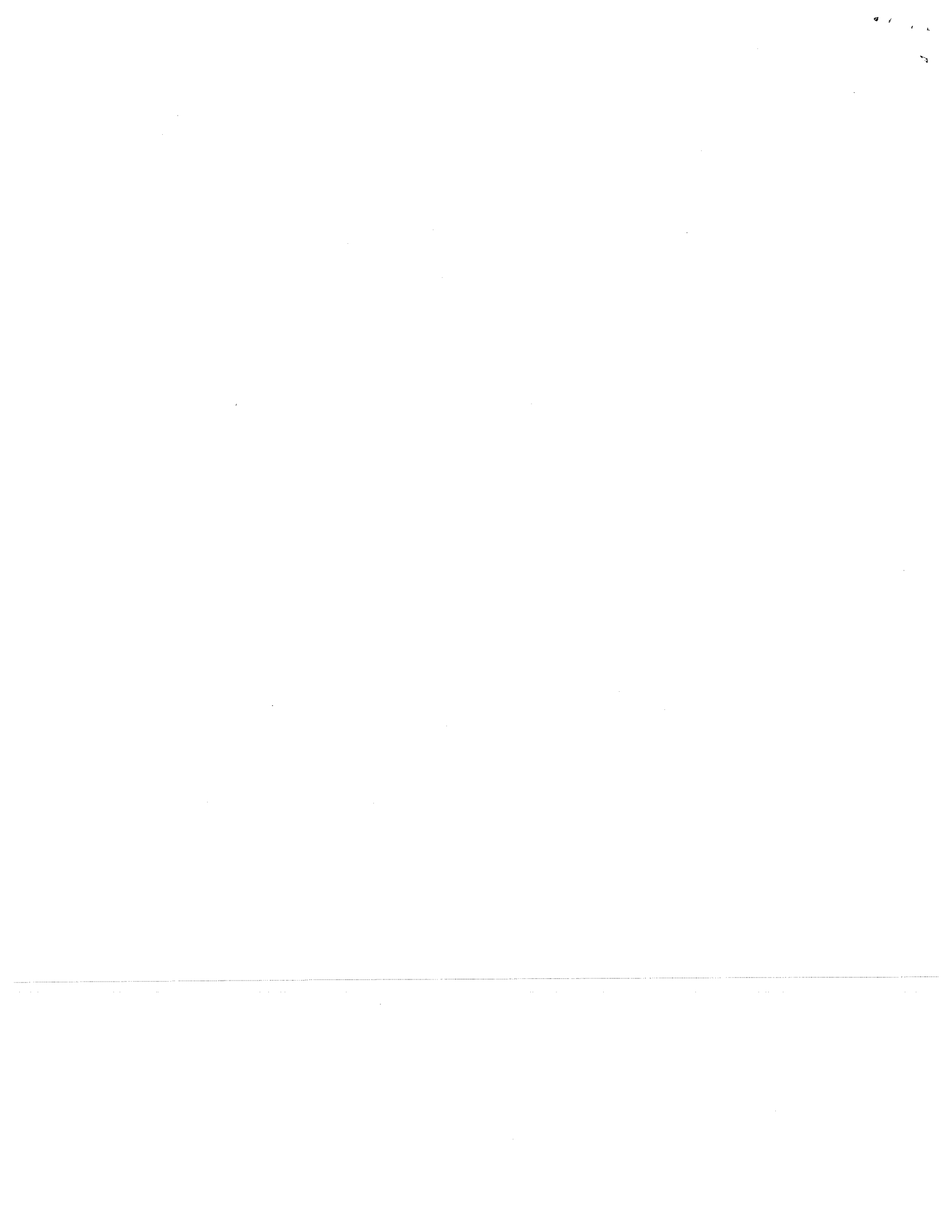
Harold Keyes  
Station Manager

Attachment(s)

p:\04jobs\0029300e\04.0029307.00\work\sampling and reporting\reports\allenstown\report\final draft 29307.00 atown exceedance rpt 033112.docx



**TABLE**



**TABLE 1 - SUMMARY OF ANALYTICAL RESULTS COMPARED TO  
ALLENSTOWN SCREENING LEVELS**

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

<b>PARAMETER</b>	<b>EXISTING SCREENING LEVEL (mg/L)</b>	<b>RESULTS (mg/L) 3/2/2012 EAI/Frontier</b>
Cyanide (T)	0.01	0.02
TDS	20,000	24,000
TSS	15	43

NOTE: Screening levels are daily maximum limitations.



VIA EMAIL

April 6, 2012  
File No. 04.0029307.00



Mr. Dana Clement  
Superintendent  
Allenstown Wastewater Treatment Facility  
35 Canal Street  
Allenstown, New Hampshire 03275

Re: Wastewater Discharge Monitoring Report  
Treated Wastewater  
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 Dana:

On behalf of Public Service of New Hampshire (PSNH), GZA GeoEnvironmental, Inc. is pleased to submit the attached **Wastewater Discharge Monitoring Report** for sampling conducted on March 2, 2012. This report satisfies the monthly sampling requirement for the month of March 2012 as outlined in Industrial Discharge Permit (IDP) No. HWIU-PSNH.

Table 1 included in the attached Wastewater Discharge Monitoring Report summarizes the analytical results for all required parameters as outlined Part 2 Section A of the IDP. The attached **Analytical Data Report**, however, contains a more comprehensive list of parameters. The analysis on samples collected on March 2, 2012 was performed in accordance with the United States Environmental Protection Agency (EPA) draft Standard Operating Procedure (SOP) for trace metals analysis of flue gas desulfurization (FGD) wastewater. The SOP is described below.

#### **ANALYTICAL DISCUSSION**

FGD wastewater requires specialized analytical techniques to overcome matrix interference for certain analysis of trace metals. To assist you in evaluating this issue further, we offer an excerpt below from the EPA web site and a link to their draft SOP for trace metals analysis of FGD wastewater 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

Copyright © 2012 GZA GeoEnvironmental, Inc.

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 an 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 SOP. 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](http://water.epa.gov/scitech/wastetech/guide/upload/steam_draft_sop.pdf), EPA May 2011.

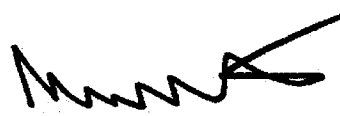
Considering that specialized analytical techniques are necessary to overcome matrix interference for certain analysis of trace metals in FDG wastewater, we recommend any analysis on FGD wastewater be conducted in accordance with the EPA draft SOP for trace metals analysis of FGD wastewater.

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, P.E.  
Principal

  
Michael P. North, P.E.  
Consultant/Reviewer

RAB/MPN:tmd

P:\04Jobs\0029300s\04.0029307.00\Work\SAMPLING AND REPORTING\REPORTS\Allenstown\REPORT\Monthly\final 04.0029307 Atown March RPT 040612.docx

Attachments: Wastewater Discharge Monitoring Report  
Analytical Data report



**WASTEWATER DISCHARGE MONITORING REPORT**

**WASTEWATER DISCHARGE MONITORING REPORT  
ALLENSTOWN WASTEWATER TREATMENT FACILITY**

Public Service of New Hampshire - Merrimack Station  
Industrial Discharge Permit - Class I  
Permit No. HWIU-PSNH  
Issued November 10, 2011  
Expires November 9, 2012

Permitted Flow 100,000 gallons per day

**FLOW DATA**

Daily Flow Rate (gallons)	<u>23,989</u>	<u>(average of 8 actual discharge days)</u>
Monitoring Period Flow (gallons)	<u>191,915</u>	<u>(3/01/12 - 3/31/12)</u>

**FACILITY INFORMATION**

Company Name Public Service Company of New Hampshire - Merrimack Station  
Company Owner Public Service Company of New Hampshire  
Facility Address 97 River Road  
Facility Contact Harold Keyes  
Telephone (603) 224-4081

**MONITORING REPORT**

Submittal Date 4/6/2012  
Monitoring Point End of treatment process  
Reporting Period First Month

**SAMPLE ANALYSIS**

Certified Analytical Laboratory Eastern Analytical Inc. (EAI) Certification Number 1012  
Authorized Representative Lorraine Olashaw  
Analytical Subcontractor Frontier Global Sciences Certification Number E87575

**SAMPLE COLLECTION**

Sampler Jim Blackwell, Gregg Thompson, EAI  
Sample Type Grab  
Sample Date 3/2/2012 Sample Time 11:00 AM  
pH 7.1

**CATEGORICAL PRETREATMENT STANDARDS**

40 CFR 423.16: Steam Electric Power Generating Category  
NOTE: There are no numerical pretreatment standards for this source

**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  
4/6/2012  
Date

**TABLE 1 - SUMMARY ANALYTICAL DATA**  
**Treated FGD Wastewater**  
 Public Service Company of New Hampshire  
 Merrimack Station  
 Bow, New Hampshire

PARAMETER	RESULTS 3/2/2012 (mg/L)
Arsenic	0.00812
BOD	< 6
Cadmium	< 0.000400
Chromium (T)	< 0.00200
Copper	< 0.00200
Cyanide (T)	0.02
Lead	< 0.000800
Mercury	0.0000172
Molybdenum	0.419
Nickel	0.0291
O&G	< 5
Selenium	0.109
Silver	< 0.000400
TDS	24,000
TSS	2
Zinc	< 0.00400
VOC EPA 624	ND (1)

Note:

1. No VOC compounds were detected by Method 624 above reporting limits.
2. The analytical results and the flow data from the monitoring period indicate that the estimated pollutant mass in the discharge is below mass limits outlined in IDP No. HWIU-PSNH.

**ANALYTICAL DATA REPORT**



# eastern analytical

*professional laboratory services*

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



Subject: Laboratory Report  
Eastern Analytical, Inc. ID: 108078  
Client Identification: Wastewater Analysis  
Date Received: 3/2/2012

Report revision/reissue: Revision, replaces report dated 3/29/2012  
Revision information: Per customer request, TSS has been rerun.

Dear Mr. Pepler:

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

The following standard abbreviations and conventions apply to all EAI reports:  
Solid samples are reported on a dry weight basis, unless otherwise noted  
< : "less than" followed by the reporting limit  
> : "greater than" followed by the reporting limit  
%R : % Recovery

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

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

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

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

Sincerely,

Lorraine Olashaw, Lab Director

4.5.12

Date

29

# of pages (excluding cover letter)



# SAMPLE CONDITIONS PAGE

EAI ID#: 108078

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

Client Designation: **Wastewater Analysis**

Temperature upon receipt (°C): **21**

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)
108078.01	Effluent Field Blank B-3621	3/2/12	3/2/12	aqueous		Adheres to Sample Acceptance Policy
108078.02	Final Effluent B-3625, B-3727, B-3722	3/2/12	3/2/12	aqueous		Adheres to Sample Acceptance Policy
108078.03	Final Effluent B-3625, B-3727, B-3722 Rerun	3/2/12	3/2/12	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

**eastern analytical, inc.**

[www.eailabs.com](http://www.eailabs.com)

Phone: (603) 228-0525



# LABORATORY REPORT

EAI ID#: 108078

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

Client Designation: **Wastewater Analysis**

Sample ID: Final Effluent B-3625, B-3727,  
B-3722

Lab Sample ID: 108078.02  
Matrix: aqueous  
Date Sampled: 3/2/12  
Date Received: 3/2/12  
Units: ug/l  
Date of Analysis: 3/7/12  
Analyst: BAM  
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	< 1
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)	99 %R





# LABORATORY REPORT

EAI ID#: 108078

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

Client Designation: **Wastewater Analysis**

**Sample ID:** Final Effluent B-3625, B-3727,  
B-3722

**Lab Sample ID:** 108078.02

**Matrix:** aqueous

**Date Sampled:** 3/2/12

**Date Received:** 3/2/12

**Units:** ug/l

**Date of Analysis:** 3/7/12

**Analyst:** BAM

**Method:** 624

**Dilution Factor:** 1

**Toluene-d8 (surr)** 94 %R



# QC REPORT

EAI ID#: 108078

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

Client Designation: **Wastewater Analysis**

Parameter Name	Blank	LCS	LCS D	Analysis Date	Units	Limits	RPD	Method
Chloromethane	< 5	20 (99 %R)	20 (101 %R) (2 RPD)	3/7/2012	ug/l	0 - 273	20	624
Vinyl chloride	< 2	20 (102 %R)	21 (106 %R) (4 RPD)	3/7/2012	ug/l	0 - 251	20	624
Bromomethane	< 2	19 (93 %R)	21 (103 %R) (10 RPD)	3/7/2012	ug/l	0 - 242	20	624
Chloroethane	< 5	23 (113 %R)	22 (110 %R) (3 RPD)	3/7/2012	ug/l	14 - 230	20	624
Trichlorofluoromethane	< 5	22 (108 %R)	22 (108 %R) (0 RPD)	3/7/2012	ug/l	17 - 181	20	624
Acrolein	< 50	* < 50 (%R)	* < 50 (%R N/A) (RPD N/A)	3/7/2012	ug/l	40 - 160	20	624
Acetone	< 50	* < 50 (188 %R)	< 50 (114 %R) (49 RPD) !	3/7/2012	ug/l	40 - 160	20	624
1,1-Dichloroethene	< 1	19 (97 %R)	19 (95 %R) (2 RPD)	3/7/2012	ug/l	0 - 234	20	624
Methylene chloride	< 5	22 (110 %R)	22 (108 %R) (2 RPD)	3/7/2012	ug/l	0 - 221	20	624
Carbon disulfide	< 5	17 (85 %R)	17 (83 %R) (2 RPD)	3/7/2012	ug/l	70 - 130	20	624
Acrylonitrile	< 50	< 50 (109 %R)	< 50 (104 %R) (5 RPD)	3/7/2012	ug/l	40 - 160	20	624
Methyl-t-butyl ether(MTBE)	< 10	20 (114 %R)	20 (113 %R) (1 RPD)	3/7/2012	ug/l	70 - 130	20	624
trans-1,2-Dichloroethene	< 2	19 (96 %R)	19 (96 %R) (0 RPD)	3/7/2012	ug/l	54 - 156	20	624
Vinyl acetate	< 10	30 (137 %R)	30 (134 %R) (2 RPD)	3/7/2012	ug/l	40 - 160	20	624
1,1-Dichloroethane	< 2	21 (106 %R)	21 (104 %R) (2 RPD)	3/7/2012	ug/l	59 - 155	20	624
cis-1,2-Dichloroethene	< 2	20 (101 %R)	20 (99 %R) (2 RPD)	3/7/2012	ug/l	70 - 130	20	624
2-Butanone(MEK)	< 10	30 (130 %R)	20 (100 %R) (26 RPD) !	3/7/2012	ug/l	40 - 160	20	624
Chloroform	< 2	21 (104 %R)	21 (104 %R) (0 RPD)	3/7/2012	ug/l	51 - 138	20	624
1,1,1-Trichloroethane	< 2	22 (111 %R)	22 (110 %R) (1 RPD)	3/7/2012	ug/l	52 - 162	20	624
Carbon tetrachloride	< 2	24 (122 %R)	24 (121 %R) (1 RPD)	3/7/2012	ug/l	70 - 140	20	624
Benzene	< 1	20 (100 %R)	20 (100 %R) (0 RPD)	3/7/2012	ug/l	37 - 151	20	624
1,2-Dichloroethane	< 2	22 (111 %R)	22 (110 %R) (1 RPD)	3/7/2012	ug/l	49 - 155	20	624
Trichloroethene	< 2	21 (105 %R)	20 (102 %R) (3 RPD)	3/7/2012	ug/l	71 - 157	20	624
1,2-Dichloropropane	< 2	21 (103 %R)	21 (103 %R) (0 RPD)	3/7/2012	ug/l	0 - 210	20	624
Bromodichloromethane	< 2	22 (110 %R)	22 (110 %R) (0 RPD)	3/7/2012	ug/l	35 - 155	20	624
2-Chloroethylvinylether	< 2	29 (143 %R)	29 (144 %R) (1 RPD)	3/7/2012	ug/l	0 - 305	20	624
4-Methyl-2-pentanone(MIBK)	< 10	20 (107 %R)	20 (105 %R) (2 RPD)	3/7/2012	ug/l	40 - 160	20	624
cis-1,3-Dichloropropene	< 2	23 (115 %R)	23 (115 %R) (0 RPD)	3/7/2012	ug/l	0 - 227	20	624
Toluene	< 1	20 (98 %R)	20 (98 %R) (0 RPD)	3/7/2012	ug/l	47 - 150	20	624
trans-1,3-Dichloropropene	< 2	22 (110 %R)	22 (108 %R) (2 RPD)	3/7/2012	ug/l	17 - 183	20	624
1,1,2-Trichloroethane	< 2	19 (95 %R)	19 (94 %R) (1 RPD)	3/7/2012	ug/l	52 - 150	20	624
2-Hexanone	< 10	20 (120 %R)	20 (101 %R) (17 RPD)	3/7/2012	ug/l	40 - 160	20	624
Tetrachloroethene	< 2	20 (102 %R)	20 (102 %R) (0 RPD)	3/7/2012	ug/l	64 - 148	20	624
Dibromochloromethane	< 2	22 (110 %R)	22 (109 %R) (1 RPD)	3/7/2012	ug/l	53 - 149	20	624
Chlorobenzene	< 2	20 (100 %R)	20 (99 %R) (1 RPD)	3/7/2012	ug/l	37 - 160	20	624
Ethylbenzene	< 1	20 (102 %R)	20 (101 %R) (1 RPD)	3/7/2012	ug/l	37 - 162	20	624
mp-Xylene	< 1	40 (99 %R)	40 (100 %R) (1 RPD)	3/7/2012	ug/l	70 - 130	20	624
o-Xylene	< 1	20 (100 %R)	20 (100 %R) (0 RPD)	3/7/2012	ug/l	70 - 130	20	624
Styrene	< 1	20 (102 %R)	20 (102 %R) (0 RPD)	3/7/2012	ug/l	70 - 130	20	624
Bromoform	< 2	19 (96 %R)	19 (95 %R) (1 RPD)	3/7/2012	ug/l	45 - 169	20	624
1,1,2,2-Tetrachloroethane	< 2	19 (94 %R)	19 (97 %R) (3 RPD)	3/7/2012	ug/l	46 - 157	20	624
1,3-Dichlorobenzene	< 1	20 (102 %R)	21 (106 %R) (4 RPD)	3/7/2012	ug/l	59 - 156	20	624
1,4-Dichlorobenzene	< 1	20 (102 %R)	21 (105 %R) (3 RPD)	3/7/2012	ug/l	18 - 190	20	624
1,2-Dichlorobenzene	< 1	20 (102 %R)	21 (105 %R) (3 RPD)	3/7/2012	ug/l	18 - 190	20	624
4-Bromofluorobenzene (surr)	93 %R	98 %R	99 %R	3/7/2012	% Rec	70 - 130		624



# QC REPORT

EAI ID#: 108078

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

Client Designation: **Wastewater Analysis**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
1,2-Dichlorobenzene-d4 (surr)	99 %R	105 %R	103 %R	3/7/2012	% Rec	70 - 130		624
Toluene-d8 (surr)	94 %R	96 %R	96 %R	3/7/2012	% 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.  
\*/! Flagged analyte recoveries deviated from the QA/QC limits. Any impact to data is addressed below.



# LABORATORY REPORT

EAL ID#: 108078

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

Client Designation: **Wastewater Analysis**

---

Sample ID:	Final Effluent B-3625, B-3727, B-3722
Lab Sample ID:	108078.02
Matrix:	aqueous
Date Sampled:	3/2/12
Date Received:	3/2/12
Units:	mg/L
Date of Extraction/Prep:	3/12/12
Date of Analysis:	3/12/12
Analyst:	LAS
Method:	1664A
Dilution Factor:	1
Oil & Grease (HEM)	< 5



# QC REPORT

EAI ID#: 108078

Client: GZA GeoEnvironmental, Inc. (NH)

Batch ID: 734574-36453/A031212OG1661

Client Designation: Wastewater Analysis

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Oil & Grease (HEM)	< 5	36 (90 %R)	36 (90 %R) (0 RPD)	3/12/2012	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#: 108078

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

Client Designation: **Wastewater Analysis**

Sample ID: Final Effluent  
B-3625, B-3727,  
B-3722

Lab Sample ID: 108078.02

Matrix: aqueous

Date Sampled: 3/2/12

Date Received: 3/2/12

Solids Suspended 43  
Solids Dissolved 24000  
Chloride 11000  
Cyanide Total 0.02  
BOD < 6  
COD 170  
pH 7.1

Units	Analysis		Method	Analyst
	Date	Time		
mg/L	3/05/12	14:00	2540D	DLS
mg/L	3/05/12	15:00	2540C	DLS
mg/L	3/09/12	11:01	4500CIE	DLS
mg/L	3/06/12	9:30	4500CNE	KJR
mg/L	3/02/12	16:30	5210B	SKC
mg/L	3/05/12	10:25	H8000	KJR
SU	3/02/12	16:00	4500H+B	NZ



# LABORATORY REPORT

EAI ID#: 108078

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

**Sample ID:** Final Effluent  
B-3625, B-3727,  
B-3722 Rerun

**Lab Sample ID:** 108078.03

**Matrix:** aqueous

**Date Sampled:** 3/2/12

**Date Received:** 3/2/12

**Solids Suspended** 2

Analysis				
Units	Date	Time	Method	Analyst
mg/L	4/03/12	13:30	2540D	DLS

**Solids Suspended:** The sample was reanalyzed past the hold time at the request of the client, with an additional 1000 mLs of rinse water.



# QC REPORT

EAI ID#: 108078

Client: GZA GeoEnvironmental, Inc. (NH)

Client Designation: Wastewater Analysis

Parameter Name	Blank	LCS	LCSD	Units	Date of Analysis	Limits	RPD	Method
Solids Suspended	< 5	100 (101 %R)		NA mg/L	3/5/12	90 - 110	20	2540D
Solids Suspended	< 2	92 (92 %R)	93 (93 %R) (1 RPD)	mg/L	4/3/12	90 - 110	20	2540D
Solids Dissolved	< 5	920 (92 %R)		NA mg/L	3/5/12	85 - 115	20	2540C
Chloride	< 1	26 (102 %R)	26 (102 %R) (0 RPD)	mg/L	3/9/12	90 - 110	20	4500CIE
Cyanide Total	< 0.02	0.26 (104 %R)		NA mg/L	3/6/12	85 - 115	20	4500CNE
BOD	< 6	360 (91 %R)	380 (96 %R) (5 RPD)	mg/L	3/2/12	84 - 115	20	5210B
COD	< 10	110 (109 %R)	110 (106 %R) (3 RPD)	mg/L	3/5/12	85 - 115	20	H8000
pH		6.0 (100 %R)	6.0 (99 %R) (1 RPD)	SU	3/2/12	5.95 - 6.07	10	4500H+B

Parameter Name	MS/MSD Parent ID	MS/MSD Parent	Matrix Spike	MSD	Units	Date of Analysis	Limits	RPD	Method
Solids Suspended		NA	NA	NA	mg/L	3/5/12		20	2540D
Solids Suspended		NA	NA	NA	mg/L	4/3/12		20	2540D
Solids Dissolved		NA	NA	NA	mg/L	3/5/12		20	2540C
Chloride		NA	NA	NA	mg/L	3/9/12		20	4500CIE
Cyanide Total	108078.02	0.02	0.29 (109 %R)	0.28 (104 %R) (5 RPD)	mg/L	3/6/12	75-125	20	4500CNE
BOD	108053.01	< 6	44 (110 %R)	NA	mg/L	3/2/12	75-125	20	5210B
COD	108069.07	60	110 (101 %R)	110 (89 %R) (13 RPD)	mg/L	3/5/12	80-120	20	H8000
pH		NA	NA	NA	SU	3/2/12		10	4500H+B

Parameter Name	Duplicate Parent ID	Duplicate Parent	Duplicate	Units	Date of Analysis	RPD	Method
Solids Suspended	108054.01	290	320 (10 RPD)	mg/L	3/5/12	20	2540D
Solids Suspended	108826.01	17	19 (14 RPD)	mg/L	4/3/12	20	2540D
Solids Dissolved	108078.02	24000	21000 (10 RPD)	mg/L	3/5/12	20	2540C
Chloride		NA	NA	mg/L	3/9/12	20	4500CIE
Cyanide Total		NA	NA	mg/L	3/6/12	20	4500CNE
BOD	108053.01	< 6	< 6 (RPD N/A)	mg/L	3/2/12	20	5210B
COD		NA	NA	mg/L	3/5/12	20	H8000
pH	108078.02	7.1	7.1 (0 RPD)	SU	3/2/12	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.





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

27 March 2012

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

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

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

Sincerely,

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

Liz Siska  
Project Manager



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

## ANALYTICAL REPORT FOR SAMPLES

Laboratory: Frontier Global Sciences, Inc.

SDG:

Client: Eastern Analytical, Inc

Project: Merrimack Station 200.8

Sample ID	Lab ID	Matrix	Date Sampled	Date Received
B-3621 Effluent Field Blank	1203055-01	Water	02-Mar-12 11:00	05-Mar-12 08:51
Final Effluent	1203055-02	Water	02-Mar-12 11:00	05-Mar-12 08:51

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 1 of 17  
1203055 Revised Report  
03/27/2012



## CASE NARRATIVE

Revised Report 03/26/2012- Client requested Pb be added to the work order.

### SAMPLE RECEIPT

Samples were received at Frontier Global Sciences (FGS) on March 15th, 2012. The samples were received intact, on-ice with temperatures measured at 13.2 degrees Celsius.

### SAMPLE PREPARATION AND ANALYSIS

Samples were prepared and analyzed for total metals in accordance with EPA Method 200.8 (modified).

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

### ANALYTICAL ISSUES

The Zn result for Effluent Field Blank (1203055-01) was greater than the MRL, the sample was re-digested and re-analyzed for confirmation.

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, 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.*

Page 2 of 17  
1203055 Revised Report  
03/27/2012



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

### CHAIN OF CUSTODY FORMS



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

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

1203055 Page 1 of 1

Client: Eastern Analytical Inc		Contact: Jeff Gyal		FGS PM: Liz Siska							
Address: 25 Cheney Drive Concord NH 03301		Phone: 238-5725 Fax: 238-4591		Date: 3/2/2012							
Project Name: Merrimack Station		E-mail: jeffg@eastlabs.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)							
Report To: Same		Contract/PO:		Saturday delivery? <input type="checkbox"/> Y <input type="checkbox"/> N (if yes, please contact PM)							
Address:		Invoice To: Same PO 27842		EDD: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N							
Phone: Fax:		Address:		QA <input type="checkbox"/> Standard <input type="checkbox"/> High							
E-mail: customservice@eastlabs.com		E-mail: customservice@eastlabs.com		Comments							
No.	Engraved Bottle ID	Sample ID	# of Bottles	Matrix	Date & Time	Sampled By	Field Filtered (Y/N)	Field Preserved: HNO <sub>3</sub> , HCl, BQ, Other: (%)	Total Metals	Analyses Requested	Comments
1	B-3621	Effluent field blank	1	AQ	3/2/2012 11:00	GT/AB	-	-			Metals include Se, Hg, As, Fe, Cd, Cr, Cu, Ni, Mn, Ag, Zn 2005 mg/L FGD WW  108078
2											
3	B-3623 B-3721 B-3722	Final Effluent	3	WW	3/2/2012 11:00	GT/AB	-	-			
4											
5											
6											
7											
8											
9											
10											
11											
12											
For Laboratory Use Only		Matrix Codes:		Relinquished By:		Received By:		Received By:			
COC Seal: N/A	Comments: 7112 850	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		Name: Jim Blackwell		Name: Deany Zink		Name:			
Cooler Temp: 6.2°C				Organization: Eastern Analytical Inc		Organization: EPA		Organization:			
Carrier: UPS				Date & Time: 3/2/2012 13:50		Date & Time: 3/2/2012 13:50		Date & Time:			
VTSR: 0851				Tracking number: 1Z X46 599 15 9152 8312							
# of Coolers:											
Sample Disposal: <input type="checkbox"/> Return (shipping fees may apply) <input type="checkbox"/> Standard Disposal - 30 Days after report <input type="checkbox"/> 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: <i>Liz Siska</i> Date: 3/2/12					

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.

Page 3 of 17  
 1203055 Revised Report  
 03/27/2012



### CHAIN OF CUSTODY FORMS

FGS Work Order: 1203059, 1203055

Sample Receipt Checklist

Client: Eastern Analytical Date & Time Received: 3/5/12 0851 Date Logged In: 3/5/12  
 Project: Merrimack Station Received By: Owen Valentine Logged In By: Owen Valentine  
 SDG: \_\_\_\_\_ # of Coolers Received: 1 FGS PM: Liz  
 Samples Arrived By: UPS Shipping Service Courier \_\_\_\_\_ Hand \_\_\_\_\_ Other (specify) \_\_\_\_\_  
 Tracking/Airbill Number(s): 1Z x 46 599 B 952 8312

Cooler Information	Yes	No	NA	Comments
The coolers do not appear to be tampered with:	<input checked="" type="checkbox"/>			
Custody seals are present and intact:		<input checked="" type="checkbox"/>		
Custody seals signed by:			<input checked="" type="checkbox"/>	

Thermal Preservation: \_\_\_\_\_ Loose Ice \_\_\_\_\_  Gel/Blue Ice \_\_\_\_\_ None (Ambient) \_\_\_\_\_ Other (specify) \_\_\_\_\_

Thermometer ID: 3150 Correction Factor (CF): + 0.3 degrees C

Cooler 1:	<u>13.2</u>	°C
Cooler 2:		°C
Cooler 3:		°C
Cooler 4:		°C
Cooler 5:		°C

Cooler 6:		°C
Cooler 7:		°C
Cooler 8:		°C
Cooler 9:		°C
Cooler 10:		°C

Cooler 11:		°C
Cooler 12:		°C
Cooler 13:		°C
Cooler 14:		°C
Cooler 15:		°C

Chain of Custody

COC is present and includes the following information for each sample:

	Yes	No	NA	Comments
Sample ID/Sample Description:				
Date and Time of Sample Collection:	<input checked="" type="checkbox"/>			
Sampled By:	<input checked="" type="checkbox"/>			
Preservation Type:			<input checked="" type="checkbox"/>	
Requested Analyses:	<input checked="" type="checkbox"/>			
Required Signatures:	<input checked="" type="checkbox"/>			
Internal chain of custody required:		<input checked="" type="checkbox"/>		

Sample Condition/Integrity

	Yes	No	NA	Comments
Sample containers were received intact:	<input checked="" type="checkbox"/>			
Sample labels are present and legible:	<input checked="" type="checkbox"/>			
Sample ID on container matches COC:	<input checked="" type="checkbox"/>			
Correct sample containers used for requested analyses:	<input checked="" type="checkbox"/>			
Samples received within holding time:	<input checked="" type="checkbox"/>			
Sample volume sufficient for requested analysis:				
Correct preservative used for requested analyses:			<input checked="" type="checkbox"/>	<i>Less than ideal volume received</i>
pH of samples checked and within method requirements:			<input checked="" type="checkbox"/>	
If pH adjusted by laboratory, noted in logbook:	<input checked="" type="checkbox"/>			

Anomalies/Non-conformances:

\_\_\_\_\_  
 \_\_\_\_\_

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

Discussion/Resolution:

\_\_\_\_\_  
 \_\_\_\_\_

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.



## ANALYTICAL RESULTS

### B-3621 Effluent Field Blank

Matrix: Water

Laboratory ID: 1203055-01

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Arsenic	ND	0.05	0.15	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Cadmium	ND	0.004	0.020	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	QM-12, U
Chromium	ND	0.009	0.10	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Copper	ND	0.01	0.10	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Iron	ND	1.3	10.0	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Lead	ND	0.004	0.040	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Mercury	ND	0.08	0.50	ng/L	1	F203099	2C08017	03/08/12	EPA 1631E	U
Molybdenum	ND	0.006	0.06	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Nickel	ND	0.008	0.10	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Selenium	ND	0.19	0.60	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Silver	ND	0.006	0.020	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Zinc	0.50	0.02	0.20	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	

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.*

Page 5 of 17  
 1203055 Revised Report  
 03/27/2012

Liz Siska, Project Manager

## ANALYTICAL RESULTS

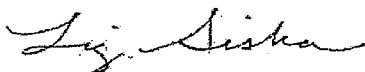
### Final Effluent

Matrix: Water

Laboratory ID: 1203055-02

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Arsenic	8.12	1.02	3.00	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	
Cadmium	ND	0.083	0.400	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	QM-12, U
Chromium	ND	0.18	2.00	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Copper	ND	0.20	2.00	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Iron	ND	26.0	200	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Lead	ND	0.078	0.800	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Mercury	17.2	0.83	5.00	ng/L	10	F203099	2C08017	03/08/12	EPA 1631E	
Molybdenum	419	0.12	1.20	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	
Nickel	29.1	0.16	2.00	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	
Selenium	109	3.88	12.0	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	
Silver	ND	0.120	0.400	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Zinc	ND	0.33	4.00	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	U

Frontier Global Sciences, Inc.



Liz Siska, Project Manager

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

Page 6 of 17  
1203055 Revised Report  
03/27/2012



### MATRIX DUPLICATES/TRIPPLICATES

**SOURCE: 1203016-05**

Batch: F203099

Sequence: 2C08017

Preparation: BrCl Oxidation

Lab Number: F203099-DUP1

Analyte	Sample Concentration ng/L	Duplicate Concentration ng/L	MRL	% RPD	RPD Limit	Method	Notes
Mercury	2.48	2.44	1.01	1.48	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 7 of 17  
1203055 Revised Report  
03/27/2012





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

**SOURCE: 1203014-01**

Batch: F203099

Sequence: 2C08017

Preparation: BrCl Oxidation

Lab Number: F203099-MS/MSD1

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	7.38	25.500	32.34	97.9	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	25.500	32.44	98.3	0.314	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 8 of 17  
 1203055 Revised Report  
 03/27/2012



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

**SOURCE: 1203055-02**

Batch: F203099

Sequence: 2C08017

Preparation: BrCl Oxidation

Lab Number: F203099-MS/MSD2

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	17.16	45.450	63.67	102	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	45.450	61.91	98.4	2.81	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 9 of 17  
 1203055 Revised Report  
 03/27/2012



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

**SOURCE: 1203016-01**

Batch: F203099

Sequence: 2C08017

Preparation: BrCl Oxidation

Lab Number: F203099-MS/MSD3

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	19.64	51.000	70.79	100	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	51.000	72.43	104	2.30	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 10 of 17  
 1203055 Revised Report  
 03/27/2012



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

**SOURCE: 1203055-02**

Batch: F203108

Sequence: 2C12010

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203108-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Chromium	0.31	7.0700	7.78	106	70 - 130	EPA 200.8 Mod	
Iron	ND	505.00	522.4	103	70 - 130	EPA 200.8 Mod	
Nickel	29.14	4.0400	30.61	36.6	70 - 130	EPA 200.8 Mod	QM-02
Copper	0.41	4.0400	4.22	94.2	70 - 130	EPA 200.8 Mod	
Zinc	2.75	10.100	18.93	160	70 - 130	EPA 200.8 Mod	QM-07
Arsenic	8.12	15.150	25.50	115	70 - 130	EPA 200.8 Mod	
Selenium	109.3	30.300	136.9	91.2	70 - 130	EPA 200.8 Mod	
Molybdenum	418.6	2.0200	416.5	-105	70 - 130	EPA 200.8 Mod	QM-02
Silver	ND	1.5150	1.450	95.7	70 - 130	EPA 200.8 Mod	
Cadmium	0.379	0.80800	1.335	118	70 - 130	EPA 200.8 Mod	
Lead	ND	1.5150	1.636	108	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Chromium	7.0700	7.64	104	1.78	70 - 130	20	EPA 200.8 Mod	
Iron	505.00	521.1	103	0.257	70 - 130	20	EPA 200.8 Mod	
Nickel	4.0400	32.86	92.1	7.07	70 - 130	20	EPA 200.8 Mod	QM-02
Copper	4.0400	4.31	96.6	2.26	70 - 130	20	EPA 200.8 Mod	
Zinc	10.100	11.07	82.4	52.4	70 - 130	20	EPA 200.8 Mod	QM-07, QR-08
Arsenic	15.150	25.03	112	1.87	70 - 130	20	EPA 200.8 Mod	
Selenium	30.300	134.1	82.0	2.07	70 - 130	20	EPA 200.8 Mod	
Molybdenum	2.0200	416.8	-89.3	0.0753	70 - 130	20	EPA 200.8 Mod	QM-02
Silver	1.5150	1.361	89.8	6.34	70 - 130	20	EPA 200.8 Mod	
Cadmium	0.80800	1.278	111	4.34	70 - 130	20	EPA 200.8 Mod	
Lead	1.5150	1.487	98.2	9.53	70 - 130	20	EPA 200.8 Mod	

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.*

Page 11 of 17  
 1203055 Revised Report  
 03/27/2012

Liz Siska, Project Manager



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

**SOURCE: 1203055-02**

Batch: F203108

Sequence: 2C12010

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203108-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Chromium	0.31	404.00	425.2	105	70 - 130	EPA 200.8 Mod	AS
Iron	ND	2020.0	2097	104	70 - 130	EPA 200.8 Mod	AS
Nickel	29.14	505.00	530.8	99.3	70 - 130	EPA 200.8 Mod	AS
Copper	0.41	505.00	465.9	92.2	70 - 130	EPA 200.8 Mod	AS
Zinc	2.75	1010.0	898.3	88.7	70 - 130	EPA 200.8 Mod	AS
Arsenic	8.12	404.00	429.4	104	70 - 130	EPA 200.8 Mod	AS
Selenium	109.3	404.00	534.6	105	70 - 130	EPA 200.8 Mod	AS
Molybdenum	418.6	202.00	623.4	101	70 - 130	EPA 200.8 Mod	AS
Silver	ND	20.200	18.02	89.2	70 - 130	EPA 200.8 Mod	AS
Cadmium	0.379	40.400	37.46	91.8	70 - 130	EPA 200.8 Mod	AS
Lead	ND	101.00	98.25	97.3	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Chromium	404.00	425.2	105	0.00134	70 - 130	20	EPA 200.8 Mod	AS
Iron	2020.0	2093	104	0.171	70 - 130	20	EPA 200.8 Mod	AS
Nickel	505.00	531.3	99.4	0.0878	70 - 130	20	EPA 200.8 Mod	AS
Copper	505.00	469.4	92.9	0.751	70 - 130	20	EPA 200.8 Mod	AS
Zinc	1010.0	898.8	88.7	0.0641	70 - 130	20	EPA 200.8 Mod	AS
Arsenic	404.00	439.2	107	2.27	70 - 130	20	EPA 200.8 Mod	AS
Selenium	404.00	497.7	96.1	7.14	70 - 130	20	EPA 200.8 Mod	AS
Molybdenum	202.00	616.1	97.8	1.18	70 - 130	20	EPA 200.8 Mod	AS
Silver	20.200	17.84	88.3	1.01	70 - 130	20	EPA 200.8 Mod	AS
Cadmium	40.400	37.27	91.3	0.512	70 - 130	20	EPA 200.8 Mod	AS
Lead	101.00	98.44	97.5	0.193	70 - 130	20	EPA 200.8 Mod	AS

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 12 of 17  
 1203055 Revised Report  
 03/27/2012



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

**RECOVERY AND RPD**

Batch: F203099

Sequence: 2C08017

Preparation: BrCl Oxidation

Lab Number: F203099-BS/BSD1

LCS Source: LCS

Analyte	Spike Added (ng/L)	LCS Concentration (ng/L)	LCS % Recovery	Recovery Limits	Method	Notes
Mercury	15.679	15.62	99.6	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	15.74	100	0.806	80 - 120	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 13 of 17  
 1203055 Revised Report  
 03/27/2012



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

**RECOVERY AND RPD**

Batch: F203108

Sequence: 2C12010

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203108-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Chromium	7.0000	6.67	95.3	85 - 115	EPA 200.8 Mod	
Iron	500.00	468.9	93.8	85 - 115	EPA 200.8 Mod	
Nickel	4.0000	4.07	102	85 - 115	EPA 200.8 Mod	
Copper	4.0000	4.22	106	85 - 115	EPA 200.8 Mod	
Zinc	10.000	10.42	104	85 - 115	EPA 200.8 Mod	
Arsenic	15.000	14.44	96.3	85 - 115	EPA 200.8 Mod	
Selenium	30.000	29.84	99.5	85 - 115	EPA 200.8 Mod	
Molybdenum	2.0000	1.80	90.0	85 - 115	EPA 200.8 Mod	
Silver	1.5000	1.476	98.4	85 - 115	EPA 200.8 Mod	
Cadmium	0.80000	0.918	115	85 - 115	EPA 200.8 Mod	
Lead	1.5000	1.542	103	85 - 115	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Chromium	7.0000	6.57	93.9	1.48	85 - 115	20	EPA 200.8 Mod	
Iron	500.00	465.2	93.0	0.801	85 - 115	20	EPA 200.8 Mod	
Nickel	4.0000	4.00	99.9	1.86	85 - 115	20	EPA 200.8 Mod	
Copper	4.0000	4.17	104	1.17	85 - 115	20	EPA 200.8 Mod	
Zinc	10.000	10.17	102	2.38	85 - 115	20	EPA 200.8 Mod	
Arsenic	15.000	14.25	95.0	1.37	85 - 115	20	EPA 200.8 Mod	
Selenium	30.000	30.40	101	1.84	85 - 115	20	EPA 200.8 Mod	
Molybdenum	2.0000	1.78	88.8	1.40	85 - 115	20	EPA 200.8 Mod	
Silver	1.5000	1.458	97.2	1.26	85 - 115	20	EPA 200.8 Mod	
Cadmium	0.80000	0.933	117	1.56	85 - 115	20	EPA 200.8 Mod	QM-12
Lead	1.5000	1.522	101	1.31	85 - 115	20	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 14 of 17  
 1203055 Revised Report  
 03/27/2012



### PREPARATION BLANKS

Instrument: ICPMS-3

Sequence: 2C08017

Preparation: BrCl Oxidation

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F203099-BLK1	Mercury	0.003	0.50	ng/L	F203099	EPA 1631E	U
F203099-BLK2	Mercury	0.009	0.50	ng/L	F203099	EPA 1631E	U
F203099-BLK3	Mercury	0.05	0.50	ng/L	F203099	EPA 1631E	U
F203099-BLK4	Mercury	0.03	0.50	ng/L	F203099	EPA 1631E	QB-04, U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 15 of 17  
1203055 Revised Report  
03/27/2012





### PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2C12010

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F203108-BLK1	Chromium	-0.01	0.10	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Iron	-0.1	10.0	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Nickel	0.01	0.10	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Copper	0.008	0.10	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Zinc	0.08	0.20	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Arsenic	-0.06	0.15	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Selenium	0.03	0.60	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Molybdenum	0.007	0.06	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Silver	-0.003	0.020	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Cadmium	-0.0003	0.020	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Lead	0.005	0.040	µg/L	F203108	EPA 200.8 Moc	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

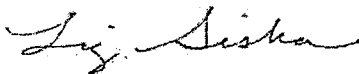
*The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Page 16 of 17  
1203055 Revised Report  
03/27/2012

## Notes and Definitions

- U Analyte included in the analysis, but not detected
- QR-08 The RPD value for the MS/MSD was outside of acceptance limits. Batch QC acceptable based on matrix duplicate and/or LCS/LCSD RPD values within control limits.
- QM-12 Initial or continuing calibration verification and/or blank spike/blank spike duplicate recoveries above upper control limits. All reported sample concentrations were below the reporting limit.
- QM-07 The spike recovery was outside control limits for the MS and/or MSD. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
- QM-02 The MS and/or MSD recoveries outside acceptance limits, due to spike concentration less than 1 times the sample concentration. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
- QB-04 The blank was preserved to 2% BrCl rather than 1%. The control limit for blanks preserved to greater than 1% BrCl is the preservation percentage multiplied by the MRL.
- AS This MS and/or MSD is an analytical spike and/or an analytical spike duplicate.
- DET Analyte Detected
- MDL Minimum Detection Limit
- MRL Minimum Reporting Limit
- ND Analyte Not Detected at or above the reporting limit
- wet Sample results reported on a wet weight basis
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- RSD Relative Standard Deviation

Frontier Global Sciences, Inc.

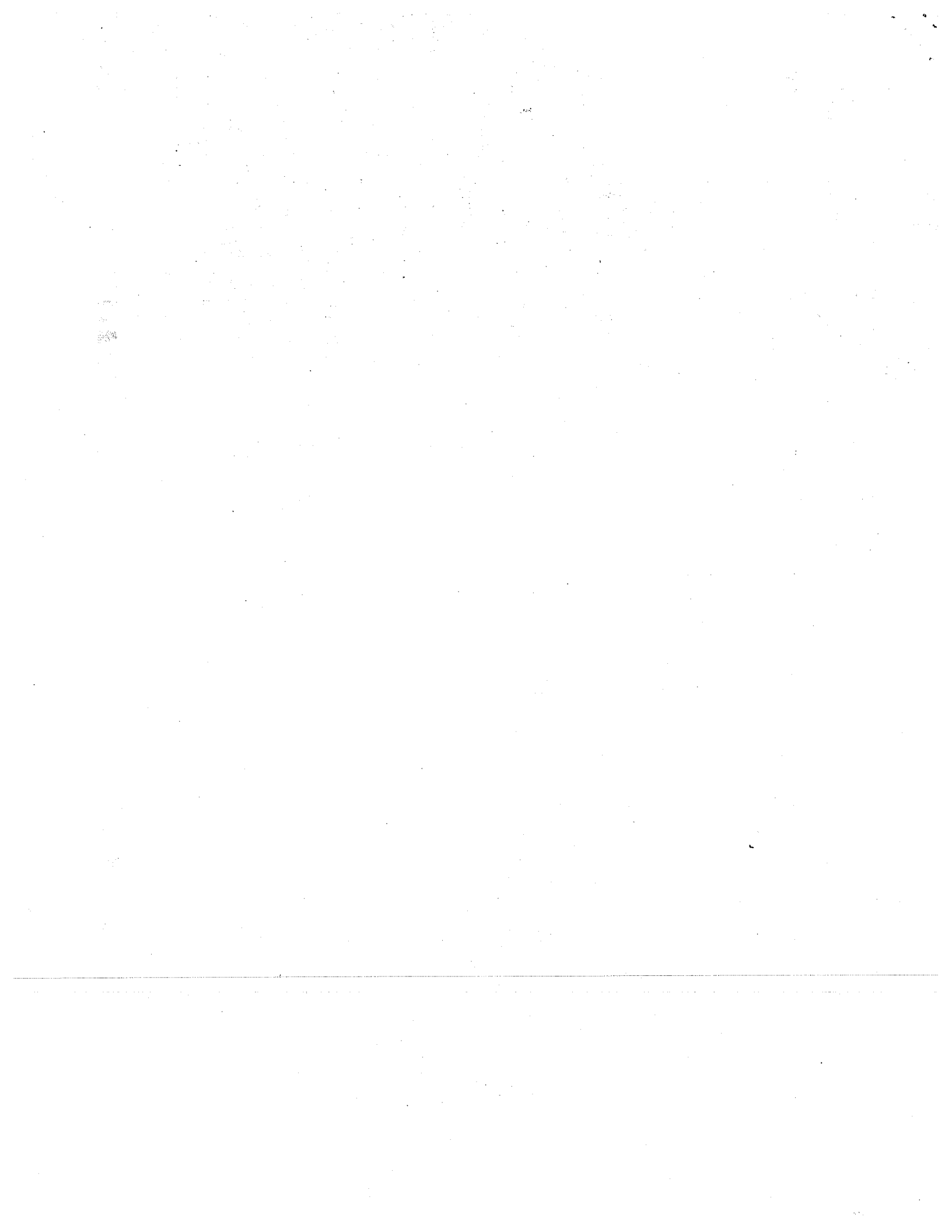


Liz Siska, Project Manager

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

Page 17 of 17  
1203055 Revised Report  
03/27/2012





**VIA EMAIL**

April 27, 2012  
File No. 04.0029307.00



Mr. Dana Clement  
Superintendent  
Allenstown Wastewater Treatment Facility  
35 Canal Street  
Allenstown, New Hampshire 03275

Re: Analytical Data Report  
Treated Wastewater  
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 Dana:

On behalf of Public Service of New Hampshire (PSNH), GZA GeoEnvironmental, Inc. is pleased to submit the attached **Analytical Data Report** for sampling conducted on January 5, 2012, previously submitted on January 16, 2012. In anticipation of extremely low metals concentrations, the previous analysis was performed by Environmental Protection Agency (EPA) Method 1638 which was specifically developed by EPA to enable metals detection by Inductively Coupled Plasma/Mass Spectrometry at extremely low concentrations in ambient water when used in conjunction with sampling Method 1669: Sampling Ambient Water for Determination of Trace Metals at EPA Water Quality Criteria Levels.

Total metals were reanalyzed using Method 200.8MOD within the sample hold time, in accordance with Part 2 Section E of Industrial Discharge Permit No. HWIU-PSNH, requiring that any sampling, preservation, handling, and analytical methods used must conform to 40 CFR 136. This method is specified in the United States EPA draft Standard Operating Procedure (SOP) for trace metals analysis of flue gas desulfurization (FGD) wastewater. The SOP is discussed below.

**ANALYTICAL DISCUSSION**

FGD wastewater requires specialized analytical techniques to overcome matrix interference for certain analysis of trace metals. To assist you in evaluating this issue further, we offer an excerpt below from the EPA web site and a link to their draft SOP for trace metals analysis of FGD wastewater 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 an 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 SOP. 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](http://water.epa.gov/scitech/wastetech/guide/upload/steam_draft_sop.pdf), EPA May 2011.

Considering that specialized analytical techniques are necessary to overcome matrix interference for certain analysis of trace metals in FDG wastewater, we recommend any analysis on FGD wastewater be conducted in accordance with the EPA draft SOP for trace metals analysis of FGD wastewater.

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.

A handwritten signature in black ink that reads 'Ronald A. Breton'.

Ronald A. Breton, P.E.  
Principal

A handwritten signature in black ink that reads 'Michael P. North'.

Michael P. North, P.E.  
Consultant/Reviewer

RAB/MPN:tmd

\\GZAMANN\Jobs\04\Jobs\00293006\04.0029307.00\Work\SAMPLING AND REPORTING\REPORTS\Allenstown\REPORT\final 04.0029307.00 Atown 010512.rerun 042712.docx

Attachment: Analytical Data Report

## **ANALYTICAL DATA REPORT**



# eastern analytical

*professional laboratory services*

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



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 107555  
Client Identification: Merrimack Station  
Date Received: 1/5/2012

Dear Mr. Pepler :

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

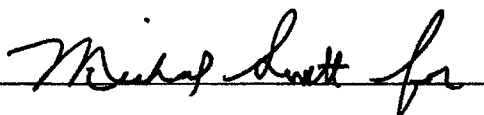
Analysis: Subcontract - Metals Method 200.8  
(Al, Sb, Ba, Be, Cd, Ca, Cr, Cu, Fe, Pb, Mn, Mo, Na, Ni, Ag, Tl, Zn, As, Se & Hg)

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

4/25/12  
Date

29  
# of pages (excluding cover letter)

**REVISED**  
Pg 4/25/12





# SAMPLE CONDITIONS PAGE

EAI ID#: 107555

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

Client Designation: **Merrimack Station**

Temperature upon receipt (°C): **4.7**

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)
107555.01	Treat Tank Eff Composite	1/5/12	1/5/12	aqueous		Adheres to Sample Acceptance Policy
107555.02	Treat Tank Eff Grab	1/5/12	1/5/12	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*



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

25 April 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,

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

Liz Siska  
Project Manager



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

### ANALYTICAL REPORT FOR SAMPLES

Laboratory: Frontier Global Sciences, Inc.

SDG:

Client: Eastern Analytical, Inc

Project: Merrimack Station

Sample ID	Lab ID	Matrix	Date Sampled	Date Received
Treat Tank Eff Composite	1201073-01	Water	05-Jan-12 10:00	06-Jan-12 09:50
Treat Tank Eff Grab	1201073-02	Water	05-Jan-12 08:00	06-Jan-12 09:50

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



## CASE NARRATIVE

Revised Report 4/25/12:

Per client request Boron was removed from report.

Revised Report 3/28/12:

Per client request samples were prepared and analyzed for total metals in accordance with EPA 200.8 (modified).

### SAMPLE RECEIPT

Samples were received at Frontier Global Sciences (FGS) on January 6th, 2012. The samples were received intact, on-ice with temperatures measured at 3.4 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 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, Inc.

A handwritten signature in cursive script that reads "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.*





## ANALYTICAL RESULTS

### Treat Tank Eff Composite

Matrix: Water

Laboratory ID: 1201073-01

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Aluminum	ND	8.9	80.0	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	U
Antimony	0.408	0.092	0.400	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	
Barium	240	0.54	4.00	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	
Beryllium	ND	0.454	1.20	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	U
Cadmium	ND	0.083	0.400	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	U
Calcium	5010000	16200	200000	µg/L	5000	F203271	2C22005	03/22/12	EPA 200.8 Mod	
Chromium	ND	0.18	2.00	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	U
Copper	ND	0.20	2.00	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	U
Iron	ND	26.0	200	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	U
Lead	ND	0.078	0.800	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	U
Manganese	280	0.15	2.00	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	
Molybdenum	134	0.12	1.20	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	
Nickel	9.79	0.16	2.00	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	
Silver	ND	0.120	0.400	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	U
Sodium	259000	23	400	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	
Thallium	5.56	0.250	1.00	µg/L	100	F203314	2C25005	03/25/12	EPA 200.8 Mod	
Zinc	ND	0.33	4.00	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



## ANALYTICAL RESULTS

### Treat Tank Eff Grab

Matrix: Water

Laboratory ID: 1201073-02

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Arsenic	8.51	1.02	3.00	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	
Mercury	10.5	0.34	2.02	ng/L	4	F201063	2A09010	01/09/12	EPA 1631E	FB-1631
Selenium	68.9	3.88	12.0	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



### MATRIX DUPLICATES/TRIPPLICATES

**SOURCE: 1201073-02**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-DUP1

Analyte	Sample Concentration ng/L	Duplicate Concentration ng/L	MRL	% RPD	RPD Limit	Method	Notes
Mercury	10.48	10.54	2.02	0.617	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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





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

**SOURCE: 1201073-02**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-MS/MSD1

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	10.48	20.400	31.36	102	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	20.400	27.08	81.4	14.7	71 - 125	24	EPA 1631E	

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



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

**SOURCE: 1112278-02**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-MS/MSD2

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	7.61	20.400	27.86	99.2	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	20.400	28.37	102	1.82	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

**SOURCE: 1201029-01**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-MS/MSD3

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	5.34	10.200	15.58	100	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	14.07	85.6	10.2	71 - 125	24	EPA 1631E	

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



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

**SOURCE: 1201030-02**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-MS/MSD4

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	5.54	10.200	14.82	91.0	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	14.61	89.0	1.40	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

**SOURCE: 1201073-01RE3**

Batch: F203271

Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203271-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Calcium	5013000	1515.0	4802000	-13900	70 - 130	EPA 200.8 Mod	QM-02

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Calcium	1515.0	4943000	-4600	2.89	70 - 130	20	EPA 200.8 Mod	QM-02

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

**SOURCE: 1201073-01RE4**

Batch: F203271

Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203271-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Beryllium	0.507	2.0200	2.442	95.8	70 - 130	EPA 200.8 Mod	
Sodium	258800	505.00	257700	-213	70 - 130	EPA 200.8 Mod	QM-02
Aluminum	52.9	151.50	202.3	98.6	70 - 130	EPA 200.8 Mod	
Chromium	0.57	7.0700	8.04	106	70 - 130	EPA 200.8 Mod	
Manganese	280.5	6.0600	283.4	47.6	70 - 130	EPA 200.8 Mod	QM-02
Iron	ND	505.00	520.0	103	70 - 130	EPA 200.8 Mod	
Nickel	9.79	4.0400	14.11	107	70 - 130	EPA 200.8 Mod	
Copper	0.55	4.0400	4.34	93.9	70 - 130	EPA 200.8 Mod	
Zinc	0.40	10.100	8.42	79.4	70 - 130	EPA 200.8 Mod	
Arsenic	10.30	15.150	24.18	91.6	70 - 130	EPA 200.8 Mod	
Selenium	63.40	30.300	89.73	86.9	70 - 130	EPA 200.8 Mod	
Molybdenum	133.8	2.0200	136.7	142	70 - 130	EPA 200.8 Mod	QM-02
Silver	ND	1.5150	1.388	91.6	70 - 130	EPA 200.8 Mod	
Cadmium	0.332	0.80800	1.105	95.6	70 - 130	EPA 200.8 Mod	
Antimony	0.408	0.80800	1.259	105	70 - 130	EPA 200.8 Mod	
Barium	239.7	10.100	249.5	96.8	70 - 130	EPA 200.8 Mod	
Lead	ND	1.5150	1.542	102	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	2.0200	2.561	102	4.74	70 - 130	20	EPA 200.8 Mod	
Sodium	505.00	257100	-336	0.243	70 - 130	20	EPA 200.8 Mod	QM-02
Aluminum	151.50	203.4	99.3	0.564	70 - 130	20	EPA 200.8 Mod	
Chromium	7.0700	7.73	101	3.85	70 - 130	20	EPA 200.8 Mod	
Manganese	6.0600	285.2	76.9	0.625	70 - 130	20	EPA 200.8 Mod	
Iron	505.00	518.7	103	0.242	70 - 130	20	EPA 200.8 Mod	
Nickel	4.0400	13.81	99.5	2.13	70 - 130	20	EPA 200.8 Mod	
Copper	4.0400	4.19	90.2	3.47	70 - 130	20	EPA 200.8 Mod	
Zinc	10.100	9.16	86.8	8.49	70 - 130	20	EPA 200.8 Mod	
Arsenic	15.150	22.25	78.9	8.31	70 - 130	20	EPA 200.8 Mod	
Selenium	30.300	94.00	101	4.64	70 - 130	20	EPA 200.8 Mod	
Molybdenum	2.0200	136.6	137	0.0771	70 - 130	20	EPA 200.8 Mod	QM-02

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



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

**SOURCE: 1201073-01RE4**

Batch: F203271

Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203271-MS/MSD2

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	1.5150	1.387	91.5	0.0874	70 - 130	20	EPA 200.8 Mod	
Cadmium	0.80800	1.061	90.2	4.03	70 - 130	20	EPA 200.8 Mod	
Antimony	0.80800	1.274	107	1.21	70 - 130	20	EPA 200.8 Mod	
Barium	10.100	251.4	116	0.781	70 - 130	20	EPA 200.8 Mod	
Lead	1.5150	1.534	101	0.525	70 - 130	20	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

**SOURCE: 1201073-01RE3**

Batch: F203271

Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203271-MS/MSD3

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Calcium	5013000	10100000	15120000	100	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Calcium	10100000	16140000	110	6.53	70 - 130	20	EPA 200.8 Mod	AS

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





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

**SOURCE: 1201073-01RE4**

Batch: F203271

Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203271-MS/MSD4

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Beryllium	0.507	20.200	20.41	98.5	70 - 130	EPA 200.8 Mod	AS
Sodium	258800	40400	292900	84.5	70 - 130	EPA 200.8 Mod	AS
Aluminum	52.9	4040.0	3956	96.6	70 - 130	EPA 200.8 Mod	AS
Chromium	0.57	404.00	430.1	106	70 - 130	EPA 200.8 Mod	AS
Manganese	280.5	404.00	704.2	105	70 - 130	EPA 200.8 Mod	AS
Iron	ND	2020.0	2121	105	70 - 130	EPA 200.8 Mod	AS
Nickel	9.79	505.00	511.2	99.3	70 - 130	EPA 200.8 Mod	AS
Copper	0.55	505.00	475.4	94.0	70 - 130	EPA 200.8 Mod	AS
Zinc	0.40	1010.0	907.4	89.8	70 - 130	EPA 200.8 Mod	AS
Arsenic	10.30	404.00	431.7	104	70 - 130	EPA 200.8 Mod	AS
Selenium	63.40	404.00	468.8	100	70 - 130	EPA 200.8 Mod	AS
Molybdenum	133.8	202.00	338.1	101	70 - 130	EPA 200.8 Mod	AS
Silver	ND	20.200	18.50	91.6	70 - 130	EPA 200.8 Mod	AS
Cadmium	0.332	40.400	39.37	96.6	70 - 130	EPA 200.8 Mod	AS
Antimony	0.408	20.200	20.91	102	70 - 130	EPA 200.8 Mod	AS
Barium	239.7	808.00	1056	101	70 - 130	EPA 200.8 Mod	AS
Lead	ND	101.00	99.32	98.3	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	20.200	20.07	96.8	1.71	70 - 130	20	EPA 200.8 Mod	AS
Sodium	40400	292600	83.7	0.114	70 - 130	20	EPA 200.8 Mod	AS
Aluminum	4040.0	3954	96.6	0.0362	70 - 130	20	EPA 200.8 Mod	AS
Chromium	404.00	428.7	106	0.337	70 - 130	20	EPA 200.8 Mod	AS
Manganese	404.00	694.4	102	1.40	70 - 130	20	EPA 200.8 Mod	AS
Iron	2020.0	2077	103	2.11	70 - 130	20	EPA 200.8 Mod	AS
Nickel	505.00	512.6	99.6	0.276	70 - 130	20	EPA 200.8 Mod	AS
Copper	505.00	470.7	93.1	0.997	70 - 130	20	EPA 200.8 Mod	AS
Zinc	1010.0	905.9	89.6	0.166	70 - 130	20	EPA 200.8 Mod	AS
Arsenic	404.00	429.9	104	0.419	70 - 130	20	EPA 200.8 Mod	AS
Selenium	404.00	468.2	100	0.141	70 - 130	20	EPA 200.8 Mod	AS
Molybdenum	202.00	336.5	100	0.473	70 - 130	20	EPA 200.8 Mod	AS

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



### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1201073-01RE4

Batch: F203271

Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203271-MS/MSD4

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	20.200	18.95	93.8	2.42	70 - 130	20	EPA 200.8 Mod	AS
Cadmium	40.400	39.33	96.5	0.104	70 - 130	20	EPA 200.8 Mod	AS
Antimony	20.200	21.07	102	0.736	70 - 130	20	EPA 200.8 Mod	AS
Barium	808.00	1058	101	0.205	70 - 130	20	EPA 200.8 Mod	AS
Lead	101.00	98.77	97.8	0.549	70 - 130	20	EPA 200.8 Mod	AS

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

**SOURCE: 1201073-01RE6**

Batch: F203314

Sequence: 2C25005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203314-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Thallium	5.563	0.40400	5.875	77.3	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Thallium	0.40400	5.880	78.5	0.0859	70 - 130	20	EPA 200.8 Mod	

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



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

**SOURCE: 1201073-01RE6**

Batch: F203314

Sequence: 2C25005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203314-MS/MSD4

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Thallium	5.563	101.00	103.3	96.8	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Thallium	101.00	103.7	97.1	0.341	70 - 130	20	EPA 200.8 Mod	AS

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

**RECOVERY AND RPD**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-BS/BSD1

LCS Source: Nist 1641d

Analyte	Spike Added (ng/L)	LCS Concentration (ng/L)	LCS % Recovery	Recovery Limits	Method	Notes
Mercury	15.679	15.50	98.8	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	15.95	102	2.89	80 - 120	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

**RECOVERY AND RPD**

Batch: F203271

Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203271-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Beryllium	2.0000	1.930	96.5	85 - 115	EPA 200.8 Mod	
Sodium	500.00	499	99.8	85 - 115	EPA 200.8 Mod	
Aluminum	150.00	146.0	97.3	85 - 115	EPA 200.8 Mod	
Calcium	1500.0	1528	102	85 - 115	EPA 200.8 Mod	
Chromium	7.0000	6.57	93.9	85 - 115	EPA 200.8 Mod	
Manganese	6.0000	5.86	97.6	85 - 115	EPA 200.8 Mod	
Iron	500.00	475.3	95.1	85 - 115	EPA 200.8 Mod	
Nickel	4.0000	4.01	100	85 - 115	EPA 200.8 Mod	
Copper	4.0000	4.18	105	85 - 115	EPA 200.8 Mod	
Zinc	10.000	10.33	103	85 - 115	EPA 200.8 Mod	
Arsenic	15.000	14.37	95.8	85 - 115	EPA 200.8 Mod	
Selenium	30.000	29.66	98.9	85 - 115	EPA 200.8 Mod	
Molybdenum	2.0000	1.81	90.5	85 - 115	EPA 200.8 Mod	
Silver	1.5000	1.517	101	85 - 115	EPA 200.8 Mod	
Cadmium	0.80000	0.781	97.6	85 - 115	EPA 200.8 Mod	
Antimony	0.80000	0.815	102	85 - 115	EPA 200.8 Mod	
Barium	10.000	9.69	96.9	85 - 115	EPA 200.8 Mod	
Lead	1.5000	1.597	106	85 - 115	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	2.0000	1.949	97.4	0.955	85 - 115	20	EPA 200.8 Mod	
Sodium	500.00	500	100	0.216	85 - 115	20	EPA 200.8 Mod	
Aluminum	150.00	148.5	99.0	1.71	85 - 115	20	EPA 200.8 Mod	
Calcium	1500.0	1544	103	1.03	85 - 115	20	EPA 200.8 Mod	
Chromium	7.0000	6.67	95.3	1.48	85 - 115	20	EPA 200.8 Mod	
Manganese	6.0000	5.96	99.4	1.75	85 - 115	20	EPA 200.8 Mod	
Iron	500.00	485.2	97.0	2.06	85 - 115	20	EPA 200.8 Mod	
Nickel	4.0000	4.02	101	0.246	85 - 115	20	EPA 200.8 Mod	

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



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

**RECOVERY AND RPD**

Batch: F203271

Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203271-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Copper	4.0000	4.28	107	2.24	85 - 115	20	EPA 200.8 Mod	
Zinc	10.000	10.39	104	0.570	85 - 115	20	EPA 200.8 Mod	
Arsenic	15.000	14.52	96.8	0.977	85 - 115	20	EPA 200.8 Mod	
Selenium	30.000	30.15	101	1.66	85 - 115	20	EPA 200.8 Mod	
Molybdenum	2.0000	1.82	91.0	0.564	85 - 115	20	EPA 200.8 Mod	
Silver	1.5000	1.502	100	1.03	85 - 115	20	EPA 200.8 Mod	
Cadmium	0.80000	0.828	103	5.85	85 - 115	20	EPA 200.8 Mod	
Antimony	0.80000	0.808	101	0.848	85 - 115	20	EPA 200.8 Mod	
Barium	10.000	9.86	98.6	1.77	85 - 115	20	EPA 200.8 Mod	
Lead	1.5000	1.620	108	1.42	85 - 115	20	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

**RECOVERY AND RPD**

Batch: F203314

Sequence: 2C25005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203314-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Thallium	0.40000	0.396	98.9	85 - 115	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Thallium	0.40000	0.391	97.8	1.12	85 - 115	20	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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





### PREPARATION BLANKS

Instrument: Hg-17

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F201063-BLK1	Mercury	-0.009	0.50	ng/L	F201063	EPA 1631E	U
F201063-BLK2	Mercury	-0.006	0.50	ng/L	F201063	EPA 1631E	U
F201063-BLK3	Mercury	-0.02	0.50	ng/L	F201063	EPA 1631E	U
F201063-BLK4	Mercury	0.03	0.50	ng/L	F201063	EPA 1631E	U, QB-04
F201063-BLK5	Mercury	0.11	0.52	ng/L	F201063	EPA 1631E	U, QB-06

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



## PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F203271-BLK1	Beryllium	0.00008	0.060	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Sodium	2	20	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Aluminum	-0.04	4.0	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Calcium	1	40	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Chromium	-0.02	0.10	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Manganese	0.01	0.10	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Iron	-0.02	10.0	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Nickel	0.004	0.10	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Copper	0.003	0.10	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Zinc	0.007	0.20	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Arsenic	-0.06	0.15	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Selenium	-0.02	0.60	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Molybdenum	0.01	0.06	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Silver	-0.0005	0.020	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Cadmium	0.004	0.020	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Antimony	0.002	0.020	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Barium	0.01	0.20	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Lead	0.010	0.040	µg/L	F203271	EPA 200.8 Moc	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



### PREPARATION BLANKS

Instrument: ICPMS-3

Sequence: 2C25005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F203314-BLK1	Thallium	0.0007	0.010	µg/L	F203314	EPA 200.8 Moc	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



## 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-06 The blank was preserved to 5% BrCl rather than 1%. The control limit for blanks preserved to greater than 1% BrCl is the preservation percentage multiplied by the MRL.
- 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.
- FB-1631 Required equipment/field/filter blank not submitted by the client. The sample has been analyzed according to 1631E, but does not meet 1631E criteria
- 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

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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











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.

Copyright © 2011 GZA GeoEnvironmental, Inc.

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.

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:rk1

P:\04\Jobs\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

**SMR SUMMARY SHEET**

---

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**

**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 / 1684			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(f). 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*

**TABLES**

**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:

- 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.
- PCB compounds analyzed by method 608 were not detected at concentrations greater than 0.3µg/L.
- The cyanide value was inconclusive due to matrix interference.
- 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.



**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

**ANALYTICAL DATA REPORTS**

---

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](http://www.eailabs.com) for a copy of our NELAP certificate and accredited parameters.

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

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

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

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

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

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

Sincerely,

  
Lorraine Olashaw, Lab Director

12.15.11  
Date

9  
# of pages (excluding cover letter)



# 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:

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



# LABORATORY REPORT

EAI ID#: 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

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



## 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  
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



# 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
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



# LABORATORY REPORT

EAI ID#: 105347

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

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

---

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





# 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
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



# 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

Solids Suspended	< 5
Fluoride	4.4
Cyanide Total	0.45
Total Nitrogen	151
BOD	< 6
COD	59
Total Phenols	< 0.05
pH	6.5

Analysis				
Units	Date	Time	Method	Analyst
mg/L	11/17/11	15:15	2540D	DLS
mg/L	11/17/11	13:59	300.0	KL
mg/L	11/21/11	9:00	4500CNE	KJR
mg/L	11/18/11	14:30	4500NorgC	KL
mg/L	11/17/11	15:43	5210B	SKC
mg/L	11/18/11	11:10	H8000	SKC
mg/L	11/18/11	9:00	420.1	JCC
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.



# 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

Molybdenum < 0.005

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

# CHAIN-OF-CUSTODY RECORD

105347

GZANH

eastern analytical, inc.  
professional laboratory services

# of containers

31

MA

Dissolved Sample Field Filtered

Sample IDs	Date/Time	Matrix	Parameters and Sample Notes
Wastewater	11/17/11	aqueous Grab or Comp <u>Grab</u>	AQ TOX NH3/BOD/COD/CyanT/F/pH/TPhenols/SS/NO3/PDS/TSS/M624A/E625/E608PCB/OG1664/ICPMets-At-Gb-As- Ba-Be-Cd-Cr-Cu-Fe-Pb-Mn-Mo-Ni-Seg-Zn-Ca-Na-Mg-Hg-CVChemservedSubs/TN/TKN/NO3NO2/AIKT/IS2/ISO3/Chlorid e/IRes
<input checked="" type="checkbox"/> Sampler confirms ID and parameters are accurate     Circle preservative/s: HCL HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH MEOH Na <sub>2</sub> S <sub>2</sub> O <sub>8</sub> ICE			

SITE NAME: MERIMACK STATION  
 SITE ADDRESS: 97 RINGER ROAD  
 BOW, NH 03304

Number and type of containers listed on EAI Bottle order # 6180 11/14/2011  
 PH 6.10  
 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	Results Needed by: Preferred date <u>12/14</u>	Reporting Options <input checked="" type="checkbox"/> HC <input checked="" type="checkbox"/> EDD PDF <input checked="" type="checkbox"/> EDD email <input checked="" type="checkbox"/> PDF prelim, NO FAX <input type="checkbox"/> e-mail Login Confirmation <input type="checkbox"/> NO FAX	PONumber: 02259252 Quote No: 1009476 Temperature <u>3</u> °C Ice present Yes <input type="checkbox"/> No <input type="checkbox"/>
Project Name Wastewater Analysis-Weekly	Notes about project: (i.e. Special Limits, Billing info if different...) <u>Revised Report - PARA meter list - Shortened AT customer REQUEST.</u>	Relinquished by <u>Paul T. Pepler</u>	Samples Collected by: <u>Paul T. Pepler</u> 62A
State NH	QC deliverables <input type="checkbox"/> A <input type="checkbox"/> A+ <input checked="" type="checkbox"/> B <input type="checkbox"/> B+ <input type="checkbox"/> C <input type="checkbox"/> PC <input type="checkbox"/> 12/15/11	Date/Time <u>11/17/11 12:05</u>	Date/Time <u>11/17/11 12:05</u>
Client (Pro Mgr) Paul Pepler	Customer GZA GeoEnvironmental, Inc. (NH)	Relinquished by <u>Paul T. Pepler</u>	Received by <u>Paul T. Pepler</u>
Address 380 Harvey Road	City Manchester NH 03103	Relinquished by <u>Paul T. Pepler</u>	Received by <u>Paul T. Pepler</u>
Phone 623-3600	Fax 624-9463 (37)	Relinquished by <u>Paul T. Pepler</u>	Received by <u>Paul T. Pepler</u>
EmailAddress: paul.pepler@gza.com	Phone: (603)228-0525	Relinquished by <u>Paul T. Pepler</u>	Received by <u>Paul T. Pepler</u>
	Phone: (603)228-0525	Relinquished by <u>Paul T. Pepler</u>	Received by <u>Paul T. Pepler</u>
	Phone: (603)228-0525	Relinquished by <u>Paul T. Pepler</u>	Received by <u>Paul T. Pepler</u>

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](http://www.eailabs.com) for a copy of our NELAP certificate and accredited parameters.

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

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

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

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

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

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

Sincerely,

Lorraine Olashaw, Lab Director

12.15.11

Date

8

# of pages (excluding cover letter)



# 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



# 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  
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



# 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  
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





# 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
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
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



# 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

Solids Suspended < 5  
Fluoride 6  
Cyanide Total < 0.01  
Total Nitrogen 130  
BOD < 6  
COD 110  
Total Phenols < 0.3  
pH 7.1

Analysis					
Units	Date	Time	Method	Analyst	
mg/L	11/30/11	8:15	2540D	DLS	
mg/L	12/01/11	2:45	300.0	KL	
mg/L	12/01/11	8:45	4500CNE	KJR	
mg/L	12/01/11	12:30	4500NorgC	KL	
mg/L	11/30/11	14:40	5210B	SKC	
mg/L	11/30/11	14:00	H8000	SKC	
mg/L	12/01/11	9:00	420.1	JCC	
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.



# 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

Molybdenum 0.010

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

# CHAIN-OF-CUSTODY RECORD

eastern analytical, inc.  
professional laboratory services

105645

00

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 <input checked="" type="radio"/> Grad or Comp	AqTot/AsH3/BOD5/COD/CyanT/F/Phenols/Se#NO3/FDS/TSS/V624/A/E625/OG1664/ICPMets=Al-Sb-As-Ba-Be-Cd-Cr-Cu-Fe-Pb-Mn-Mo-Ni-Se-Ag-Ti-Zn-Ca-Na-Mg/Hg-CV-ChemserveSub/TN/TKN/NO3/NO2/AlkT/S2/SO3/CHlorine/Res <i>12/11/11</i>	24
<input checked="" type="checkbox"/> Sampler confirms ID and parameters are accurate			Circle preservatives: HCL HNO3 H2SO4 NaOH MEOH Na2S2O8 ICE	Dissolved Sample Field Filtered <input type="checkbox"/>

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

Number and type of containers listed on EA1 Bottle order # 5377 11/28/11  
 1 additional bottle included (1 liter glass amber) for matrix interference troubleshooting (See Kitty Lane)  
 PH: 6.96  
 T: 23.58°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 623-3560	Fax 624-9463 (37)	Email/Address: paul.pepler@gza.com
Results Needed by: Preferred date <u>Friday 12/15/11</u>	Notes about project: (i.e. Special Limits, Billing info if different...) AT CUSTOMERS REQUEST: SUB OUT ARSENIC SELENIUM	Reporting Options <input checked="" type="checkbox"/> HC <input checked="" type="checkbox"/> EDD PDF <input checked="" type="checkbox"/> EDD email <input checked="" type="checkbox"/> PDF prelim, NO FAX <input type="checkbox"/> e-mail Login Confirmation <input type="checkbox"/> NO FAX	PO Number: 02259252	Quote No: 1009476	Temperature 23.5°C	Ice present Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Samples Collected by: <u>Paul T. Pepler</u>	Relinquished by: <u>Paul T. Pepler</u>	Date/Time: <u>11/30/11</u>
REVISED REPORT LIST SHORTENED AT CUSTOMERS REQUEST PM QC deliverables	<input type="checkbox"/> A <input type="checkbox"/> A+ <input checked="" type="checkbox"/> B <input type="checkbox"/> B+ <input type="checkbox"/> C <input type="checkbox"/> PC	Relinquished by: <u>Paul T. Pepler</u>	Date/Time: <u>12/15/11</u>	Relinquished by: <u>Paul T. Pepler</u>	Date/Time: <u>12/15/11</u>	Relinquished by: <u>Paul T. Pepler</u>	Date/Time: <u>12/15/11</u>	Relinquished by: <u>Paul T. Pepler</u>	Date/Time: <u>12/15/11</u>

Arthur Auclair  
Northeast Utilities  
97 River Road  
Bow , NH 03304



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:

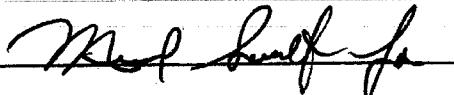
Analysis: Subcontract - Metals, Low Level

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

12/15/11  
Date

20  
# of pages (excluding cover letter)



# 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

**eastern analytical, inc.**

[www.eailabs.com](http://www.eailabs.com)

Phone: (603) 228-0525



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,

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

Liz Siska  
Project Manager





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.

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.*

Page 1 of 17  
1112110 Final Report



## 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, Inc.



---

Liz Siska, Project Manager

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



CHAIN OF CUSTODY FORMS



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

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

Page 1 of 1

1112097

Client: <u>Eastern Analytical, Inc.</u>		Contact: <u>Jeff Goyne</u>		FGS PM: <u>Liz Siska</u>							
Address: <u>25 Chenell Drive</u>		Phone: <u>(603) 228-5551</u> Fax: <u>(603) 228-4591</u>		Date: <u>12/7/11</u>							
<u>Concord NH 03301</u>		E-mail: <u>jeffg@ealabs.com</u>		TAT (business days): <u>20 (std)</u> <u>15 10 5 4 3 (2) 24 hrs.</u> (For TAT < 10 days, contact PM. Surcharges apply for expedited TAT)							
Project Name: <u>Merrimack Station</u>		Contract/PO: <u>PO# 2756P</u>		Saturday delivery? <input type="checkbox"/> Y <input type="checkbox"/> N (If yes, please contact PM)							
Report To: <u>SEMC</u>		Invoice To:		EDD <input type="checkbox"/> Y <input type="checkbox"/> N							
Address:		Address:		QA <input type="checkbox"/> Standard <input type="checkbox"/> High							
Phone: <u>(603) 228-5555</u> Fax: <u>(603) 228-4591</u>		Phone: Fax:		Comments							
E-mail: <u>customerservice@ealabs.com</u>		E-mail:									
Engraved Bottle ID	Sample ID	# of Bottles	Matrix	Date & Time	Sampled By	Field Preserved (Y/N)	Lab Preserved (Y/N)	Other (Y/N)	Analysis Requested		
1 C-2923/1	Treat Tank	2	NW	12/7/11 1400	JG	N	N		X		
2 C-2922	T.T. Field Blank	1	AB	12/7/11 1400	JG	Y	Y		X		
3											
4 C-581/C-584	Treat Tank	2	WW	12/7/11 1400	JG	Y	Y		X		
5 C-573	T.T. Field Blank	1	AB	12/7/11 1400	JG	Y	Y		X		
6											
7											
8											
9											
10											
11											
12											
For Laboratory Use Only		Matrix Codes		Relinquished By:		Received By:		Received By:			
COC Seal: <u>NW</u>		SW NW WW AB		Name: <u>Jeff Goyne</u>		Name: <u>Jennifer Lane</u>		Name: <u>UPS</u>			
Cooler Temp: <u>3-16</u>		SW WW WW AB		Organization: <u>Eastern Analytical</u>		Organization: <u>ERM</u>		Organization: <u>UPS</u>			
Carrier: <u>UPS</u>		SW WW WW AB		Date & Time: <u>12/7/11 1750</u>		Date & Time: <u>12/7/11 1800</u>		Date & Time: <u>12/7/11 1800</u>			
MSR: <u>00-40</u>		SW WW WW AB		Tracking number: <u>12X465991594813163</u>							
# of cooler: <u>1 (1000)</u>		SW WW WW AB		By signing, you declare that you agree with FGS' terms and conditions, and that you authorize FGS to perform the specified analyses.							
Sample Disposal:				Customer Approval: <u>[Signature]</u>						Date: <u>12/7/11</u>	
<input type="checkbox"/> Return (shipping fees may apply)											
<input type="checkbox"/> Standard Disposal - 30 Days after report											
<input type="checkbox"/> Retain for _____ weeks after report (storage fees may apply)											

REC'D BY: ALB, 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.



CHAIN OF CUSTODY FORMS



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

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

Page 1 of 1

1112097

Client: <u>Eastern Analytical, Inc.</u>		Contact: <u>Jeff Gayne</u>		Analyses Requested:		FGS PM: <u>Liz Siska</u>	
Address: <u>25 Chenell Drive</u>		Phone: <u>(603) 228-5551</u> Fax: <u>(603) 228-4591</u>		Date: <u>12/7/11</u>		TAT (business days): <u>20</u> (std)	
Project Name: <u>Merrimack Station</u>		E-mail: <u>jsfg@eailabs.com</u>		Contract/PO: <u>PO# 2756P</u>		15 10 5 4 3 (2) 24 hrs.	
Report To: <u>SEMC</u>		Invoice To:		Field Preserved: <u>AS, 50 - Cellulose Cell</u>		(For TAT < 10 days, contact PM.)	
Address:		Address:		Field Preserved: <u>HJ 1031</u>		Surcharges apply for expedited TAT	
Phone: <u>(603) 228-5525</u> Fax: <u>(603) 228-4591</u>		Phone: Fax:		Field Preserved: <u>NO</u>		Saturday delivery? <input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
E-mail: <u>customerservice@eailabs.com</u>		E-mail:		Field Preserved: <u>NO</u>		(If yes, please contact PM)	
Engraved Bottle ID		Sample ID		No. of Bottles		Matrix	
Date & Time		Sampler		Field Filtered (Y/N)		Field Preserved (Y/N)	
1 <u>C-2923/1</u>		<u>Treat Tank</u>		<u>2</u>		<u>WW</u>	
2 <u>C-2922</u>		<u>T.T. Field Blank</u>		<u>1</u>		<u>AQ</u>	
3							
4 <u>C-581/C-594</u>		<u>Treat Tank</u>		<u>2</u>		<u>WW</u>	
5 <u>C-573</u>		<u>T.T. Field Blank</u>		<u>1</u>		<u>AQ</u>	
6							
7							
8							
9							
10							
11							
12							
For Laboratory Use Only		Matrix Code		Relinquished By:		Received By:	
COC Seal: <u>NO</u>		EW: Fresh Water		<u>Jeff Gayne</u>		<u>Jeff Gayne</u>	
Comments: <u>NO 0268</u>		WW: Waste Water		Name: <u>Jeff Gayne</u>		Name: <u>Oennifer Lane</u>	
Copper Temp: <u>31.1 C</u>		SB: Seawater/Brackish Water		Organization: <u>Eastern Analytical</u>		Organization: <u>EAI</u>	
Catcher: <u>UPS</u>		SS: Soil and Sediment		Date & Time: <u>12/7/11 1750</u>		Date & Time: <u>12/7/11 1800</u>	
W/SR: <u>600440</u>		PS: Plant and Animal Tissue		Tracking number: <u>12X465991594813763</u>		Date & Time: <u>12/7/11 1800</u>	
% of Cores: <u>1 (0.00)</u>		HC: Hydrocarbon		By signing, you declare that you agree with FGS' terms and conditions, and that you authorize FGS to perform the specified analyses.		Customer Approval: <u>Jeff Gayne</u> Date: <u>12/7/11</u>	
Sample Disposal:		TR: Tap					
<input type="checkbox"/> Return (shipping fees may apply)		OT: Other					
<input type="checkbox"/> Standard Disposal - 30 Days after report							
<input type="checkbox"/> Retain for ___ weeks after report (storage fees may apply)							

REC'D BY: ALB, Alexa Bahm, FGS 12-8-11 09:11

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*

Liz Siska, Project Manager



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, 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.*

Page 5 of 17  
1112110 Final Report



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, 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.*

Page 6 of 17  
1112110 Final Report



414 Pontius Ave North  
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.

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.*

Page 7 of 17  
1112110 Final Report



**MATRIX DUPLICATES/TRIPPLICATES**

**SOURCE: 1112097-01RE2**

Matrix: Water

Sequence: 1L09012

Batch: F112077

Lab Number: F112077-DUP2

Preparation: BrCl Oxidation

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.

*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

**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

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



**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.

*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.*



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

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

**SOURCE: 1112089-17**

Matrix: Water

Sequence: 1L09012

Batch: F112077

Lab Number: F112077-MS/MSD2

Preparation: BrCl Oxidation

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.

*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



**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	

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.*



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

**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	

Frontier Global Sciences, Inc.

*Liz Siska*

*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.*



LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE

RECOVERY AND RPD

Matrix: Water

Sequence: 1L09012

Batch: F112077

Lab Number: F112077-BS/BS1

Preparation: BrCl Oxidation

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	

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.*



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

### PREPARATION BLANKS

Matrix: Water

Sequence: 1L09004

Instrument: ICPMS-6

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, 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.*

Page 15 of 17  
1112110 Final Report



### 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.

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.*

Page 16 of 17  
1112110 Final Report





## Notes and Definitions

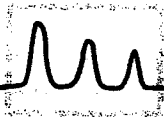
- U Analyte included in the analysis, but not detected
- QM-02 The MS and/or MSD recoveries outside acceptance limits, due to spike concentration less than 1 times the sample concentration. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable 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, 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.*





# eastern analytical

*professional laboratory services*

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](http://www.eailabs.com) for a copy of our NELAP certificate and accredited parameters.

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

Solid samples are reported on a dry weight basis, unless otherwise noted

< : "less than" followed by the reporting limit

> : "greater than" followed by the reporting limit

%R : % Recovery

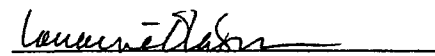
Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

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

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

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

Sincerely,

  
Lorraine Olashaw, Lab Director

12-13-11  
Date

11  
# of pages (excluding cover letter)



# LABORATORY REPORT

EAI ID#: 105963

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Sample ID: WWT Effluent

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	<b>0.22</b>	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



# QC REPORT

EAI ID#: 105963

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.



# QC REPORT

EAI ID#: 105963

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Parameter Name	MS/MSD Parent ID	MS/MSD Parent	Matrix Spike	MSD	Date of Units 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.



# 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



Siemens Industry, Inc.

301 West Military Road  
Rothschild, WI 54474

Tel: 800-338-7226  
Fax: 715-355-3221  
[www.siemens.com/enviroscan](http://www.siemens.com/enviroscan)

The total number of pages in this report, including this page is 17.



# SIEMENS

Siemens Industry Inc  
181 Thorn Hill Road  
Warrendale, PA 15086

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

Attn: Frank Sassaman

Sample ID: Effluent	Matrix: Waste Water	Sample Date/Time: 12/05/11 16:00	Lab No. : 1112078-02					
	<u>Results</u>	<u>Units</u>	<u>LOD</u>	<u>LOQ</u>	<u>Dilution Factor</u>	<u>Qualifiers</u>	<u>Date Analyzed</u>	<u>Analyst</u>
<b>Calculated</b>								
Trivalent Chromium	ND	mg/L	0.00400	0.00400	1		12/08/11	CKV
<b>EPA 1664 A</b>								
Hexane Extractable Material (HEM)	1.60	mg/L	1.40	4.66	1	J	12/08/11	KAM
<b>EPA 200.7 - Total</b>								
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

## 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/m<sup>3</sup> = 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.

Company Name: Siemens - Warrandale  
 Report Mailing Address: 181 Thorn Hill Rd  
 Invoice Address: \_\_\_\_\_  
 Project: PSNH Merrimack Station  
 Contact Name, Phone, Fax, Email: Frank Sassaman  
 Purchase Order #: \_\_\_\_\_  
 Invoice Contact and Phone No.: \_\_\_\_\_

Lab Use Only	Date	Time	No. of Containers		Sample ID	Comments
			Comp	Grab		
201	12/5	1600	2	1	Influent	
202	12/5	1600	2	2	Cart F.H. Eff	
203	12/5	1600	2	2	Hg Media 2	
204	12/5	1600	2	2	AS Media 1	
205	12/5	1600	2	2	AS Media 2	
206	12/5	1600	5	5	Treated Effluent	
207	12/5	1600	2	2	Treat Eff Tank	

Matrix: Drinking Water, Groundwater, Wastewater, Soil/Solid, Other: \_\_\_\_\_  
 Ws. PECPA Project subject to U&C? Yes  No   
 For Compliance Monitoring? Yes  No   
 Agency/Reg: \_\_\_\_\_ State: \_\_\_\_\_  
 Turnaround Request:  Normal (10 Bus. Days)  Rush (Must be pre-approved by Lab and is subject to surcharge)  
 Date Needed: \_\_\_\_\_  
 WO No.: 1110278  
 Delivered by: \_\_\_\_\_  
 Ship: Cont. OK? \_\_\_\_\_  
 Samples Leaking? \_\_\_\_\_  
 Seals OK? \_\_\_\_\_  
 Recd on Ice? \_\_\_\_\_  
 Courier: \_\_\_\_\_  
 Sample Receiving Comments: \_\_\_\_\_  
 Comments: \_\_\_\_\_

Refiniquished By: Bill Blankenship  
 Date: 12/5  
 Time: 16:20  
 Chair of Custody Record: PLE 1:21 Completed  
 "Effluent" are Treated Eff. Tank



**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.analyticalab.com](http://www.analyticalab.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

### ALS Environmental Laboratory Locations Across North America

Canada: Burlington · Calgary · Centre of Excellence · Edmonton · Fort McMurray · Fort St. John · Grande Prairie · London · Mississauga · Richmond Hill · Saskatoon · Thunder Bay  
Vancouver Waterloo · Winnipeg · Yellowknife United States: Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York Mexico: Monterrey



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

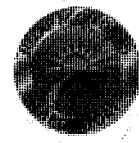
Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed By	Conc
<b>METALS</b>								
Mercury, Dissolved	ND		ng/L	5.0	EPA 1631	12/8/11 MNP	12/8/11 11:09	MNP A1
Mercury, Total	6.7		ng/L	5.0	EPA 1631	12/8/11 MNP	12/9/11 12:43	MNP A2

**Sample Comments:**

*Anna G Milliken*  
Anna G Milliken  
Technical Manager

### ALS Environmental Laboratory Locations Across North America

Canada: Burlington · Calgary · Centre of Excellence · Edmonton · Fort McMurray · Fort St. John · Grande Prairie · London · Mississauga · Richmond Hill · Saskatoon · Thunder Bay  
Vancouver Waterloo · Winnipeg · Yellowknife United States: Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York Mexico: Monterrey



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**  
Sample ID: **Field Blank**

Date Collected: 12/5/2011 17:00  
Date Received: 12/6/2011 09:55

Matrix: Waste Water

Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed	By	Cnt
<b>METALS</b>									
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*  
Anna G Milliken  
Technical Manager

**ALS Environmental Laboratory Locations Across North America**

Canada: Burlington · Calgary · Centre of Excellence · Edmonton · Fort McMurray · Fort St. John · Grande Prairie · London · Mississauga · Richmond Hill · Saskatoon · Thunder Bay  
Vancouver Waterloo · Winnipeg · Yellowknife United States: Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York Mexico: Monterrey



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

**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	Max RPD	Max RPD
Mercury, Dissolved	2.1		ng/L	250	219	224	86.7	88.7	71-125	2.26	24

**ALS Environmental Laboratory Locations Across North America**

Canada: Burlington · Calgary · Centre of Excellence · Edmonton · Fort McMurray · Fort St. John · Grande Prairie · London · Mississauga · Richmond Hill · Saskatoon · Thunder Bay  
 Vancouver Waterloo · Winnipeg · Yellowknife United States: Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York Mexico: Monterrey



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

**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	Max RPD	RPD
Mercury, Total	10.7		ng/L	250	241	241	92.1	92.1	71-125	0	24

**ALS Environmental Laboratory Locations Across North America**

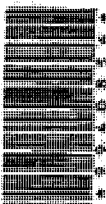
Canada: Burlington · Calgary · Centre of Excellence · Edmonton · Fort McMurray · Fort St. John · Grande Prairie · London · Mississauga · Richmond Hill · Saskatoon · Thunder Bay  
 Vancouver Waterloo · Winnipeg · Yellowknife United States: Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York Mexico: Monterrey





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



Page 1 of 1  
 Counter: **FAD EX**  
 Tracking #: **8165519**

**CHAIN OF CUSTODY/  
 REQUEST FOR ANALYSIS**  
 ALL SAMPLES MUST BE COMPLETED BY THE CLIENT  
 FOLLOWER INSTRUCTIONS ON THE BACK



ALS Environmental  
 Ship to: 34 Dogwood Lane ■ Middletown, PA 17057 ■ 717.944.5541 ■ Fax: 717.944.1430

Co. Name: **SIEMENS WATER TECH**  
 Contact (print): **FRANK SASSARIAN**  
 Address: **181 THORN HILL RD**  
**WARRENDALE PA 15086**  
 Phone: **724-544-8856**

Bill To (if different than Request):  
 PO#: \_\_\_\_\_  
 Project Name/ID: \_\_\_\_\_  
 ALS Quote #: \_\_\_\_\_  
 TAT:  Normal Standard TAT in 10 business days.  
 Rush-Subject to ALS approval and surcharges.  
 Email?  Yes  No  
 Fax?  Yes  No

Sample Description/Location  
 1 **Hg A EFF**  
 2 **Hg B EFF**  
 3 **CARBONATE CLEAN EFF**  
 4 **FIRST BUNKER EFF**  
 5  
 6  
 7  
 8

Sample Date  
 12/5 17:00  
 12/5 17:00  
 12/5 17:00

COC-Comments  
 TOTAL 4 Hg  
 DISCOVERED 4 Hg  
 Blank  
 \* Per this finding one bottle is missing and the other is blank

Enter Number of Containers Per Analysis  
 2 4 1 1 1 1 1 1

ANALYSE/METHOD REQUESTED

Correct containers?	Y	N
Correct sample volume?	Y	N
Received on test?	Y	N
COC labels complete/accurate?	Y	N
Container in good condition?	Y	N

Receipt Information  
 Analyzed by: **ALS**  
 Container No.: **4C**  
 Cooler Temp: **4C**  
 Theme ID: **TH25**  
 No. of Coolers: \_\_\_\_\_  
 Notes: \_\_\_\_\_

ALS FIELD SERVICES

Standard  CUP-Like  NI-Reduced  NI-Full

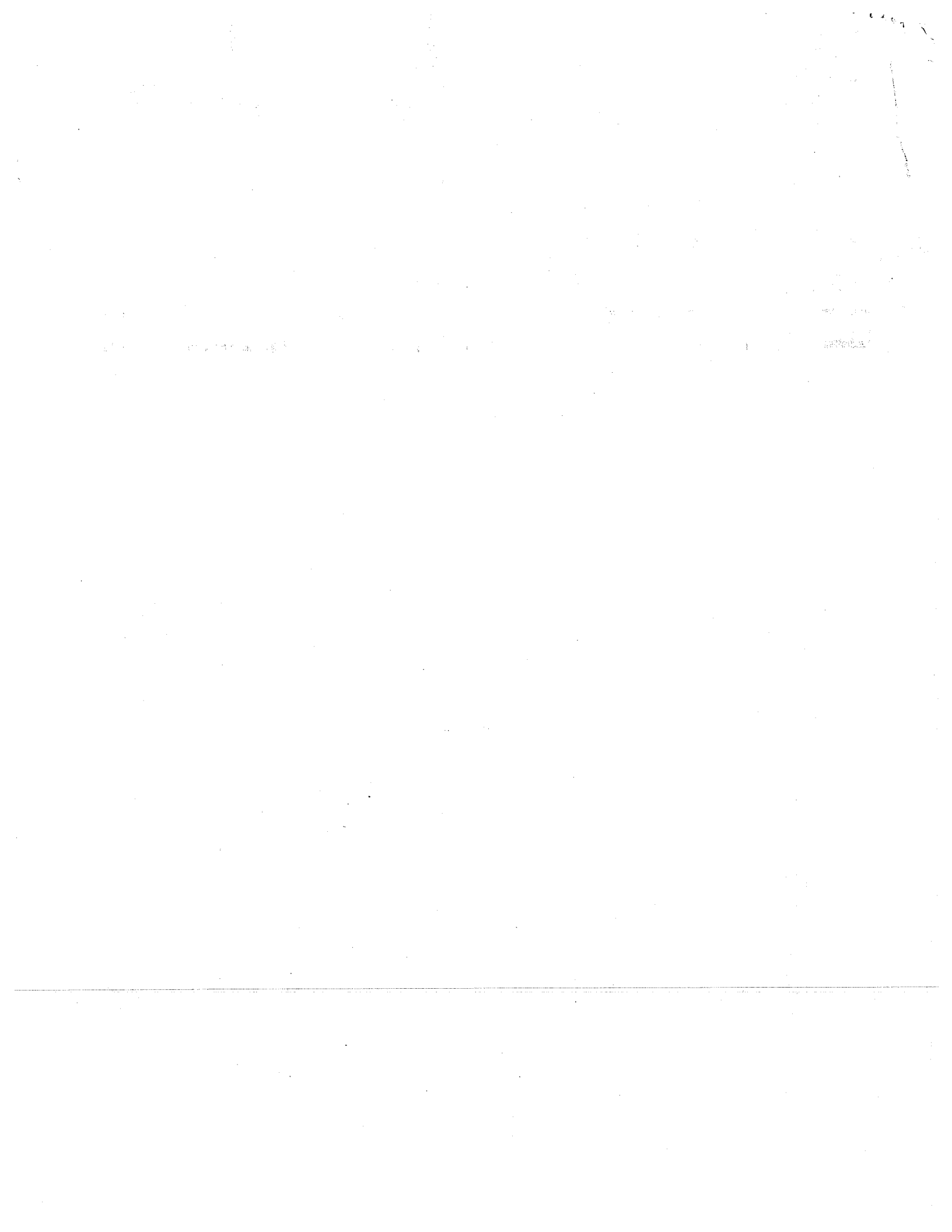
SIWA Form's  YES  NO

Blank Samples Calculated by:  YES  NO

Other:  Other

1000 Criteria Required?

ALS Environmental Laboratory Locations Across North America  
 Canada: Burlington · Calgary · Centre of Excellence · Edmonton · Fort McMurray · Fort St. John · Grande Prairie · London · Mississauga · Richmond Hill · Saskatoon · Thunder Bay  
 Vancouver Waterloo · Winnipeg · Yellowknife United States: Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York Mexico: Monterrey



January 27, 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: Monthly Self Monitoring Report  
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 the attached Self-Monitoring Report (SMR) for the period January 1, 2012 through January 31, 2012. This SMR is intended to satisfy Conditions 7 and 8 of 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 period from 10:00 am on January 4, 2012 through 10:00 am on January 5, 2012 by Eastern Analytical, Inc. under the direction of GZA. To satisfy the monthly sampling requirements in Conditions 7 and 8, found on Page 2 of the PSNH IDA, samples were collected at the end of the treatment process.

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

The attached **SMR Summary Sheet** summarizes the analytical results for all required parameters as outlined in Condition 8 of the IDA including pH, chemical oxygen demand (COD), arsenic, cadmium, lead, mercury, and silver. The attached **Analytical Data Report**, however, contains a more comprehensive list of parameters. As referenced in the attached **SMR Summary Sheet**, both grab samples and a composite sample were collected. The results indicate that pollutant concentrations were within the Local Sewer Discharge Limits.

Wastewater flow data for the 24-hour sampling period 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 the Environmental Protection Agency's (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. 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.



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/tmd

\\GZAMAN\Jobs\04\Jobs\0029300s\04.0029307.00\Work\SAMPLING AND REPORTING\REPORTS\Lowell\Monthly Reports\Jan 2012\final 29307 LRWU CVR LTR 012612.docx

Attachments: SMR Summary Sheet  
Analytical Data Report

**SMR SUMMARY SHEET**

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

Facility Information:      Company Name    Public Service of New Hampshire  
NA (Interim  
Discharge  
Permit No.    Authorization)  
Facility Address    97 River Road Bow, New Hampshire  
Facility Contact    Harold Keyes      Telephone    (603) 224-4081

-----**Use A Separate Summary Sheet For Each Monitoring Point**-----

Monitoring Report:      Monitoring Point    End of pretreatment process      Submittal Date    January 27, 2012  
Reporting Period  
(circle applicable):      Baseline      Annually      Semi-Annually      Quarterly      Monthly      Re-Sample  
Reporting Period Start Date    January 1, 2012      Reporting Period End Date    January 31, 2012

Sample Analysis:      Certified Analytical Lab    Eastern Analytical, Inc. (EAI)  
Authorized Rep.    Lorraine Olashaw      Certification No.    1012  
Analytical Sub-Contractor    Frontier Global Sciences      Certification No.    E87575

Sample Collection:      Sampler (Lab/Self/Other)    Jeff Gagne, EAI  
Sample Type(s) (circle all that apply):      Grab      Time Composite      Flow Composite

Grab Sampling:      Sample Date    1/05/2012      Sample Time    08:00 am  
pH (Standard Units)    7.3      Instantaneous Flow Rate (GPM)    \_\_\_\_\_

Composite Sampling:      Start Date/Time    1/04/2012, 10:00 am      Stop Date/Time    1/05/2012, 10:00 am  
No. Aliquots    48      Aliquot Volume    400 mL      Sample Volume    19.2 Liters

Flow Data:      Sampling Interval Volume (Gal)    48,000      Daily Flow Rate (GPD)    41,567 (average)  
Monitoring Period Industrial Wastewater Flow (Gal)    1,247,000      [ ] Meter    [ X ] Estimate  
Monitoring Period Start Date    January 1, 2012      Monitoring Period End Date    January 31, 2012

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

**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			Copper		
COD	01/12/2012	130	Cyanide (Total)		
O & G 413.1/1664			Fluoride		
TSS			Lead	01/09/2012	< 0.0002
TOC *			Mercury	01/09/2012	0.0000105
TTO ** 624 / 82608 - 625 / 8270			Molybdenum		
Aluminum			Nickel		
Antimony			Nitrogen (Kjeldahl)		
Arsenic	01/10/2012	0.00498	Phenols (Total)		
Barium			Selenium		
Beryllium			Silver	01/09/2012	<0.0001
Cadmium	01/09/2012	0.000207	Thallium		
Chromium (Hexavalent)			Zinc		
Chromium (Total)			Other		

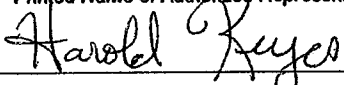
**BOD = Biochemical Oxygen Demand**    **COD = Chemical Oxygen Demand**    **O & G = Oil & Grease**    **TSS = Total Suspended Solids**    **TTO = Total Toxic Organics**  
**\*TOC (Total Organic Carbon)** = is the amount of carbon bound in an organic compound and is often used as a non-specific indicator 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  
  
 \_\_\_\_\_  
 Signature of Authorized Representative

Station Manager  
 \_\_\_\_\_  
 Title  
 1/26/2012  
 \_\_\_\_\_  
 Date



**ANALYTICAL DATA REPORT**

Arthur Auclair  
Northeast Utilities  
97 River Road  
Bow, NH 03304



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 106677  
Client Identification: Merrimack Station  
Date Received: 1/5/2012

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](http://www.eailabs.com) for a copy of our NELAP certificate and accredited parameters.

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

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

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

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

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

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

Sincerely,

  
Lorraine Olashaw, Lab Director

1.13.12  
Date

44  
# of pages (excluding cover letter)



# SAMPLE CONDITIONS PAGE

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Temperature upon receipt (°C): **4.7**

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)
106677.01	Treat Tank Eff Composite	1/5/12	1/5/12	aqueous		Adheres to Sample Acceptance Policy
106677.02	Treat Tank Eff Grab	1/5/12	1/5/12	aqueous		Adheres to Sample Acceptance Policy
106677.03	Treat Tank Eff Grab	1/5/12	1/5/12	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



# LABORATORY REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Sample ID: Treat Tank Eff Grab

Lab Sample ID: 106677.02  
Matrix: aqueous  
Date Sampled: 1/5/12  
Date Received: 1/5/12  
Units: ug/l  
Date of Analysis: 1/6/12  
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) 98 %R  
1,2-Dichlorobenzene-d4 (surr) 90 %R  
Toluene-d8 (surr) 100 %R



# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Chloromethane	< 5	19 (97 %R)	21 (105 %R) (8 RPD)	1/6/2012	ug/l	0 - 273	20	624
Vinyl chloride	< 2	18 (91 %R)	20 (101 %R) (10 RPD)	1/6/2012	ug/l	0 - 251	20	624
Bromomethane	< 2	21 (105 %R)	23 (113 %R) (7 RPD)	1/6/2012	ug/l	0 - 242	20	624
Chloroethane	< 5	19 (95 %R)	20 (101 %R) (6 RPD)	1/6/2012	ug/l	14 - 230	20	624
Trichlorofluoromethane	< 5	17 (84 %R)	18 (88 %R) (5 RPD)	1/6/2012	ug/l	17 - 181	20	624
Acrolein	< 50	< 50 (%R N/A)	< 50 (%R) ( RPD)	1/6/2012	ug/l			624
Acetone	< 50	< 50 (78 %R)	< 50 (90 %R) (14 RPD)	1/6/2012	ug/l			624
1,1-Dichloroethene	< 1	17 (83 %R)	18 (89 %R) (7 RPD)	1/6/2012	ug/l	0 - 234	20	624
Methylene chloride	< 5	18 (88 %R)	19 (93 %R) (6 RPD)	1/6/2012	ug/l	0 - 221	20	624
Carbon disulfide	< 5	17 (%R)	19 (%R) ( RPD)	1/6/2012	ug/l			624
Acrylonitrile	< 50	< 50 (%R)	< 50 (%R) ( RPD)	1/6/2012	ug/l			624
Methyl-t-butyl ether(MTBE)	< 10	20 (%R)	20 (%R) ( RPD)	1/6/2012	ug/l			624
trans-1,2-Dichloroethene	< 2	18 (89 %R)	18 (92 %R) (3 RPD)	1/6/2012	ug/l	54 - 156	20	624
Vinyl acetate	< 10	30 (%R)	30 (%R) ( RPD)	1/6/2012	ug/l			624
1,1-Dichloroethane	< 2	19 (93 %R)	20 (98 %R) (5 RPD)	1/6/2012	ug/l	59 - 155	20	624
cis-1,2-Dichloroethene	< 2	19 (%R)	20 (%R) ( RPD)	1/6/2012	ug/l			624
2-Butanone(MEK)	< 10	20 (%R)	20 (%R) ( RPD)	1/6/2012	ug/l			624
Chloroform	< 2	19 (94 %R)	20 (99 %R) (5 RPD)	1/6/2012	ug/l	51 - 138	20	624
1,1,1-Trichloroethane	< 2	18 (91 %R)	19 (97 %R) (6 RPD)	1/6/2012	ug/l	52 - 162	20	624
Carbon tetrachloride	< 2	18 (91 %R)	19 (95 %R) (4 RPD)	1/6/2012	ug/l	70 - 140	20	624
Benzene	< 1	19 (97 %R)	20 (102 %R) (5 RPD)	1/6/2012	ug/l	37 - 151	20	624
1,2-Dichloroethane	< 2	18 (91 %R)	19 (94 %R) (3 RPD)	1/6/2012	ug/l	49 - 155	20	624
Trichloroethene	< 2	19 (93 %R)	20 (98 %R) (5 RPD)	1/6/2012	ug/l	71 - 157	20	624
1,2-Dichloropropane	< 2	19 (95 %R)	20 (98 %R) (3 RPD)	1/6/2012	ug/l	0 - 210	20	624
Bromodichloromethane	< 2	19 (96 %R)	20 (100 %R) (4 RPD)	1/6/2012	ug/l	35 - 155	20	624
2-Chloroethylvinylether	< 2	23 (115 %R)	24 (121 %R) (5 RPD)	1/6/2012	ug/l	0 - 305	20	624
4-Methyl-2-pentanone(MIBK)	< 10	20 (%R)	20 (%R) ( RPD)	1/6/2012	ug/l			624
cis-1,3-Dichloropropene	< 2	22 (109 %R)	23 (113 %R) (4 RPD)	1/6/2012	ug/l	0 - 227	20	624
Toluene	< 1	20 (101 %R)	21 (103 %R) (2 RPD)	1/6/2012	ug/l	47 - 150	20	624
trans-1,3-Dichloropropene	< 2	18 (90 %R)	19 (93 %R) (3 RPD)	1/6/2012	ug/l	17 - 183	20	624
1,1,2-Trichloroethane	< 2	20 (100 %R)	21 (104 %R) (4 RPD)	1/6/2012	ug/l	52 - 150	20	624
2-Hexanone	< 10	20 (%R)	20 (%R) ( RPD)	1/6/2012	ug/l			624
Tetrachloroethene	< 2	20 (100 %R)	21 (106 %R) (6 RPD)	1/6/2012	ug/l	64 - 148	20	624
Dibromochloromethane	< 2	20 (102 %R)	21 (104 %R) (2 RPD)	1/6/2012	ug/l	53 - 149	20	624
Chlorobenzene	< 2	20 (98 %R)	20 (100 %R) (2 RPD)	1/6/2012	ug/l	37 - 160	20	624
Ethylbenzene	< 1	20 (101 %R)	21 (105 %R) (4 RPD)	1/6/2012	ug/l	37 - 162	20	624
mp-Xylene	< 1	40 (101 %R)	43 (106 %R) (5 RPD)	1/6/2012	ug/l	70 - 130	20	624
o-Xylene	< 1	21 (104 %R)	22 (109 %R) (5 RPD)	1/6/2012	ug/l	70 - 130	20	624
Styrene	< 1	21 (%R)	22 (%R) ( RPD)	1/6/2012	ug/l			624
Bromoform	< 2	18 (88 %R)	18 (90 %R) (2 RPD)	1/6/2012	ug/l	45 - 169	20	624
1,1,2,2-Tetrachloroethane	< 2	20 (99 %R)	20 (100 %R) (1 RPD)	1/6/2012	ug/l	46 - 157	20	624
1,3-Dichlorobenzene	< 1	20 (100 %R)	21 (104 %R) (4 RPD)	1/6/2012	ug/l	59 - 156	20	624
1,4-Dichlorobenzene	< 1	20 (98 %R)	20 (102 %R) (4 RPD)	1/6/2012	ug/l	18 - 190	20	624
1,2-Dichlorobenzene	< 1	20 (98 %R)	20 (102 %R) (4 RPD)	1/6/2012	ug/l	18 - 190	20	624
4-Bromofluorobenzene (surr)	100 %R	101 %R	102 %R	1/6/2012	% Rec	70 - 130		624



# QC REPORT

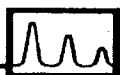
EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
1,2-Dichlorobenzene-d4 (surr)	93 %R	90 %R	89 %R	1/6/2012	% Rec	70 - 130		624
Toluene-d8 (surr)	100 %R	102 %R	102 %R	1/6/2012	% 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.  
\*! Flagged analyte recoveries deviated from the QA/QC limits. Any impact to data is addressed below.



# LABORATORY REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Sample ID: Treat Tank Eff Grab

Lab Sample ID: 106677.02  
Matrix: aqueous  
Date Sampled: 1/5/12  
Date Received: 1/5/12  
Units: ug/l  
Date of Extraction/Preparation: 1/6/12  
Date of Analysis: 1/6/12  
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



# LABORATORY REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Sample ID: Treat Tank Eff Grab

Lab Sample ID: 106677.02  
Matrix: aqueous  
Date Sampled: 1/5/12  
Date Received: 1/5/12  
Units: ug/l  
Date of Extraction/Preparation: 1/6/12  
Date of Analysis: 1/6/12  
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) 33 %R  
Phenol-d6 (surr) 24 %R  
2,4,6-Tribromophenol (surr) 90 %R  
Nitrobenzene-D5 (surr) 71 %R  
2-Fluorobiphenyl (surr) 72 %R  
p-Terphenyl-D14 (surr) 84 %R





# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Batch ID: 734507-32510/A010512E6251

Client Designation: **Merrimack Station**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Phenol	< 1	14 (27 %R)	14 (29 %R) (7 RPD)	1/5/2012	ug/l	15 - 130	20	625mod
2-Chlorophenol	< 1	29 (59 %R)	30 (60 %R) (2 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
2,4-Dichlorophenol	< 1	35 (70 %R)	36 (72 %R) (3 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
2,4,5-Trichlorophenol	< 1	18 (72 %R)	19 (75 %R) (4 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
2,4,6-Trichlorophenol	< 1	34 (68 %R)	36 (71 %R) (4 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
Pentachlorophenol	< 5	34 (68 %R)	39 (78 %R) (14 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
2-Nitrophenol	< 1	35 (70 %R)	37 (73 %R) (4 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
4-Nitrophenol	< 5	16 (32 %R)	17 (35 %R) (9 RPD)	1/5/2012	ug/l	15 - 130	20	625mod
2,4-Dinitrophenol	< 5	38 (75 %R)	40 (81 %R) (8 RPD)	1/5/2012	ug/l	15 - 130	20	625mod
2-Methylphenol	< 1	15 (61 %R)	16 (64 %R) (5 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
3/4-Methylphenol	< 1	13 (53 %R)	14 (54 %R) (2 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
2,4-Dimethylphenol	< 1	33 (66 %R)	34 (67 %R) (2 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
4-Chloro-3-methylphenol	< 1	36 (73 %R)	36 (73 %R) (0 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
4,6-Dinitro-2-methylphenol	< 5	39 (77 %R)	41 (81 %R) (5 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
Benzoic Acid	< 50	< 50 (31 %R)	< 50 (34 %R) (9 RPD)	1/5/2012	ug/l	15 - 140	20	625mod
N-Nitrosodimethylamine	< 1	12 (46 %R)	12 (47 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
n-Nitroso-di-n-propylamine	< 1	17 (67 %R)	17 (69 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
n-Nitrosodiphenylamine	< 1	22 (90 %R)	23 (90 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
bis(2-Chloroethyl)ether	< 1	16 (63 %R)	16 (64 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
bis(2-chloroisopropyl)ether	< 1	15 (61 %R)	15 (62 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
bis(2-Chloroethoxy)methane	< 1	17 (69 %R)	18 (70 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
1,3-Dichlorobenzene	< 1	13 (52 %R)	13 (52 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
1,4-Dichlorobenzene	< 1	13 (52 %R)	13 (52 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
1,2-Dichlorobenzene	< 1	14 (54 %R)	14 (55 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
1,2,4-Trichlorobenzene	< 1	14 (57 %R)	14 (58 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
2-Chloronaphthalene	< 1	16 (63 %R)	16 (65 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
4-Chlorophenyl-phenylether	< 1	18 (71 %R)	18 (72 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
4-Bromophenyl-phenylether	< 1	19 (75 %R)	19 (75 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Hexachloroethane	< 1	11 (43 %R)	11 (43 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Hexachlorobutadiene	< 1	10 (40 %R)	10 (42 %R) (5 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Hexachlorocyclopentadiene	< 5	* 9 (37 %R)	10 (41 %R) (10 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Hexachlorobenzene	< 1	18 (73 %R)	19 (78 %R) (7 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
4-Chloroaniline	< 1	20 (80 %R)	20 (80 %R) (0 RPD)	1/5/2012	ug/l	15 - 140	20	625mod
2-Nitroaniline	< 5	17 (67 %R)	18 (71 %R) (6 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
3-Nitroaniline	< 1	18 (73 %R)	19 (76 %R) (4 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
4-Nitroaniline	< 1	18 (73 %R)	19 (77 %R) (5 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzyl alcohol	< 5	16 (65 %R)	17 (67 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Nitrobenzene	< 1	16 (65 %R)	17 (68 %R) (5 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Isophorone	< 1	20 (79 %R)	20 (81 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
2,4-Dinitrotoluene	< 1	20 (81 %R)	21 (85 %R) (5 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
2,6-Dinitrotoluene	< 1	19 (75 %R)	20 (79 %R) (5 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzidine (estimated)	< 5	23 (92 %R)	20 (81 %R) (13 RPD)	1/5/2012	ug/l	15 - 168	20	625mod
3,3'-Dichlorobenzidine	< 1	19 (75 %R)	19 (76 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Pyridine	< 5	11 (45 %R)	11 (46 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Azobenzene	< 1	18 (71 %R)	18 (71 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod



# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Batch ID: 734507-32510/A010512E6251

Client Designation: **Merrimack Station**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Carbazole	< 1	20 (79 %R)	20 (81 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Dimethylphthalate	< 1	18 (73 %R)	18 (74 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Diethylphthalate	< 1	19 (76 %R)	19 (77 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Di-n-butylphthalate	< 5	19 (77 %R)	19 (76 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Butylbenzylphthalate	< 1	19 (76 %R)	19 (77 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
bis(2-Ethylhexyl)phthalate	< 5	19 (76 %R)	19 (76 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Di-n-octylphthalate	< 1	18 (73 %R)	19 (75 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Dibenzofuran	< 1	16 (66 %R)	17 (67 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Naphthalene	< 1	17 (67 %R)	17 (67 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
2-Methylnaphthalene	< 1	16 (62 %R)	16 (62 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Acenaphthylene	< 1	16 (63 %R)	16 (65 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Acenaphthene	< 1	17 (70 %R)	18 (71 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Fluorene	< 1	17 (70 %R)	18 (71 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Phenanthrene	< 1	19 (74 %R)	19 (76 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Anthracene	< 1	19 (77 %R)	19 (77 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Fluoranthene	< 1	19 (75 %R)	19 (76 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Pyrene	< 1	18 (73 %R)	18 (73 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzo[a]anthracene	< 1	19 (75 %R)	19 (76 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Chrysene	< 1	19 (77 %R)	19 (77 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzo[b]fluoranthene	< 1	19 (75 %R)	19 (77 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzo[k]fluoranthene	< 1	19 (77 %R)	20 (79 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzo[a]pyrene	< 1	19 (76 %R)	19 (77 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Indeno[1,2,3-cd]pyrene	< 1	19 (78 %R)	19 (77 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Dibenz[a,h]anthracene	< 1	20 (80 %R)	19 (77 %R) (4 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzo[g,h,i]perylene	< 1	20 (79 %R)	19 (77 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
2-Fluorophenol (surr)	39 %R	39 %R	39 %R	1/5/2012	% Rec	21 - 110	20	625mod
Phenol-d6 (surr)	28 %R	28 %R	29 %R	1/5/2012	% Rec	15 - 94	20	625mod
2,4,6-Tribromophenol (surr)	76 %R	92 %R	82 %R	1/5/2012	% Rec	15 - 110	20	625mod
Nitrobenzene-D5 (surr)	76 %R	75 %R	77 %R	1/5/2012	% Rec	35 - 114	20	625mod
2-Fluorobiphenyl (surr)	77 %R	73 %R	75 %R	1/5/2012	% Rec	43 - 116	20	625mod
p-Terphenyl-D14 (surr)	89 %R	95 %R	90 %R	1/5/2012	% 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.

Hexachlorocyclopentadiene exhibited recovery below acceptance limits in the LCS. Hexachlorocyclopentadiene was not detected in the sample.



# LABORATORY REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

---

Sample ID: Treat Tank Eff  
Grab

Lab Sample ID: 106677.02  
Matrix: aqueous  
Date Sampled: 1/5/12  
Date Received: 1/5/12  
Units: mg/L  
Date of Extraction/Prep: 1/9/12  
Date of Analysis: 1/9/12  
Analyst: LAS  
Method: 1664A  
Dilution Factor: 1

Oil & Grease (HEM) < 5



# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Oil & Grease (HEM)	< 5	37 (93 %R)	33 (82 %R) (13 RPD)	1/9/2012	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. Any impact to data is addressed below.



# LABORATORY REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Sample ID: Treat Tank Eff  
Grab

Lab Sample ID: 106677.02  
Matrix: aqueous  
Date Sampled: 1/5/12  
Date Received: 1/5/12  
Units: ug/l  
Date of Extraction/Prep: 1/6/12  
Date of Analysis: 1/6/12  
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)	81 %R
DCB (surr)	96 %R



# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Batch ID: 734508-43146/A010612E608P1

Client Designation: **Merrimack Station**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
PCB-1016	< 0.3	2.0 (101 %R)	2.1 (106 %R) (5 RPD)	1/6/2012	ug/l	40 - 140	20	608
PCB-1221	< 0.3	< 0.3 (%R N/A)	< 0.3 (%R N/A) (RPD N/A)	1/6/2012	ug/l			608
PCB-1232	< 0.3	< 0.3 (%R N/A)	< 0.3 (%R N/A) (RPD N/A)	1/6/2012	ug/l			608
PCB-1242	< 0.3	< 0.3 (%R N/A)	< 0.3 (%R N/A) (RPD N/A)	1/6/2012	ug/l			608
PCB-1248	< 0.3	< 0.3 (%R N/A)	< 0.3 (%R N/A) (RPD N/A)	1/6/2012	ug/l			608
PCB-1254	< 0.3	< 0.3 (%R N/A)	< 0.3 (%R N/A) (RPD N/A)	1/6/2012	ug/l			608
PCB-1260	< 0.3	2.0 (102 %R)	2.1 (105 %R) (3 RPD)	1/6/2012	ug/l	40 - 140	20	608
TMX (surr)	84 %R	88 %R	90 %R	1/6/2012	% Rec	30 - 150		608
DCB (surr)	95 %R	101 %R	100 %R	1/6/2012	% 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#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Sample ID: Treat Tank Eff Composite

Lab Sample ID: 106677.01

Matrix: aqueous

Date Sampled: 1/5/12

Date Received: 1/5/12

Solids Suspended	14
Solids Dissolved	21000
Fluoride	10
Sulfate	1200
Chloride	11000
Nitrate-N	100
Alkalinity Total (CaCO3)	180
Ammonia-N	0.92
BOD	< 6
COD	130
pH	7.3

Units	Analysis		Method	Analyst
	Date	Time		
mg/L	01/10/12	15:40	2540D	DLS
mg/L	01/11/12	13:15	2540C	DLS
mg/L	01/11/12	11:23	300.0	KL
mg/L	01/11/12	11:23	300.0	KL
mg/L	01/10/12	12:17	4500CIE	DLS
mg/L	01/06/12	12:57	353.2	DLS
mg/L	01/11/12	9:40	2320B	SEL
mg/L	01/10/12	8:30	4500NH3D	SEL
mg/L	01/06/12	14:05	5210B	SKC
mg/L	01/12/12	10:20	H8000	SKC
SU	01/05/12	15:10	4500H+B	NZ

Sample ID: Treat Tank Eff Grab

Lab Sample ID: 106677.02

Matrix: aqueous

Date Sampled: 1/5/12

Date Received: 1/5/12

Cyanide Total	0.02
Sulfide	< 0.1
Sulfite	< 2
Total Residual Chlorine	< 0.05
Total Phenols	< 0.3

Units	Analysis		Method	Analyst
	Date	Time		
mg/L	01/11/12	8:45	4500CNE	KJR
mg/L	01/11/12	13:20	8131HACH	KJR
mg/L	01/05/12	17:30	377.1	JL
mg/L	01/05/12	16:50	4500CIG	NZ
mg/L	01/09/12	9:00	420.1	JCC

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



# QC REPORT

EAI ID#: 106677

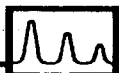
Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Parameter Name	Blank	LCS	LCSD	Units	Date of Analysis	Limits	RPD	Method
Solids Suspended	< 5	90 (90 %R)	93 (93 %R) (3 RPD)	mg/L	1/10/12	90 - 110	20	2540D
Solids Dissolved	< 5	970 (97 %R)	NA	mg/L	1/11/12	85 - 115		2540C
Fluoride	< 0.1	2.0 (101 %R)	2.0 (101 %R) (0 RPD)	mg/L	1/11/12	90 - 110	20	300.0
Sulfate	< 1	21 (106 %R)	21 (103 %R) (3 RPD)	mg/L	1/11/12	90 - 110	20	300.0
Chloride	< 1	26 (103 %R)	26 (103 %R) (0 RPD)	mg/L	1/10/12	90 - 110	20	4500CIE
Nitrate-N	< 0.05	5.3 (106 %R)	5.3 (106 %R) (0 RPD)	mg/L	1/6/12	90 - 110	20	353.2
Alkalinity Total (CaCO3)	< 1	10 (99 %R)	10 (100 %R) (1 RPD)	mg/L	1/11/12	85 - 115	20	2320B
Cyanide Total	< 0.02	0.27 (106 %R)	0.23 (91 %R) (15 RPD)	mg/L	1/11/12	85 - 115	20	4500CNE
Ammonia-N	< 0.05	2.0 (100 %R)	2.1 (105 %R) (5 RPD)	mg/L	1/10/12	90 - 110	20	4500NH3DN
Sulfide	< 0.1	0.4 (98 %R)	0.4 (90 %R) (9 RPD)	mg/L	1/11/12	80 - 120	20	8131HACH
Sulfite	< 2	NA	NA	mg/L	1/5/12			377.1
Total Residual Chlorine	< 0.05	0.88 (101 %R)	0.87 (100 %R) (1 RPD)	mg/L	1/5/12	80 - 120	20	4500CIG
BOD	< 6	430 (109 %R)	390 (97 %R) (12 RPD)	mg/L	1/6/12	84 - 115	20	5210B
COD	< 10	100 (101 %R)	100 (98 %R) (3 RPD)	mg/L	1/12/12	85 - 115	20	H8000
Total Phenols	< 0.05	0.28 (112 %R)	0.27 (106 %R) (6 RPD)	mg/L	1/9/12	85 - 115	20	420.1
pH		6.0 (101 %R)	6.05 (101 %R) (0 RPD)	SU	1/5/12	5.95 - 6.07	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.





# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Parameter Name	Duplicate Parent ID	Duplicate Parent	Duplicate	Units	Date of Analysis	RPD	Method
Solids Suspended	106692.03	180	160 (13 RPD)	mg/L	1/10/12	20	2540D
Solids Dissolved		NA	NA	mg/L	1/11/12		2540C
Fluoride		NA	NA	mg/L	1/11/12	20	300.0
Sulfate		NA	NA	mg/L	1/11/12	20	300.0
Chloride		NA	NA	mg/L	1/10/12	20	4500CIE
Nitrate-N		NA	NA	mg/L	1/6/12	20	353.2
Alkalinity Total (CaCO <sub>3</sub> )		NA	NA	mg/L	1/11/12	20	2320B
Cyanide Total		NA	NA	mg/L	1/11/12	20	4500CNE
Ammonia-N	106627.02	13	13 (2 RPD)	mg/L	1/10/12	20	4500NH3D
Sulfide		NA	NA	mg/L	1/11/12	20	8131HACH
Sulfite	106677.02	< 2	< 2 (RPD N/A)	mg/L	1/5/12	20	377.1
Total Residual Chlorine		NA	NA	mg/L	1/5/12	20	4500CIG
BOD	106657.02	410	400 (3 RPD)	mg/L	1/6/12	20	5210B
COD		NA	NA	mg/L	1/12/12	20	H8000
Total Phenols		NA	NA	mg/L	1/9/12	20	420.1
pH	106649.01	6.3	6.3 (0 RPD)	SU	1/5/12	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.



# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Parameter Name	MS/MSD Parent ID	MS/MSD Parent	Matrix Spike	MSD	Date of Units Analysis	Limits	RPD	Method
Solids Suspended		NA	NA	NA	mg/L 1/10/12		20	2540D
Solids Dissolved		NA	NA	NA	mg/L 1/11/12			2540C
Fluoride		NA	NA	NA	mg/L 1/11/12		20	300.0
Sulfate		NA	NA	NA	mg/L 1/11/12		20	300.0
Chloride	106632.02	11	22 (110 %R)	22 (109 %R) (1 RPD)	mg/L 1/10/12	80-120	20	4500CIE
Nitrate-N	106678.01	1.2	12 (110 %R)	12 (109 %R) (1 RPD)	mg/L 1/6/12	80-120	20	353.2
Alkalinity Total (CaCO3)	106607.01	29	48 (98 %R)	NA	mg/L 1/11/12	80-120	20	2320B
Cyanide Total	106677.02	0.02	0.25 (93 %R)	0.23 (86 %R) (8 RPD)	mg/L 1/11/12	75-125	20	4500CNE
Ammonia-N	106627.02	13	16 (115 %R)	15 (85 %R) (30 RPD)	mg/L 1/10/12	80-120	20	4500NH3
Sulfide		NA	NA	NA	mg/L 1/11/12		20	8131HAC
Sulfite		NA	NA	NA	mg/L 1/5/12			377.1
Total Residual Chlorine		NA	NA	NA	mg/L 1/5/12		20	4500CIG
BOD	106657.02	410	760 (82 %R)	NA	mg/L 1/6/12	75-125	20	5210B
COD	106677.01	130	220 (92 %R)	230 (99 %R) (7 RPD)	mg/L 1/12/12	80-120	20	H8000
Total Phenols	106677.02	< 0.3	0.4 (42 %R)	0.4 (42 %R) (133 RPD)	mg/L 1/9/12	80-120	20	420.1
pH		NA	NA	NA	SU 1/5/12		10	4500H+B

Total Phenols: The MS and MSD recoveries were below acceptance criteria even when the parent sample was diluted indicating a matrix interference.

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.



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

11 January 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,

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

Liz Siska  
Project Manager



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
Treat Tank Eff Composite	1201073-01	Water	05-Jan-12 10:00	06-Jan-12 09:50
Treat Tank Eff Grab	1201073-02	Water	05-Jan-12 08:00	06-Jan-12 09:50

Frontier Global Sciences, Inc.

A handwritten signature in cursive script that reads "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.*

Page 1 of 26  
1201073 Final Report  
01/11/2012



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

## CASE NARRATIVE

### SAMPLE RECEIPT

Samples were received at Frontier Global Sciences (FGS) on January 6th, 2012. The samples were received intact, on-ice with temperatures measured at 3.4 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 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, Inc.

A handwritten signature in cursive script that reads "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.*

Page 2 of 26  
1201073 Final Report  
01/11/2012





## ANALYTICAL RESULTS

### Treat Tank Eff Composite

Matrix: Water

Laboratory ID: 1201073-01

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Aluminum	41.1	2.2	20.0	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Antimony	0.520	0.023	0.100	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Barium	300	0.14	1.00	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Beryllium	0.522	0.114	0.300	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Cadmium	0.207	0.021	0.100	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Calcium	5050000	16200	200000	µg/L	5000	F201077	2A10015	01/10/12	FGS-054	
Chromium	ND	0.04	0.50	µg/L	5	F201062	2A10002	01/09/12	FGS-054	U
Copper	ND	0.05	0.50	µg/L	5	F201062	2A10002	01/09/12	FGS-054	U
Iron	ND	6.5	50.0	µg/L	5	F201062	2A10002	01/09/12	FGS-054	U
Lead	ND	0.020	0.200	µg/L	5	F201062	2A10002	01/09/12	FGS-054	U
Manganese	293	0.74	10.0	µg/L	100	F201062	2A10002	01/09/12	FGS-054	
Molybdenum	140	0.03	0.30	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Nickel	8.03	0.04	0.50	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Silver	ND	0.030	0.100	µg/L	5	F201062	2A10002	01/09/12	FGS-054	U
Sodium	277000	115	2000	µg/L	100	F201062	2A10002	01/09/12	FGS-054	
Thallium	6.64	0.006	0.025	µg/L	5	F201062	2A10002	01/09/12	FGS-054	QB-01
Zinc	ND	0.08	1.00	µg/L	5	F201062	2A10002	01/09/12	FGS-054	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 4 of 26  
 1201073 Final Report  
 01/11/2012



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

## ANALYTICAL RESULTS

### Treat Tank Eff Grab

Matrix: Water

Laboratory ID: 1201073-02

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Arsenic	4.98	1.02	3.00	µg/L	20	F201062	2A10015	01/10/12	FGS-054	
Mercury	10.5	0.34	2.02	ng/L	4	F201063	2A09010	01/09/12	EPA 1631E	FB-1631
Selenium	74.0	3.88	12.0	µg/L	20	F201062	2A10015	01/10/12	FGS-054	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 5 of 26  
1201073 Final Report  
01/11/2012





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

### MATRIX DUPLICATES/TRIPPLICATES

SOURCE: 1201073-02

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-DUP1

Analyte	Sample Concentration ng/L	Duplicate Concentration ng/L	MRL	% RPD	RPD Limit	Method	Notes
Mercury	10.48	10.54	2.02	0.617	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 6 of 26  
1201073 Final Report  
01/11/2012



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

**SOURCE: 1201073-01**

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201062-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Beryllium	0.522	2.0200	2.676	107	75 - 135	FGS-054	
Aluminum	41.1	151.50	210.7	112	80 - 115	FGS-054	
Chromium	0.47	7.0700	8.59	115	85 - 115	FGS-054	
Iron	ND	505.00	563.6	112	75 - 125	FGS-054	
Nickel	8.03	4.0400	11.98	97.7	68 - 134	FGS-054	
Copper	0.29	4.0400	4.00	91.8	51 - 145	FGS-054	
Zinc	0.27	10.100	9.10	87.4	46 - 146	FGS-054	
Arsenic	5.32	15.150	22.17	111	85 - 115	FGS-054	
Selenium	71.73	30.300	100.6	95.3	59 - 149	FGS-054	
Molybdenum	140.3	2.0200	142.1	88.8	80 - 115	FGS-054	
Silver	ND	1.5150	1.216	80.3	74 - 119	FGS-054	
Cadmium	0.207	0.80800	1.076	108	84 - 113	FGS-054	
Antimony	0.520	0.80800	1.360	104	79 - 122	FGS-054	
Barium	300.0	10.100	305.0	49.8	80 - 120	FGS-054	QM-02
Thallium	6.645	0.40400	6.882	58.7	64 - 137	FGS-054	QB-01, QM-02
Lead	ND	1.5150	1.635	108	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	2.639	105	1.39	75 - 135	20	FGS-054	
Aluminum	151.50	213.8	114	1.50	80 - 115	20	FGS-054	
Chromium	7.0700	8.59	115	0.0611	85 - 115	20	FGS-054	
Iron	505.00	553.8	110	1.76	75 - 125	20	FGS-054	
Nickel	4.0400	12.20	103	1.83	68 - 134	20	FGS-054	
Copper	4.0400	3.95	90.7	1.15	51 - 145	20	FGS-054	
Zinc	10.100	8.87	85.2	2.51	46 - 146	20	FGS-054	
Arsenic	15.150	22.81	115	2.84	85 - 115	20	FGS-054	
Selenium	30.300	110.8	129	9.65	59 - 149	20	FGS-054	
Molybdenum	2.0200	143.5	159	0.993	80 - 115	20	FGS-054	QM-02
Silver	1.5150	1.226	81.0	0.852	74 - 119	20	FGS-054	
Cadmium	0.80800	0.956	92.7	11.8	84 - 113	20	FGS-054	

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.*



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

### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1201073-01

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201062-MS/MSD1

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Antimony	0.80800	1.373	106	0.924	79 - 122	20	FGS-054	
Barium	10.100	307.1	71.1	0.703	80 - 120	20	FGS-054	QM-02
Thallium	0.40400	6.918	67.6	0.520	64 - 137	20	FGS-054	QB-01
Lead	1.5150	1.580	104	3.44	72 - 143	20	FGS-054	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 8 of 26  
1201073 Final Report  
01/11/2012



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

**SOURCE: 1201073-01RE1**

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201062-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Sodium	277400	505.00	264500	-2560	75 - 125	FGS-054	QM-02
Manganese	293.1	6.0600	287.1	-98.7	80 - 120	FGS-054	QM-02

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Sodium	505.00	270000	-1460	2.06	75 - 125	20	FGS-054	QM-02
Manganese	6.0600	289.7	-55.3	0.912	80 - 120	20	FGS-054	QM-02

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 9 of 26  
 1201073 Final Report  
 01/11/2012



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

**SOURCE: 1201073-01**

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201062-MS/MSD3

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Beryllium	0.522	10.100	10.96	103	75 - 135	FGS-054	AS
Aluminum	41.1	2020.0	2166	105	80 - 115	FGS-054	AS
Chromium	0.47	202.00	230.0	114	85 - 115	FGS-054	AS
Iron	ND	1010.0	1103	109	75 - 125	FGS-054	AS
Nickel	8.03	252.50	255.1	97.8	68 - 134	FGS-054	AS
Copper	0.29	252.50	224.5	88.8	51 - 145	FGS-054	AS
Zinc	0.27	505.00	422.7	83.7	46 - 146	FGS-054	AS
Arsenic	5.32	202.00	235.0	114	85 - 115	FGS-054	AS
Selenium	71.73	202.00	287.2	107	59 - 149	FGS-054	AS
Molybdenum	140.3	101.00	244.7	103	80 - 115	FGS-054	AS
Silver	ND	10.100	8.224	81.4	74 - 119	FGS-054	AS
Cadmium	0.207	20.200	19.18	93.9	84 - 113	FGS-054	AS
Antimony	0.520	10.100	11.16	105	79 - 122	FGS-054	AS
Barium	300.0	404.00	775.3	118	80 - 120	FGS-054	AS
Thallium	6.645	10.100	17.46	107	64 - 137	FGS-054	AS, QB-01
Lead	ND	50.500	51.95	103	72 - 143	FGS-054	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	10.100	11.25	106	2.66	75 - 135	20	FGS-054	AS
Aluminum	2020.0	2171	105	0.234	80 - 115	20	FGS-054	AS
Chromium	202.00	231.3	114	0.528	85 - 115	20	FGS-054	AS
Iron	1010.0	1112	110	0.802	75 - 125	20	FGS-054	AS
Nickel	252.50	255.9	98.2	0.346	68 - 134	20	FGS-054	AS
Copper	252.50	225.5	89.2	0.424	51 - 145	20	FGS-054	AS
Zinc	505.00	425.5	84.2	0.647	46 - 146	20	FGS-054	AS
Arsenic	202.00	236.5	114	0.629	85 - 115	20	FGS-054	AS
Selenium	202.00	287.0	107	0.0540	59 - 149	20	FGS-054	AS
Molybdenum	101.00	246.7	105	0.806	80 - 115	20	FGS-054	AS
Silver	10.100	8.290	82.1	0.798	74 - 119	20	FGS-054	AS
Cadmium	20.200	19.31	94.6	0.670	84 - 113	20	FGS-054	AS
Antimony	10.100	11.31	107	1.29	79 - 122	20	FGS-054	AS

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*

Page 10 of 26  
 1201073 Final Report  
 01/11/2012

Liz Siska, Project Manager



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

### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1201073-01

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201062-MS/MSD3

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Barium	404.00	779.8	119	0.575	80 - 120	20	FGS-054	AS
Thallium	10.100	17.56	108	0.595	64 - 137	20	FGS-054	AS, QB-01
Lead	50.500	52.16	103	0.399	72 - 143	20	FGS-054	AS

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 11 of 26  
1201073 Final Report  
01/11/2012



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

**SOURCE: 1201073-01RE1**

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201062-MS/MSD4

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Sodium	277400	202000	474400	97.5	75 - 125	FGS-054	AS
Manganese	293.1	2020.0	2396	104	80 - 120	FGS-054	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Sodium	202000	480300	100	1.25	75 - 125	20	FGS-054	AS
Manganese	2020.0	2405	105	0.346	80 - 120	20	FGS-054	AS

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 12 of 26  
 1201073 Final Report  
 01/11/2012



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

**SOURCE: 1201073-02**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-MS/MSD1

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	10.48	20.400	31.36	102	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	20.400	27.08	81.4	14.7	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 13 of 26  
 1201073 Final Report  
 01/11/2012





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

### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1112278-02

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-MS/MSD2

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	7.61	20.400	27.86	99.2	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	20.400	28.37	102	1.82	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 14 of 26  
1201073 Final Report  
01/11/2012



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

**SOURCE: 1201029-01**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-MS/MSD3

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	5.34	10.200	15.58	100	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	14.07	85.6	10.2	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 15 of 26  
 1201073 Final Report  
 01/11/2012



### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1201030-02

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-MS/MSD4

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	5.54	10.200	14.82	91.0	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	14.61	89.0	1.40	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 16 of 26  
1201073 Final Report  
01/11/2012



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

**SOURCE: 1201073-01RE2**

Batch: F201077

Sequenc: 2A10015

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201077-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Calcium	5052000	1515.0	5067000	1010	70 - 130	FGS-054	QM-02

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Calcium	1515.0	5034000	-1190	0.660	70 - 130	20	FGS-054	QM-02

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.*

Page 17 of 26  
 1201073 Final Report  
 01/11/2012

Liz Siska, Project Manager



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

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

**SOURCE: 1201073-01RE2**

Batch: F201077

Sequence: 2A10015

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201077-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Calcium	5052000	10100000	15570000	104	70 - 130	FGS-054	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Calcium	10100000	15550000	104	0.125	70 - 130	20	FGS-054	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 18 of 26  
 1201073 Final Report  
 01/11/2012



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

**RECOVERY AND RPD**

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201062-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Beryllium	2.0000	2.039	102	75 - 135	FGS-054	
Sodium	500.00	487	97.4	80 - 120	FGS-054	
Aluminum	150.00	152.4	102	85 - 115	FGS-054	
Calcium	1500.0	1550	103	80 - 120	FGS-054	
Chromium	7.0000	6.82	97.4	85 - 115	FGS-054	
Manganese	6.0000	6.03	101	85 - 115	FGS-054	
Iron	500.00	481.5	96.3	80 - 120	FGS-054	
Nickel	4.0000	4.06	102	68 - 134	FGS-054	
Copper	4.0000	4.15	104	51 - 145	FGS-054	
Zinc	10.000	10.16	102	46 - 146	FGS-054	
Arsenic	15.000	15.38	103	85 - 115	FGS-054	
Selenium	30.000	31.50	105	59 - 149	FGS-054	
Molybdenum	2.0000	1.97	98.3	85 - 115	FGS-054	
Silver	1.5000	1.569	105	74 - 119	FGS-054	
Cadmium	0.80000	0.850	106	84 - 113	FGS-054	
Antimony	0.80000	0.866	108	79 - 122	FGS-054	
Barium	10.000	10.41	104	85 - 115	FGS-054	
Thallium	0.40000	0.433	108	64 - 134	FGS-054	
Lead	1.5000	1.611	107	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	2.078	104	1.91	75 - 135	20	FGS-054	
Sodium	500.00	496	99.2	1.88	80 - 120	20	FGS-054	
Aluminum	150.00	154.4	103	1.28	85 - 115	20	FGS-054	
Calcium	1500.0	1583	106	2.10	80 - 120	20	FGS-054	
Chromium	7.0000	6.95	99.3	1.90	85 - 115	20	FGS-054	
Manganese	6.0000	6.15	103	1.97	85 - 115	20	FGS-054	
Iron	500.00	494.6	98.9	2.69	80 - 120	20	FGS-054	

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.*

Page 19 of 26  
 1201073 Final Report  
 01/11/2012

Liz Siska, Project Manager



LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE

RECOVERY AND RPD

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201062-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Nickel	4.0000	4.15	104	2.20	68 - 134	20	FGS-054	
Copper	4.0000	4.28	107	3.01	51 - 145	20	FGS-054	
Zinc	10.000	10.52	105	3.48	46 - 146	20	FGS-054	
Arsenic	15.000	15.69	105	2.00	85 - 115	20	FGS-054	
Selenium	30.000	32.57	109	3.35	59 - 149	20	FGS-054	
Molybdenum	2.0000	1.93	96.6	1.72	85 - 115	20	FGS-054	
Silver	1.5000	1.557	104	0.768	74 - 119	20	FGS-054	
Cadmium	0.80000	0.868	108	2.04	84 - 113	20	FGS-054	
Antimony	0.80000	0.872	109	0.661	79 - 122	20	FGS-054	
Barium	10.000	10.54	105	1.25	85 - 115	20	FGS-054	
Thallium	0.40000	0.443	111	2.27	64 - 134	20	FGS-054	
Lead	1.5000	1.641	109	1.85	72 - 143	20	FGS-054	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 20 of 26  
 1201073 Final Report  
 01/11/2012



LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE

RECOVERY AND RPD

Batch: F201063

Sequence: 2A09010

Preparation: BrClOxidation

Lab Number: F201063-BS/BSD1

LCS Source: Nist 1641d

Analyte	Spike Added (ng/L)	LCS Concentration (ng/L)	LCS % Recovery	Recovery Limits	Method	Notes
Mercury	15.679	15.50	98.8	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	15.95	102	2.89	80 - 120	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 21 of 26  
 1201073 Final Report  
 01/11/2012





LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE

RECOVERY AND RPD

Batch: F201077

Sequence: 2A10015

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201077-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Calcium	1500.0	1517	101	80 - 120	FGS-054	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Calcium	1500.0	1571	105	3.47	80 - 120	20	FGS-054	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 22 of 26  
 1201073 Final Report  
 01/11/2012



### PREPARATION BLANKS

Instrument: Hg-17

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F201063-BLK1	Mercury	-0.009	0.50	ng/L	F201063	EPA 1631E	U
F201063-BLK2	Mercury	-0.006	0.50	ng/L	F201063	EPA 1631E	U
F201063-BLK3	Mercury	-0.02	0.50	ng/L	F201063	EPA 1631E	U
F201063-BLK4	Mercury	0.03	0.50	ng/L	F201063	EPA 1631E	U, QB-04
F201063-BLK5	Mercury	0.11	0.52	ng/L	F201063	EPA 1631E	U, QB-06

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 23 of 26  
1201073 Final Report  
01/11/2012



### PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F201062-BLK1	Beryllium	0.0002	0.060	µg/L	F201062	FGS-054	U
F201062-BLK1	Sodium	0.09	20	µg/L	F201062	FGS-054	U
F201062-BLK1	Aluminum	0.09	4.0	µg/L	F201062	FGS-054	U
F201062-BLK1	Calcium	0.5	40	µg/L	F201062	FGS-054	U
F201062-BLK1	Chromium	0.03	0.10	µg/L	F201062	FGS-054	U
F201062-BLK1	Manganese	-0.002	0.10	µg/L	F201062	FGS-054	U
F201062-BLK1	Iron	-0.06	10.0	µg/L	F201062	FGS-054	U
F201062-BLK1	Nickel	0.004	0.10	µg/L	F201062	FGS-054	U
F201062-BLK1	Copper	-0.0003	0.10	µg/L	F201062	FGS-054	U
F201062-BLK1	Zinc	0.04	0.20	µg/L	F201062	FGS-054	U
F201062-BLK1	Arsenic	-0.07	0.15	µg/L	F201062	FGS-054	U
F201062-BLK1	Selenium	0.003	0.60	µg/L	F201062	FGS-054	U
F201062-BLK1	Molybdenum	0.005	0.06	µg/L	F201062	FGS-054	U
F201062-BLK1	Silver	0.0002	0.020	µg/L	F201062	FGS-054	U
F201062-BLK1	Cadmium	-0.00002	0.020	µg/L	F201062	FGS-054	U
F201062-BLK1	Antimony	-0.0003	0.020	µg/L	F201062	FGS-054	U
F201062-BLK1	Barium	-0.04	0.20	µg/L	F201062	FGS-054	U
F201062-BLK1	Thallium	0.007	0.005	µg/L	F201062	FGS-054	QB-10
F201062-BLK1	Lead	0.003	0.040	µg/L	F201062	FGS-054	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.*

Page 24 of 26  
 1201073 Final Report  
 01/11/2012

Liz Siska, Project Manager



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

### PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2A10015

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F201077-BLKI	Calcium	0.2	40	µg/L	F201077	FGS-054	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.*

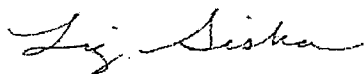
Page 25 of 26  
1201073 Final Report  
01/11/2012

Liz Siska, Project Manager

## 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-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-06 The blank was preserved to 5% BrCl rather than 1%. The control limit for blanks preserved to greater than 1% BrCl is the preservation percentage multiplied by the MRL.
- 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-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.
- FB-1631 Required equipment/field/filter blank not submitted by the client. The sample has been analyzed according to 1631E, but does not meet 1631E criteria
- 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

Frontier Global Sciences, Inc.



Liz Siska, Project Manager

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

Page 26 of 26  
1201073 Final Report  
01/11/2012



**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).

Copyright © 2012 GZA GeoEnvironmental, Inc.



- 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](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.

A handwritten signature in black ink that reads 'Ronald A. Breton'.

Ronald A. Breton, P.E.  
Principal

RAB:mm

P:\04\Jobs\0029300s\04.0029307.00\Work\SAMPLING AND REPORTING\REPORTS\Lowell\Exceedance Reports\FINAL 04.0029307 LRWU AgLTR 020212.docx

Attachment: Table

**TABLE**

---

**SUMMARY OF HISTORICAL SILVER CONCENTRATIONS**

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

PARAMETER	RESULTS (mg/l) 12/15/2012 by Lowell	RESULTS (mg/l) 12/16/2011 EAI/Fontier	RESULTS (mg/l) 12/19/2012 by Lowell	RESULTS (mg/l) 12/27/2012 by Lowell	RESULTS (mg/l) 1/05/2012 EAI/Fontier	RESULTS (mg/l) 01/16/2012 by Lowell	RESULTS (mg/l) 01/20/2012 by Lowell	RESULTS (mg/l) 1/26/2012 EAI/Fontier
Silver	0.021	< 0.000100	0.004	0.004	< 0.000100	0.058	0.087	< 0.000400
Analysis in accordance with EPA Draft SOP <sup>1</sup>	NO	YES	NO	NO	YES	NO	NO	YES

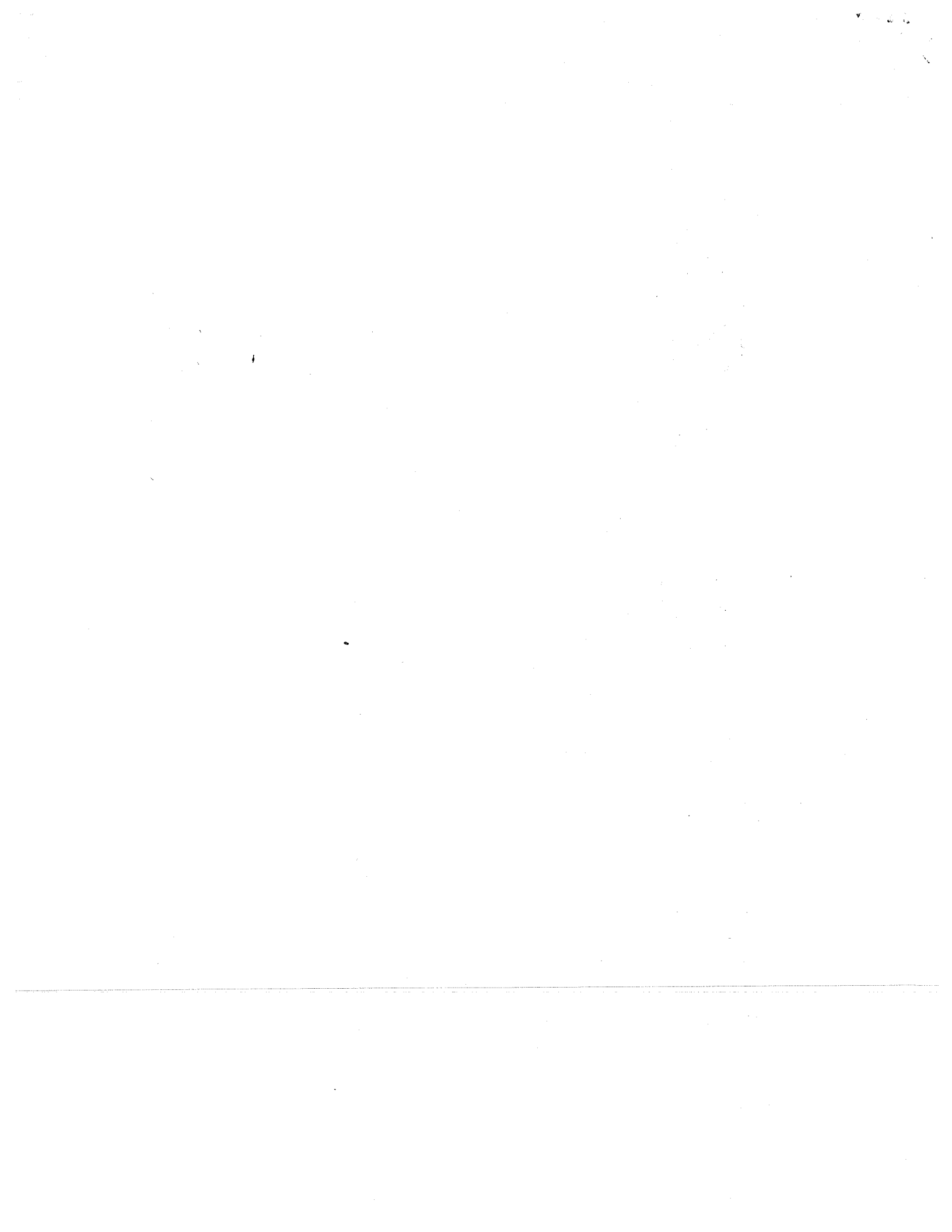
NOTES:

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](http://water.epa.gov/scitech/wastetech/guide/upload/steam_draft_sop.pdf), EPA, May 2011



February 23, 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: Monthly Self Monitoring Report  
February 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 the attached Self-Monitoring Report (SMR) for the period February 1, 2012 through February 29, 2012. This SMR is intended to satisfy Conditions 7 and 8 of the Interim Discharge Authorization (IDA) issued to PSNH by the Lowell Regional Wastewater Utility (Utility), dated September 28, 2011.

The attached **SMR Summary Sheet** summarizes the analytical results for all required parameters as outlined in Condition 8 of the IDA. The attached **Analytical Data Report**, however, contains a more comprehensive list of parameters. The results indicate that pollutant concentrations were within the Local Sewer Discharge Limits. Wastewater flow data for the monitoring period was estimated based on the actual number of tanker trucks sent to the Utility from February 1, 2012 through February 22, 2012 and tanker capacity, as well as the anticipated trucking schedule between February 23, 2012 and February 29, 2012.

#### **ANALYTICAL DISCUSSION**

Flue Gas Desulfurization (FGD) wastewater requires specialized analytical techniques to overcome matrix interference for certain analysis of trace metals. To assist you in evaluating this issue further, we offer an excerpt below from the United States Environmental Protection Agency (EPA) web site and a link to their draft Standard Operating Procedure (SOP) for trace metals analysis of FGD wastewater 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 an 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](http://water.epa.gov/scitech/wastetech/guide/upload/steam_draft_sop.pdf), EPA May 2011.

Considering that specialized analytical techniques are necessary to overcome matrix interference for certain analysis of trace metals in FGD wastewater, we recommend any analysis on FGD wastewater be conducted in accordance with the EPA draft SOP for trace metals analysis of FGD wastewater.

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.

A handwritten signature in black ink that reads 'Ronald A. Breton'.

Ronald A. Breton, P.E.  
Principal

RAB:tmd

P:\04Jobs\0029300\04.0029307.00\Work\SAMPLING AND REPORTING\REPORTS\Lowell\Monthly Reports\Feb 2012\final 29307 LRWU CVR LTR 022312.docx

Attachments: SMR Summary Sheet  
Analytical Data Report





**SMR SUMMARY SHEET**



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

Facility Information: Company Name Public Service of New Hampshire  
Facility Address 97 River Road Bow, New Hampshire Permit No. NA (Interim Discharge Authorization)  
Facility Contact Harold Keyes Telephone (603) 224-4081

-----**Use A Separate Summary Sheet For Each Monitoring Point**-----

Monitoring Report: Monitoring Point End of pretreatment process Submittal Date February 23, 2012  
Reporting Period  
(circle applicable): Baseline Annually Semi-Annually Quarterly Monthly Re-Sample  
Reporting Period Start Date February 1, 2012 Reporting Period End Date February 29, 2012

Sample Analysis: Certified Analytical Lab Eastern Analytical, Inc. (EAI)

Authorized Rep. Lorraine Olashaw Certification No. 1012

Analytical Sub-Contractor Frontier Global Sciences Certification No. E87575

Sample Collection: Sampler (Lab/Self/Other) Jeff Gagne, EAI

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

Grab Sampling: Sample Date 2/02/2012 Sample Time 09:15 am

pH (Standard Units) 7.4 Instantaneous Flow Rate (GPM) \_\_\_\_\_

Composite Sampling: Start Date/Time \_\_\_\_\_ Stop Date/Time \_\_\_\_\_

No. Aliquots \_\_\_\_\_ Aliquot Volume \_\_\_\_\_ Sample Volume \_\_\_\_\_

Flow Data: Sampling Interval Volume (Gal) 8,000 Daily Flow Rate (GPD) 9,300 (average of actual discharge days)

Monitoring Period Industrial Wastewater Flow (Gal) Stream A: 95,495  
Stream B: 6,800 [ ] Meter [ X ] Estimate

Monitoring Period Start Date February 1, 2012 Monitoring Period End Date February 29, 2012

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



**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			Copper		
COD	02/07/2012	140	Cyanide (Total)		
O & G 413.1 / 1664			Fluoride		
TSS			Lead	02/12/2012	< 0.00200
TOC *			Mercury	02/06/2012	0.0000360
TTO ** 624 / 8260B - 625 / 8270			Molybdenum		
Aluminum			Nickel		
Antimony			Nitrogen (Kjeldahl)		
Arsenic	02/12/2012	0.0121	Phenols (Total)		
Barium			Selenium		
Beryllium			Silver	02/12/2012	<0.00100
Cadmium	02/12/2012	< 0.00100	Thallium		
Chromium (Hexavalent)			Zinc		
Chromium (Total)			Other		

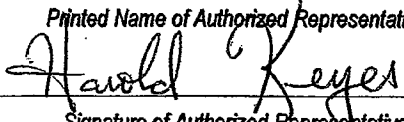
*BOD = Biochemical Oxygen Demand    COD = Chemical Oxygen Demand    O & G = Oil & Grease    TSS = Total Suspended Solids    TTO = Total Toxic Organics  
 \*TOC (Total Organic Carbon) = is the amount of carbon bound in an organic compound and is often used as a non-specific indicator of water quality. 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(f). 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*  
  
 \_\_\_\_\_  
*Signature of Authorized Representative*

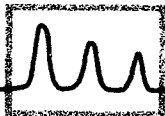
Station Manager  
 \_\_\_\_\_  
*Title*  
 2/23/2012  
 \_\_\_\_\_  
*Date*



**ANALYTICAL DATA REPORT**







# eastern analytical

*professional laboratory services*

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



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 107330  
Client Identification: Wastewater Analysis - *Weekly*  
Date Received: 2/2/2012

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](http://www.eailabs.com) for a copy of our NELAP certificate and accredited parameters.

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

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

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

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

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

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

Sincerely,



Lorraine Olashaw, Lab Director

2-17-12

Date

30

# of pages (excluding cover letter)





# SAMPLE CONDITIONS PAGE

EAI ID#: 107330

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

Client Designation: Wastewater Analysis - *Weekly*

Temperature upon receipt (°C): **5.2**

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)
107330.01	Effluent Field Blank	2/2/12	2/2/12	aqueous		Adheres to Sample Acceptance Policy
107330.02	Treat Tank Effluent	2/2/12	2/2/12	aqueous		624, 625 and 608 placed on hold, then cancelled at customer's

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

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

References include:

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





# LABORATORY REPORT

EAI ID#: 107330

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

Client Designation: Wastewater Analysis - *Weekly*

Sample ID: Treat Tank  
Effluent

Lab Sample ID: 107330.02  
Matrix: aqueous  
Date Sampled: 2/2/12  
Date Received: 2/2/12  
Units: mg/L  
Date of Extraction/Prep: 2/8/12  
Date of Analysis: 2/8/12  
Analyst: LAS  
Method: 1664A  
Dilution Factor: 1

Oil & Grease (HEM) < 5





# QC REPORT

EAI ID#: 107330

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

Batch ID: 734541-34922/A020812OG1661

Client Designation: Wastewater Analysis - *Weekly*

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Oil & Grease (HEM)	< 5	36 (91 %R)	36 (90 %R) (1 RPD)	2/8/2012	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#: 107330

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

Client Designation: Wastewater Analysis - *Weekly*

Sample ID: Treat Tank Effluent

Lab Sample ID: 107330.02

Matrix: aqueous

Date Sampled: 2/2/12

Date Received: 2/2/12

Solids Suspended	6
Solids Dissolved	19000
Fluoride	2.9
Sulfate	1200
Chloride	9300
Nitrate-N	65
Cyanide Total	< 0.01
Ammonia-N	1.1
BOD	< 6
COD	140
Total Phenols	< 0.5
pH	7.4

Units	Analysis		Method	Analyst
	Date	Time		
mg/L	2/03/12	10:45	2540D	DLS
mg/L	2/03/12	10:45	2540C	DLS
mg/L	2/08/12	15:01	300.0	KL
mg/L	2/08/12	14:46	300.0	KL
mg/L	2/03/12	10:35	4500CIE	DLS
mg/L	2/03/12	10:32	353.2	DLS
mg/L	2/08/12	9:30	4500CNE	KJR
mg/L	2/09/12	9:00	4500NH3D	SEL
mg/L	2/03/12	11:20	5210B	KJR
mg/L	2/07/12	16:00	H8000	SKC
mg/L	2/08/12	2:00	420.1	JCC
SU	2/02/12	16:30	4500H+B	KJR

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





# QC REPORT

EAI ID#: 107330

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

Client Designation: Wastewater Analysis - *Weekly*

Parameter Name	Blank	LCS	LCSD	Units	Date of Analysis	Limits	RPD	Method
Solids Suspended	< 2	95 (95 %R)	94 (94 %R) (1 RPD)	mg/L	2/3/12	90 - 110	20	2540D
Solids Dissolved	< 5	990 (99 %R)	NA	mg/L	2/3/12	85 - 115	20	2540C
Fluoride	< 0.1	2.0 (99 %R)	2.0 (99 %R) (0 RPD)	mg/L	2/8/12	90 - 110	20	300.0
Sulfate	< 1	20 (100 %R)	20 (101 %R) (1 RPD)	mg/L	2/8/12	90 - 110	20	300.0
Chloride	< 1	24 (96 %R)	24 (97 %R) (1 RPD)	mg/L	2/3/12	90 - 110	20	4500CIE
Nitrate-N	< 0.5	4.9 (99 %R)	4.9 (98 %R) (1 RPD)	mg/L	2/3/12	90 - 110	20	353.2
Cyanide Total	< 0.02	0.25 (100 %R)	NA	mg/L	2/8/12	85 - 115	20	4500CNE
Ammonia-N	< 0.05	2.2 (109 %R)	2.2 (110 %R) (1 RPD)	mg/L	2/9/12	90 - 110	20	4500NH3DN
BOD	< 6	420 (104 %R)	420 (104 %R) (0 RPD)	mg/L	2/3/12	84 - 115	20	5210B
COD	< 10	100 (103 %R)	100 (101 %R) (2 RPD)	mg/L	2/7/12	85 - 115	20	H8000
Total Phenols	< 0.05	0.22 (87 %R)	0.22 (89 %R) (2 RPD)	mg/L	2/8/12	85 - 115	20	420.1
pH		6.05 (101 %R)	6.07 (101 %R) (0 RPD)	SU	2/2/12	5.95 - 6.07	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.





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

15 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,

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

Liz Siska  
Project Manager





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-3015 Effluent Field Blank	1202063-01	Water	02-Feb-12 08:47	03-Feb-12 09:30
Treat Tank Effluent	1202063-02	Water	02-Feb-12 09:15	03-Feb-12 09:30

Frontier Global Sciences, Inc.

A handwritten signature in cursive script that reads "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.*

Page 1 of 23  
1202063 Final Report  
02/15/2012







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

## CASE NARRATIVE

### SAMPLE RECEIPT

Samples were received at Frontier Global Sciences (FGS) on February 3rd, 2012. The samples were received intact, on-ice with temperatures measured at 10.6 degrees Celsius.

### SAMPLE PREPARATION AND ANALYSIS

Samples were prepared and analyzed for total metals in accordance with EPA Method 200.8 (modified).

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

### ANALYTICAL ISSUES

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

A handwritten signature in cursive script that reads "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.*

Page 2 of 23  
1202063 Final Report  
02/15/2012





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

### CHAIN OF CUSTODY FORMS



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

414 Pon 107330 39  
Phone: 206-622-6960  
Fax: 206-622-6870  
Info@FrontierGS.com  
http://www.FrontierGS.com

Page 1 of 1

1202063

Client: Eastern Analytical, Inc. Address: 25 Chaceil Drive Concord NH 03301		Contact: Jeff Gray Phone: 603 467-3810 Fax: 603 228-4571 E-mail: jeffg@ealabs.com		Project Name: Merrimack Station		Contract/PO:		Report To: Same		Invoice To: Same		Address: Same		Address: Same		Phone: 603 228-0535 Fax: 603 228-4571		Phone: Fax:		E-mail: customer.service@ealabs.com		E-mail: customer.serv@ealabs.com		Analyses Requested		FGS PM: Liz Siska Date: 2/3/2012		
Phone: 603 228-0535 Fax: 603 228-4571		Phone: Fax:		E-mail: customer.service@ealabs.com		E-mail: customer.serv@ealabs.com		Sampled By		Field Filtered (Y/N)		Field Preserved: HNO <sub>3</sub> , HCl, BCl, Other (%)		Total Metals		TAT (business days): 20 (std) 15 (if 5 4 3 2 24 hrs. (For TAT < 10 days, contact PM. Surcharges apply for expedited TAT). Saturday delivery? <input type="checkbox"/> Y <input type="checkbox"/> N (If yes, please contact PM) EDD <input type="checkbox"/> Y <input type="checkbox"/> N QA <input type="checkbox"/> Standard <input type="checkbox"/> High		Comments										
No.	Engraved Bottle ID	Sample ID	# of Bottles	Matrix	Date & Time	Sampled By	Field Filtered (Y/N)	Field Preserved: HNO <sub>3</sub> , HCl, BCl, Other (%)	Total Metals																			
1	C-3015	Effluent Field Blank	1	AQ	2/3/12 08:17	JB/GT	N	-	X																			
2	C-3027 C-3028	Treat Tank Effluent	3	WW	2/3/12 09:15	JB/GT	N	-	X																			
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												
For Laboratory Use Only				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: <i>[Signature]</i>				Received By: <i>[Signature]</i>				Received By: <i>[Signature]</i>												
COC Seal: No		Comments: TID: 0268		Name: Jim Blackwell		Name: Chris Winters		Name: ALEXA BAHM		Organization: Eastern Analytical		Organization: EAI		Organization: FGS		Date & Time: 2/3/12 13:00		Date & Time: 2/3/12 13:00		Date & Time: 2-3-12		Tracking number: 1E X46 599 01 9628 9755		14:31				
Sample Disposal: <input type="checkbox"/> Return (shipping fees may apply) <input type="checkbox"/> Standard Disposal - 30 Days after report <input type="checkbox"/> 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: _____																

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*

Page 3 of 23  
1202063 Final Report  
02/15/2012

Liz Siska, Project Manager





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

### CHAIN OF CUSTODY FORMS

FGS Work Order: 1202063 Sample Receipt Checklist

Client: Eastern Analytical Date & Time Received: 2-3-12 09:30 Date Logged in: 2-3-12 14:31  
 Project: Merrimack Station Received By: Alexa Balkun  
 SDG: \_\_\_\_\_ # of Coolers Received: 1 (one) FGS PMA: \_\_\_\_\_  
 Samples Analyzed By: X Shipping Service: \_\_\_\_\_ Courier: \_\_\_\_\_ Head: \_\_\_\_\_  
 Tracking/Invoice Number(s): UPS 1Z X46 509 01 9628 9755 Other (specify): \_\_\_\_\_

Yes	No	NA	Comments
	<input checked="" type="checkbox"/>		
	<input checked="" type="checkbox"/>		
	<input checked="" type="checkbox"/>		

Thermal Preservation:  Loose Ice  Gel/Blue Ice  None (Ambient)  Other (specify)

Thermometer ID: 0268 Correction Factor (CF): 1.04 degrees C

Cooler 1:	16.6	°C
Cooler 2:		°C
Cooler 3:		°C
Cooler 4:		°C
Cooler 5:		°C

Cooler 6:		°C
Cooler 7:		°C
Cooler 8:		°C
Cooler 9:		°C
Cooler 10:		°C

Cooler 11:		°C
Cooler 12:		°C
Cooler 13:		°C
Cooler 14:		°C
Cooler 15:		°C

**Chain of Custody**

COC is present and includes the following information for each sample:

Sample ID/Sample Description:	Date and Time of Sample Collection:	Sampled By:	Preservation Type:	Requested Analyses:	Requested Signatures:	Internal chain of custody required:	Yes	No	NA	Comments:
							<input checked="" type="checkbox"/>			
							<input checked="" type="checkbox"/>			
							<input checked="" type="checkbox"/>			
							<input checked="" type="checkbox"/>			
							<input checked="" type="checkbox"/>			
							<input checked="" type="checkbox"/>			
							<input checked="" type="checkbox"/>			

**Sample Condition/Integrity**

Sample Condition/Integrity	Yes	No	NA	Comments
Sample containers were received intact:	<input checked="" type="checkbox"/>			
Sample labels are present and legible:	<input checked="" type="checkbox"/>			
Sample ID on container matches COC:	<input checked="" type="checkbox"/>			
Correct sample containers used for requested analyses:	<input checked="" type="checkbox"/>			
Samples received within holding time:	<input checked="" type="checkbox"/>			
Sample volume sufficient for requested analysis:	<input checked="" type="checkbox"/>			
Correct preservative used for requested analyses:	<input checked="" type="checkbox"/>			
pH of samples checked and within method requirements:			<input checked="" type="checkbox"/>	
if pH adjusted by laboratory, noted in logbook:			<input checked="" type="checkbox"/>	

Anomalies/Non-conformances: N/A

Client Communication Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Method: \_\_\_\_\_  
 Discussion/Resolution: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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.

Page 4 of 23  
 1202063 Final Report  
 02/15/2012





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

## ANALYTICAL RESULTS

### C-3015 Effluent Field Blank

Matrix: Water

Laboratory ID: 1202063-01

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Aluminum	ND	0.4	4.0	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Antimony	ND	0.005	0.020	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Arsenic	ND	0.05	0.15	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Barium	ND	0.03	0.20	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Beryllium	ND	0.023	0.060	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Cadmium	ND	0.004	0.020	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Chromium	ND	0.009	0.10	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Copper	ND	0.01	0.10	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Iron	ND	1.3	10.0	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Lead	ND	0.004	0.040	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Manganese	0.12	0.007	0.10	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Mercury	ND	0.08	0.50	ng/L	1	F202057	2B06014	02/06/12	EPA 1631E	U
Molybdenum	ND	0.006	0.06	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Nickel	ND	0.008	0.10	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Selenium	ND	0.19	0.60	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Silver	ND	0.006	0.020	µg/L	1	F202159	2B15016	02/15/12	EPA 200.8 Mod	QM-12, U
Thallium	ND	0.001	0.005	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	QB-02, U
Zinc	ND	0.02	0.20	µg/L	1	F202053	2B15001	02/14/12	EPA 200.8 Mod	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 5 of 23  
 1202063 Final Report  
 02/15/2012







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

## ANALYTICAL RESULTS

### Treat Tank Effluent

Matrix: Water

Laboratory ID: 1202063-02

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Aluminum	218	22.2	200	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Antimony	1.55	0.230	1.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Arsenic	12.1	2.55	7.50	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Barium	243	1.35	10.0	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Beryllium	ND	1.14	3.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Cadmium	ND	0.208	1.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Chromium	ND	0.45	5.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Copper	5.53	0.50	5.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Iron	ND	65.0	500	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Lead	ND	0.195	2.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Manganese	631	0.37	5.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Mercury	36.0	0.84	5.05	ng/L	10	F202057	2B06014	02/06/12	EPA 1631E	
Molybdenum	195	0.30	3.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Nickel	ND	0.40	5.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Selenium	121	9.69	30.0	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Silver	ND	0.300	1.00	µg/L	50	F202159	2B15016	02/15/12	EPA 200.8 Mod	QM-12, U
Thallium	6.85	0.056	0.250	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	QB-01
Zinc	ND	0.82	10.0	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 6 of 23  
 1202063 Final Report  
 02/15/2012





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

### MATRIX DUPLICATES/TRIPPLICATES

SOURCE: 1202063-02

Batch: F202057

Sequence: 2B06014

Preparation: BrCl Oxidation

Lab Number: F202057-DUP1

Analyte	Sample Concentration ng/L	Duplicate Concentration ng/L	MRL	% RPD	RPD Limit	Method	Notes
Mercury	36.03	36.21	5.05	0.482	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 7 of 23  
1202063 Final Report  
02/15/2012





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

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

**SOURCE: 1202063-02**

Batch: F202053

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202053-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	2.062	102	70 - 130	EPA 200.8 Mod	
Aluminum	217.7	151.50	355.1	90.7	70 - 130	EPA 200.8 Mod	
Chromium	2.05	7.0700	9.47	105	70 - 130	EPA 200.8 Mod	
Manganese	631.1	6.0600	611.0	-331	70 - 130	EPA 200.8 Mod	QM-02
Iron	ND	505.00	474.3	93.9	70 - 130	EPA 200.8 Mod	
Nickel	3.25	4.0400	7.58	107	70 - 130	EPA 200.8 Mod	
Copper	5.53	4.0400	9.39	95.7	70 - 130	EPA 200.8 Mod	
Zinc	0.99	10.100	12.68	116	70 - 130	EPA 200.8 Mod	
Arsenic	12.06	15.150	24.53	82.3	70 - 130	EPA 200.8 Mod	
Selenium	121.3	30.300	145.2	79.1	70 - 130	EPA 200.8 Mod	
Molybdenum	195.2	2.0200	192.5	-135	70 - 130	EPA 200.8 Mod	QM-02
Cadmium	0.623	0.80800	1.437	101	70 - 130	EPA 200.8 Mod	
Antimony	1.549	0.80800	2.358	100	70 - 130	EPA 200.8 Mod	
Barium	243.3	10.100	251.4	79.3	70 - 130	EPA 200.8 Mod	
Thallium	6.848	0.40400	7.126	68.9	70 - 130	EPA 200.8 Mod	QB-01
Lead	ND	1.5150	1.334	88.0	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	2.0200	2.025	100	1.80	70 - 130	20	EPA 200.8 Mod	
Aluminum	151.50	338.6	79.8	4.77	70 - 130	20	EPA 200.8 Mod	
Chromium	7.0700	9.09	99.6	4.12	70 - 130	20	EPA 200.8 Mod	
Manganese	6.0600	612.2	-311	0.200	70 - 130	20	EPA 200.8 Mod	QM-02
Iron	505.00	464.8	92.0	2.03	70 - 130	20	EPA 200.8 Mod	
Nickel	4.0400	8.13	121	7.06	70 - 130	20	EPA 200.8 Mod	
Copper	4.0400	9.35	94.8	0.415	70 - 130	20	EPA 200.8 Mod	
Zinc	10.100	10.13	90.4	22.4	70 - 130	20	EPA 200.8 Mod	QR-08
Arsenic	15.150	25.77	90.5	4.92	70 - 130	20	EPA 200.8 Mod	
Selenium	30.300	139.9	61.4	3.76	70 - 130	20	EPA 200.8 Mod	QM-02
Molybdenum	2.0200	190.9	-213	0.823	70 - 130	20	EPA 200.8 Mod	QM-02
Cadmium	0.80800	1.230	75.2	15.5	70 - 130	20	EPA 200.8 Mod	
Antimony	0.80800	2.316	95.0	1.77	70 - 130	20	EPA 200.8 Mod	

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*

Page 8 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager





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

### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1202063-02

Batch: F202053

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202053-MS/MSD1

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Barium	10.100	250.6	71.7	0.305	70 - 130	20	EPA 200.8 Mod	
Thallium	0.40400	6.963	28.6	2.31	70 - 130	20	EPA 200.8 Mod	QM-02, QB-01
Lead	1.5150	1.403	92.6	5.09	70 - 130	20	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 9 of 23  
1202063 Final Report  
02/15/2012







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

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

**SOURCE: 1202063-02**

Batch: F202053

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202053-MS/MSD3

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Beryllium	ND	50.500	42.91	85.0	70 - 130	EPA 200.8 Mod	AS
Aluminum	217.7	10100	9206	89.0	70 - 130	EPA 200.8 Mod	AS
Chromium	2.05	1010.0	1006	99.4	70 - 130	EPA 200.8 Mod	AS
Manganese	631.1	1010.0	1582	94.2	70 - 130	EPA 200.8 Mod	AS
Iron	ND	5050.0	4849	96.0	70 - 130	EPA 200.8 Mod	AS
Nickel	3.25	1262.5	1190	94.0	70 - 130	EPA 200.8 Mod	AS
Copper	5.53	1262.5	1149	90.6	70 - 130	EPA 200.8 Mod	AS
Zinc	0.99	2525.0	2401	95.0	70 - 130	EPA 200.8 Mod	AS
Arsenic	12.06	1010.0	1050	103	70 - 130	EPA 200.8 Mod	AS
Selenium	121.3	1010.0	1168	104	70 - 130	EPA 200.8 Mod	AS
Molybdenum	195.2	505.00	685.1	97.0	70 - 130	EPA 200.8 Mod	AS
Cadmium	0.623	101.00	96.95	95.4	70 - 130	EPA 200.8 Mod	AS
Antimony	1.549	50.500	50.84	97.6	70 - 130	EPA 200.8 Mod	AS
Barium	243.3	2020.0	2379	106	70 - 130	EPA 200.8 Mod	AS
Thallium	6.848	50.500	53.06	91.5	70 - 130	EPA 200.8 Mod	AS, QB-01
Lead	ND	252.50	220.5	87.3	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	50.500	43.37	85.9	1.08	70 - 130	20	EPA 200.8 Mod	AS
Aluminum	10100	9221	89.1	0.164	70 - 130	20	EPA 200.8 Mod	AS
Chromium	1010.0	990.2	97.8	1.59	70 - 130	20	EPA 200.8 Mod	AS
Manganese	1010.0	1562	92.2	1.27	70 - 130	20	EPA 200.8 Mod	AS
Iron	5050.0	4775	94.6	1.53	70 - 130	20	EPA 200.8 Mod	AS
Nickel	1262.5	1197	94.6	0.613	70 - 130	20	EPA 200.8 Mod	AS
Copper	1262.5	1129	89.0	1.79	70 - 130	20	EPA 200.8 Mod	AS
Zinc	2525.0	2399	95.0	0.0456	70 - 130	20	EPA 200.8 Mod	AS
Arsenic	1010.0	1013	99.2	3.57	70 - 130	20	EPA 200.8 Mod	AS
Selenium	1010.0	1151	102	1.49	70 - 130	20	EPA 200.8 Mod	AS
Molybdenum	505.00	684.8	97.0	0.0426	70 - 130	20	EPA 200.8 Mod	AS
Cadmium	101.00	100.4	98.7	3.45	70 - 130	20	EPA 200.8 Mod	AS
Antimony	50.500	51.11	98.1	0.531	70 - 130	20	EPA 200.8 Mod	AS

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.*

Page 10 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager





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

### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1202063-02

Batch: F202053

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202053-MS/MSD3

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Barium	2020.0	2377	106	0.106	70 - 130	20	EPA 200.8 Mod	AS
Thallium	50.500	53.45	92.3	0.720	70 - 130	20	EPA 200.8 Mod	AS, QB-01
Lead	252.50	219.8	87.0	0.315	70 - 130	20	EPA 200.8 Mod	AS

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 11 of 23  
1202063 Final Report  
02/15/2012





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

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

**SOURCE: 1202063-02**

Batch: F202057

Sequence: 2B06014

Preparation: BrCl Oxidation

Lab Number: F202057-MS/MSD1

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	36.03	102.00	140.9	103	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	141.0	103	0.0816	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 12 of 23  
 1202063 Final Report  
 02/15/2012





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

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

**SOURCE: 1202035-02RE1**

Batch: F202057

Sequence: 2B06014

Preparation: BrCl Oxidation

Lab Number: F202057-MS/MSD2

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	38.97	102.00	144.0	103	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	144.5	103	0.394	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 13 of 23  
 1202063 Final Report  
 02/15/2012







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

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

**SOURCE: 1202063-02RE2**

Batch: F202159

Sequence: 2B15016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202159-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Silver	ND	1.5150	1.891	125	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	1.5150	2.021	133	6.64	70 - 130	20	EPA 200.8 Mod	QM-07

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

Page 14 of 23  
 1202063 Final Report  
 02/15/2012





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

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

**SOURCE: 1202063-02RE2**

Batch: F202159

Sequence: 2B15016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202159-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Silver	ND	50.500	45.54	90.2	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	50.500	46.21	91.5	1.46	70 - 130	20	EPA 200.8 Mod	AS

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 15 of 23  
 1202063 Final Report  
 02/15/2012





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

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

**RECOVERY AND RPD**

Batch: F202053

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202053-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Beryllium	2.0000	1.891	94.5	85 - 115	EPA 200.8 Mod	
Aluminum	150.00	143.0	95.3	85 - 115	EPA 200.8 Mod	
Chromium	7.0000	6.44	92.0	85 - 115	EPA 200.8 Mod	
Manganese	6.0000	5.77	96.2	85 - 115	EPA 200.8 Mod	
Iron	500.00	454.7	90.9	85 - 115	EPA 200.8 Mod	
Nickel	4.0000	4.02	100	85 - 115	EPA 200.8 Mod	
Copper	4.0000	4.18	105	85 - 115	EPA 200.8 Mod	
Zinc	10.000	10.25	103	85 - 115	EPA 200.8 Mod	
Arsenic	15.000	14.25	95.0	85 - 115	EPA 200.8 Mod	
Selenium	30.000	29.36	97.9	85 - 115	EPA 200.8 Mod	
Molybdenum	2.0000	1.82	91.0	85 - 115	EPA 200.8 Mod	
Cadmium	0.80000	0.828	103	85 - 115	EPA 200.8 Mod	
Antimony	0.80000	0.800	100	85 - 115	EPA 200.8 Mod	
Barium	10.000	9.99	99.9	85 - 115	EPA 200.8 Mod	
Thallium	0.40000	0.420	105	85 - 115	EPA 200.8 Mod	
Lead	1.5000	1.552	103	85 - 115	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	2.0000	1.863	93.1	1.50	85 - 115	20	EPA 200.8 Mod	
Aluminum	150.00	137.5	91.7	3.91	85 - 115	20	EPA 200.8 Mod	
Chromium	7.0000	6.29	89.9	2.39	85 - 115	20	EPA 200.8 Mod	
Manganese	6.0000	5.58	93.0	3.37	85 - 115	20	EPA 200.8 Mod	
Iron	500.00	435.9	87.2	4.22	85 - 115	20	EPA 200.8 Mod	
Nickel	4.0000	3.71	92.9	7.79	85 - 115	20	EPA 200.8 Mod	
Copper	4.0000	4.03	101	3.75	85 - 115	20	EPA 200.8 Mod	
Zinc	10.000	9.89	98.9	3.59	85 - 115	20	EPA 200.8 Mod	
Arsenic	15.000	13.45	89.7	5.77	85 - 115	20	EPA 200.8 Mod	
Selenium	30.000	29.20	97.3	0.548	85 - 115	20	EPA 200.8 Mod	

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.*

Page 16 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager





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

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

**RECOVERY AND RPD**

Batch: F202053

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202053-BS/BS1

LCS Source: Blank Spike Dup

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Molybdenum	2.0000	1.77	88.3	3.03	85 - 115	20	EPA 200.8 Mod	
Cadmium	0.80000	0.794	99.2	4.16	85 - 115	20	EPA 200.8 Mod	
Antimony	0.80000	0.784	98.0	2.05	85 - 115	20	EPA 200.8 Mod	
Barium	10.000	9.82	98.2	1.77	85 - 115	20	EPA 200.8 Mod	
Thallium	0.40000	0.407	102	2.98	85 - 115	20	EPA 200.8 Mod	
Lead	1.5000	1.535	102	1.06	85 - 115	20	EPA 200.8 Mod	

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

Page 17 of 23  
 I202063 Final Report  
 02/15/2012







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

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

**RECOVERY AND RPD**

Batch: F202057

Sequence: 2B06014

Preparation: BrCl Oxidation

Lab Number: F202057-BS/BSD1

LCS Source: LCS

Analyte	Spike Added (ng/L)	LCS Concentration (ng/L)	LCS % Recovery	Recovery Limits	Method	Notes
Mercury	15.679	15.77	101	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	16.05	102	1.76	80 - 120	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 18 of 23  
 1202063 Final Report  
 02/15/2012





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

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

**RECOVERY AND RPD**

Batch: F202159

Sequence: 2B15016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202159-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Silver	1.5000	2.156	144	85 - 115	EPA 200.8 Mod	QM-12

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	1.5000	2.141	143	0.706	85 - 115	20	EPA 200.8 Mod	QM-12

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.*

Page 19 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager





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

### PREPARATION BLANKS

Instrument: Hg-16

Sequence: 2B06014

Preparation: BrCl Oxidation

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F202057-BLK1	Mercury	0.04	0.50	ng/L	F202057	EPA 1631E	U
F202057-BLK2	Mercury	0.04	0.50	ng/L	F202057	EPA 1631E	U
F202057-BLK3	Mercury	0.05	0.50	ng/L	F202057	EPA 1631E	U
F202057-BLK4	Mercury	0.10	0.50	ng/L	F202057	EPA 1631E	QB-04, U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 20 of 23  
1202063 Final Report  
02/15/2012





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

### PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F202053-BLK1	Beryllium	0.005	0.060	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Aluminum	-0.04	4.0	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Chromium	-0.02	0.10	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Manganese	-0.002	0.10	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Iron	-0.3	10.0	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Nickel	-0.03	0.10	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Copper	0.008	0.10	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Zinc	0.10	0.20	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Arsenic	-0.07	0.15	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Selenium	-0.02	0.60	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Molybdenum	0.01	0.06	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Cadmium	0.005	0.020	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Antimony	0.019	0.020	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Barium	0.005	0.20	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Thallium	0.028	0.005	µg/L	F202053	EPA 200.8 Moc	QB-10
F202053-BLK1	Lead	0.004	0.040	µg/L	F202053	EPA 200.8 Moc	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 21 of 23  
 1202063 Final Report  
 02/15/2012







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

### PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2B15016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F202159-BLK1	Silver	0.0006	0.020	µg/L	F202159	EPA 200.8 Moc	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 22 of 23  
1202063 Final Report  
02/15/2012





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

## Notes and Definitions

- U Analyte included in the analysis, but not detected
- QR-08 The RPD value for the MS/MSD was outside of acceptance limits. Batch QC acceptable based on matrix duplicate and/or LCS/LCSD RPD values within control limits.
- QM-12 Initial or continuing calibration verification and/or blank spike/blank spike duplicate recoveries above upper control limits. All reported sample concentrations were below the reporting limit.
- QM-07 The spike recovery was outside control limits for the MS and/or MSD. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
- QM-02 The MS and/or MSD recoveries outside acceptance limits, due to spike concentration less than 1 times the sample concentration. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
- QB-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

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 23 of 23  
1202063 Final Report  
02/15/2012





eastern analytical, inc.  
Professional Laboratory services

# CHAIN-OF-CUSTODY RECORD

107330  
GZANH

30

Date/Time  
Composites need start and stop dates/times  
Matrix  
Parameters and Sample Notes  
# of containers

Effluent Field Blank	2/2/2012	aqueous	AqTot/SWLLMetalsSub	1
	8:47	Grab/Comp		

Treat Tank Effluent	2/2/2012	aqueous	AqTot/SWLLMetalsSub/BOD/COD/CyanT/F/NO3/OG1664/SO4/TDS/TSS/V624/MEG25/TPhenols/E666PGB/NH3/Cl/pH	18
	9:15	Grab or Comp		

Samplers confirms ID and parameters are accurate  
Circle preservative/s: HCl, HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>, NaOH, MeOH, Na<sub>2</sub>S<sub>2</sub>O<sub>8</sub>, ~~DB~~  
Dissolved Sample Field Filtered   
Dissolved Sample Field Filtered

Samplers confirms ID and parameters are accurate  
Circle preservative/s: HCl, HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>, NaOH, MeOH, Na<sub>2</sub>S<sub>2</sub>O<sub>8</sub>, ~~DB~~  
Dissolved Sample Field Filtered

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)  
Email/Address: paul.pepler@gza.com

Results Needed by: Preferred date \_\_\_\_\_  
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, Ti, Zn.  
Metals analyses require project-specific MS/MSD.  
Please hold G24/G25/G08 analyticals per GZA.

Reporting Options

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

Quote No: 1039476  
Temperature 5.2°C  
Ice present Yes  No

Sample collected by: JF GT  
Relinquished by:   
Date/Time: 2/2/12 13:00  
Received by:

QC deliverables  
 A  A+  B  B+  C  PC  
Relinquished by \_\_\_\_\_ Date/Time \_\_\_\_\_ Received by \_\_\_\_\_

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



March 20, 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: Supplemental Monthly Self-Monitoring Report  
February 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 a supplement to the Self-Monitoring Report previously submitted for the period February 1, 2012 through February 29, 2012. The attached **Table 1** summarizes the data contained in the attached **Analytical Data Report** from the Stream B sample collected on February 15, 2012. The results indicate that pollutant concentrations were within the Local Sewer Discharge Limits.

#### **ANALYTICAL DISCUSSION**

Flue Gas Desulfurization (FGD) wastewater requires specialized analytical techniques to overcome matrix interference for certain analysis of trace metals. To assist you in evaluating this issue further, we offer an excerpt below from the United States Environmental Protection Agency (EPA) web site and a link to their draft Standard Operating Procedure (SOP) for trace metals analysis of FGD wastewater 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.

Copyright © 2012 GZA GeoEnvironmental, Inc.



As part of a recent sampling effort for the steam electric power generating effluent guidelines rulemaking, EPA developed an 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 please see the following:

- Draft SOP: 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](http://water.epa.gov/scitech/wastetech/guide/upload/steam_draft_sop.pdf), EPA May 2011.

Considering that specialized analytical techniques are necessary to overcome matrix interference for certain analysis of trace metals in FGD wastewater, we recommend any analysis on FGD wastewater be conducted in accordance with the EPA draft SOP for trace metals analysis of FGD wastewater.

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.

A handwritten signature in black ink that reads "Ronald A. Breton".

Ronald A. Breton, P.E.  
Principal

A handwritten signature in black ink that reads "Michael P. North".

Michael P. North, P.E.  
Consultant/Reviewer

RAB/MPN:rkl

P:\04\Jobs\0029300s\04.0029307.00\Work\SAMPLING AND REPORTING REPORTS\Lowell\Stream B\FINAL 29307 STREAM B Supplemental 032012.docx

Attachments: Table  
Analytical Data Report



**TABLE**

**TABLE 1  
SUMMARY OF STREAM B CONCENTRATIONS  
COMPARED TO LOWELL SEWER DISCHARGE LIMITS**

Public Service of New Hampshire  
Merrimack Station  
Bow, New Hampshire

PARAMETER	LOWELL SEWER DISCHARGE LIMITS (mg/L)	STREAM B RESULTS (mg/L) 2/15/2012 EAI/Frontier
Aluminum	24.69	3.920
Arsenic	0.556	0.0494
Cadmium	0.056	0.00252
Chromium (T)	8.108	0.0282
Copper	3.124	0.0669
Lead	0.857	0.00621
Mercury	0.004	0.0000458
Nickel	1.541	0.165
pH	5-9.5	6.5
Silver	0.053	< 0.00100
Zinc	4.959	0.0925

## **ANALYTICAL DATA REPORT**



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



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 107792B  
Client Identification: Stream B  
Date Received: 2/16/2012

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](http://www.eailabs.com) for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:  
Solid samples are reported on a dry weight basis, unless otherwise noted  
< : "less than" followed by the reporting limit  
> : "greater than" followed by the reporting limit  
%R : % Recovery

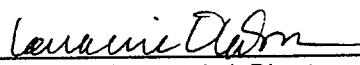
Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

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

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

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

Sincerely,

  
Lorraine Olashaw, Lab Director

3.9.12  
Date

28  
# of pages (excluding cover letter)



# SAMPLE CONDITIONS PAGE

EAI ID#: 107792

Client: GZA GeoEnvironmental, Inc. (NH)

Client Designation: Stream B (Report B)

Temperature upon receipt (°C): 7

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)
107792.01	Concentrated Wastewater	2/16/12	2/15/12	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

**eastern analytical, inc.**

[www.eailabs.com](http://www.eailabs.com)

Phone: (603) 228-0525



# LABORATORY REPORT

EAI ID#: 107792B

Client: GZA GeoEnvironmental, Inc. (NH)

Client Designation: Stream B

Sample ID: Concentrated Wastewater

Lab Sample ID: 107792.03

Matrix: aqueous

Date Sampled: 2/15/12

Date Received: 2/16/12

Solids Suspended	33000
Solids Dissolved	180000
Fluoride	20
Sulfate	17000
Nitrate/Nitrite-N	5.7
TKN	30
Total Nitrogen	35.7
BOD	67
COD	1300
pH	6.5
Specific Gravity @ 60F	1.252
Chloride	110000
Chloride	93000

Analytical Matrix	Units	Analysis		
		Date	Method	Analyst
AqTot	mg/L	2/22/12	2540D	DLS
AqTot	mg/L	2/22/12	2540C	DLS
AqTot	mg/L	2/24/12	300.0	KL
AqTot	mg/L	2/24/12	300.0	KL
AqTot	mg/L	2/17/12	353.2	DLS
AqTot	mg/L	2/24/12	4500NorgC	SEL
AqTot	mg/L	2/24/12	4500NorgC	SEL
AqTot	mg/L	2/17/12	5210B	SKC
AqTot	mg/L	2/24/12	H8000	KJR
AqTot	SU	2/17/12	4500H+B	JG
AqTot	None	2/27/12	D1429D	KL
AqTot	mg/L	2/29/12	4500CIE	DLS
AqDis	mg/L	2/29/12	4500CIE	DLS

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



# QC REPORT

EAI ID#: 107792B

Client: GZA GeoEnvironmental, Inc. (NH)

Client Designation: Stream B

Parameter Name	Blank	LCS	LCSD	Units	Date of Analysis	Limits	RPD	Method
Solids Suspended	< 5	100 (104 %R)	110 (110 %R) (6 RPD)	mg/L	2/22/12	90 - 110	20	2540D
Solids Dissolved	< 5	970 (97 %R)	NA	mg/L	2/22/12	85 - 115	20	2540C
Fluoride	< 0.1	2.1 (104 %R)	2.1 (105 %R) (1 RPD)	mg/L	2/24/12	90 - 110	20	300.0
Sulfate	< 1	21 (106 %R)	21 (106 %R) (0 RPD)	mg/L	2/24/12	90 - 110	20	300.0
Chloride	< 1	26 (102 %R)	26 (103 %R) (1 RPD)	mg/L	2/21/12	90 - 110	20	4500CIE
Nitrate/Nitrite-N	< 0.5	5.4 (108 %R)	5.4 (108 %R) (0 RPD)	mg/L	2/17/12	90 - 110	20	353.2
TKN	< 0.5	5.0 (99 %R)	4.8 (96 %R) (3 RPD)	mg/L	2/24/12	90 - 110	20	4500Norg
BOD	< 6	380 (94 %R)	NA	mg/L	2/17/12	84 - 115	20	5210B
COD	< 10	95 (95 %R)	NA	mg/L	2/24/12	85 - 115	20	H8000
pH		6.0 (100 %R)	NA	SU	2/17/12	5.95 - 6.07	20	4500H+B

Parameter Name	Duplicate Parent ID	Duplicate Parent	Duplicate	Units	Date of Analysis	RPD	Method
Solids Suspended	107848.01	400	350 (12 RPD)	mg/L	2/22/12	20	2540D
Solids Dissolved	107792.03	180000	160000 (10 RPD)	mg/L	2/22/12	20	2540C
Fluoride		NA	NA	mg/L	2/24/12	20	300.0
Sulfate		NA	NA	mg/L	2/24/12	20	300.0
Chloride		NA	NA	mg/L	2/21/12	20	4500CIE
Nitrate/Nitrite-N		NA	NA	mg/L	2/17/12	20	353.2
TKN		NA	NA	mg/L	2/24/12	20	4500NorgC
BOD	107749.01	89	85 (4 RPD)	mg/L	2/17/12	20	5210B
COD		NA	NA	mg/L	2/24/12	20	H8000
pH	107792.03	6.5	6.5 (0 RPD)	SU	2/17/12	20	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.



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

08 March 2012

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

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

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

Sincerely,

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

Liz Siska  
Project Manager





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: Mccrimack Station 200.8

Sample ID	Lab ID	Matrix	Date Sampled	Date Received
Concentrated Waste Water	1202262-01	Water	15-Feb-12 00:00	20-Feb-12 09:38

Frontier Global Sciences, Inc.

A handwritten signature in cursive script that reads "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.*

Page 1 of 23  
1202262 Final Report-Revised  
03/08/2012



## CASE NARRATIVE

Revised Report- Sample date corrected and updated Case Narrative 3/8/12

### SAMPLE RECEIPT

Samples were received at Frontier Global Sciences (FGS) on February 20th, 2012. The samples were received intact, on-ice with temperatures measured at 2.2 degrees Celsius.

### SAMPLE PREPARATION AND ANALYSIS

Samples were prepared and analyzed for total metals in accordance with EPA Method 200.8 (modified).

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

### ANALYTICAL ISSUES

The requested MS/MSD was not run for Zn due to limited sample volume.

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, 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.*

Page 2 of 23  
1202262 Final Report-Revised  
03/08/2012



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

### CHAIN OF CUSTODY FORMS



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

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

Page 1 of 1

1202262

Client: <u>ERF</u> Address: <u>4800 1st Ave</u> <u>Seattle, WA 98101</u>		Contact: <u>John</u> Phone: <u>206-622-6960</u> Fax: <u>206-622-6870</u> E-mail: <u>john@erf.com</u>		Project Name: <u>1202262</u> Contract/PO: <u>Z7800</u>		Report To: <u>John</u> Invoice To:		Address:		Phone: _____ Fax: _____ E-mail: <u>john@erf.com</u>		Analyses Requested		FGS PM: <u>Liz Siska</u> Date: <u>2/7/12</u> TAT (business days): <u>20</u> (std) <u>15</u> (0: 5 4 3 2 24 hrs. (For TAT < 10 days, contact PM. Surcharges apply for expedited TAT) Saturday delivery? <input type="checkbox"/> Y <input type="checkbox"/> N (If yes, please contact PM) EOD <input type="checkbox"/> Y <input type="checkbox"/> N QA <input type="checkbox"/> Standard <input type="checkbox"/> High	
No.	Engraved Bottle ID	Sample ID	# of Bottles	Matrix	Date & Time	Sampled By	Field Filtered (Y/N)	Field Preserved: HNO <sub>3</sub> , HCl, BrCl, Other (%)	TAT Method		Comments				
1	1630963030	Concentrated	2	WWT	2/7/12							1) Metals (Pb, Cu, Ag, Hg, Ni, Mn, Zn, Fe, Cr, B, Cd, Se) 2) Cr, Co, Cu, Pb, Ni, Ag, Mn, Se 3) Ag, TLE 4) Metals (Pb, Cu, Ag, Hg, Ni, Mn, Zn, Fe, Cr, B, Cd, Se) 5) Metals (Pb, Cu, Ag, Hg, Ni, Mn, Zn, Fe, Cr, B, Cd, Se) 6) Metals (Pb, Cu, Ag, Hg, Ni, Mn, Zn, Fe, Cr, B, Cd, Se) 7) Metals (Pb, Cu, Ag, Hg, Ni, Mn, Zn, Fe, Cr, B, Cd, Se) 8) Metals (Pb, Cu, Ag, Hg, Ni, Mn, Zn, Fe, Cr, B, Cd, Se) 9) Metals (Pb, Cu, Ag, Hg, Ni, Mn, Zn, Fe, Cr, B, Cd, Se) 10) Metals (Pb, Cu, Ag, Hg, Ni, Mn, Zn, Fe, Cr, B, Cd, Se) 11) Metals (Pb, Cu, Ag, Hg, Ni, Mn, Zn, Fe, Cr, B, Cd, Se) 12) Metals (Pb, Cu, Ag, Hg, Ni, Mn, Zn, Fe, Cr, B, Cd, Se)			
For Laboratory Use Only			Matrix Codes:		Relinquished By:		Received By:		Received By:						
COC Seal: <u>112</u>		Comments: <u>12 X46 949 01</u>		FW: Fresh Water WW: Waste Water SB: Sea and Brackish Water SS: Soil and Sediment FS: Plant and Animal Tissue HC: Hydrocarbons TR: Trip OT: Other		Name: <u>John</u> Organization: <u>ERF</u> Date & Time: <u>2/7/12 15:30</u> Tracking number:		Name: <u>Car</u> Organization: <u>ERF</u> Date & Time: <u>2/7/12 15:30</u>		Name: _____ Organization: _____ Date & Time: _____					
Cooler Temp: <u>22°C</u>		Carrier: <u>100</u>		VTSR: <u>0430</u>		Date & Time: _____		Date & Time: _____		Date & Time: _____					
# of Coolers: _____		Sample Disposal:		By signing, you declare that you agree with FGS' terms and conditions, and that you authorize FGS to perform the specified analyses.		Customer Approval: <u>John</u>		Date: <u>2/7/12</u>							
<input type="checkbox"/> Return (shipping fees may apply)		<input type="checkbox"/> Standard Disposal - 30 Days after report		<input type="checkbox"/> Retain for _____ weeks after report (storage fees may apply)											

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*

Page 3 of 23  
1202262 Final Report-Revised  
03/08/2012

Liz Siska, Project Manager



## ANALYTICAL RESULTS

### Concentrated Waste Water

Matrix: Water

Laboratory ID: 1202262-01

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Aluminum	3920	89.0	800	µg/L	200	F202240	2B27019	02/24/12	EPA 200.8 Mod	
Antimony	13.6	0.230	1.00	µg/L	50	F202240	2B27019	02/24/12	EPA 200.8 Mod	
Arsenic	49.4	2.55	7.50	µg/L	50	F202240	2B27019	02/24/12	EPA 200.8 Mod	
Barium	2470	1.35	10.0	µg/L	50	F202240	2B27019	02/24/12	EPA 200.8 Mod	
Beryllium	ND	1.14	3.00	µg/L	50	F202240	2B27019	02/24/12	EPA 200.8 Mod	U
Boron	2980000	1030	15000	µg/L	5000	F202240	2B27019	02/24/12	EPA 200.8 Mod	
Cadmium	2.52	0.208	1.00	µg/L	50	F202240	2B27019	02/24/12	EPA 200.8 Mod	
Chromium	28.2	1.80	20.0	µg/L	200	F202240	2B27019	02/24/12	EPA 200.8 Mod	
Copper	66.9	0.50	5.00	µg/L	50	F202240	2B27019	02/24/12	EPA 200.8 Mod	
Lead	6.21	0.195	2.00	µg/L	50	F202240	2B27019	02/24/12	EPA 200.8 Mod	
Magnesium	5450000	871	12500	µg/L	5000	F202240	2B27019	02/24/12	EPA 200.8 Mod	
Mercury	45.8	1.68	10.1	ng/L	20	F202351	2B29014	02/29/12	EPA 1631E	FB-1631
Molybdenum	848	1.20	12.0	µg/L	200	F202240	2B27019	02/24/12	EPA 200.8 Mod	
Nickel	165	0.40	5.00	µg/L	50	F202240	2B27019	02/24/12	EPA 200.8 Mod	
Potassium	270000	200	2000	µg/L	50	F202240	2B27019	02/24/12	EPA 200.8 Mod	
Selenium	498	9.69	30.0	µg/L	50	F202240	2B27019	02/24/12	EPA 200.8 Mod	
Silver	ND	0.300	1.00	µg/L	50	F202240	2B27019	02/24/12	EPA 200.8 Mod	QM-12, U
Sodium	4300000	5750	100000	µg/L	5000	F202240	2B27019	02/24/12	EPA 200.8 Mod	
Thallium	29.9	0.125	0.500	µg/L	50	F202240	2B27019	02/24/12	EPA 200.8 Mod	QB-01
Zinc	92.5	0.82	10.0	µg/L	50	F203070	2C06014	03/06/12	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 4 of 23  
 1202262 Final Report-Revised  
 03/08/2012



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

### MATRIX DUPLICATES/TRIPPLICATES

SOURCE: 1202337-01

Batch: F202351

Sequence: 2B29014

Preparation: BrCl Oxidation

Lab Number: F202351-DUP1

Analyte	Sample Concentration ng/L	Duplicate Concentration ng/L	MRL	% RPD	RPD Limit	Method	Notes
Mercury	25.26	25.95	10.0	2.69	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 5 of 23  
1202262 Final Report-Revised  
03/08/2012



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

**SOURCE: 1202262-01**

Batch: F202240

Sequence: 2B27019

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202240-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Beryllium	2.385	2.0200	3.954	77.7	70 - 130	EPA 200.8 Mod	
Potassium	269500	303.00	274800	1750	70 - 130	EPA 200.8 Mod	QM-02
Nickel	164.9	4.0400	172.2	180	70 - 130	EPA 200.8 Mod	QM-02
Copper	66.90	4.0400	70.34	85.2	70 - 130	EPA 200.8 Mod	
Arsenic	49.43	15.150	68.03	123	70 - 130	EPA 200.8 Mod	
Selenium	497.6	30.300	555.9	193	70 - 130	EPA 200.8 Mod	QM-02
Silver	ND	1.5150	1.939	128	70 - 130	EPA 200.8 Mod	
Cadmium	2.524	0.80800	3.323	98.9	70 - 130	EPA 200.8 Mod	
Antimony	13.59	0.80800	14.62	128	70 - 130	EPA 200.8 Mod	
Barium	2475	10.100	2548	730	70 - 130	EPA 200.8 Mod	QM-02
Thallium	29.95	0.40400	30.79	209	70 - 130	EPA 200.8 Mod	QM-02
Lead	6.212	1.5150	7.940	114	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	2.0200	4.033	81.6	2.00	70 - 130	20	EPA 200.8 Mod	
Potassium	303.00	271400	618	1.26	70 - 130	20	EPA 200.8 Mod	QM-02
Nickel	4.0400	169.6	118	1.48	70 - 130	20	EPA 200.8 Mod	
Copper	4.0400	69.01	52.3	1.91	70 - 130	20	EPA 200.8 Mod	QM-02
Arsenic	15.150	67.71	121	0.467	70 - 130	20	EPA 200.8 Mod	
Selenium	30.300	586.2	293	5.31	70 - 130	20	EPA 200.8 Mod	QM-02
Silver	1.5150	1.944	128	0.286	70 - 130	20	EPA 200.8 Mod	
Cadmium	0.80800	3.527	124	5.94	70 - 130	20	EPA 200.8 Mod	
Antimony	0.80800	14.64	130	0.128	70 - 130	20	EPA 200.8 Mod	
Barium	10.100	2533	579	0.601	70 - 130	20	EPA 200.8 Mod	QM-02
Thallium	0.40400	29.17	-193	5.41	70 - 130	20	EPA 200.8 Mod	QM-02
Lead	1.5150	7.623	93.2	4.07	70 - 130	20	EPA 200.8 Mod	

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.*

Page 6 of 23  
 1202262 Final Report-Revised  
 03/08/2012

Liz Siska, Project Manager



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

**SOURCE: 1202262-01RE1**

Batch: F202240

Sequence: 2B27019

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202240-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Aluminum	3924	151.50	4258	220	70 - 130	EPA 200.8 Mod	QM-02
Chromium	28.16	7.0700	38.35	144	70 - 130	EPA 200.8 Mod	QM-02
Molybdenum	847.8	2.0200	890.0	2090	70 - 130	EPA 200.8 Mod	QM-02

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Aluminum	151.50	3993	45.9	6.41	70 - 130	20	EPA 200.8 Mod	QM-02
Chromium	7.0700	33.98	82.3	12.1	70 - 130	20	EPA 200.8 Mod	
Molybdenum	2.0200	850.9	151	4.50	70 - 130	20	EPA 200.8 Mod	QM-02

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 7 of 23  
 1202262 Final Report-Revised  
 03/08/2012



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

**SOURCE: 1202262-01RE2**

Batch: F202240

Sequence: 2B27019

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202240-MS/MSD3

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Boron	2975000	75.750	3015000	52200	70 - 130	EPA 200.8 Mod	QM-02
Sodium	4297000	505.00	4350000	10600	70 - 130	EPA 200.8 Mod	QM-02
Magnesium	5449000	252.50	5555000	42000	70 - 130	EPA 200.8 Mod	QM-02

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Boron	75.750	3071000	127000	1.86	70 - 130	20	EPA 200.8 Mod	QM-02
Sodium	505.00	4416000	23600	1.51	70 - 130	20	EPA 200.8 Mod	QM-02
Magnesium	252.50	5571000	48300	0.284	70 - 130	20	EPA 200.8 Mod	QM-02

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.*

Page 8 of 23  
 1202262 Final Report-Revised  
 03/08/2012

Liz Siska, Project Manager





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

**SOURCE: 1202262-01**

Batch: F202240

Sequence: 2B27019

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202240-MS/MSD4

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Beryllium	2.385	50.500	40.13	74.7	70 - 130	EPA 200.8 Mod	AS
Potassium	269500	101000	359400	89.1	70 - 130	EPA 200.8 Mod	AS
Nickel	164.9	1262.5	1318	91.3	70 - 130	EPA 200.8 Mod	AS
Copper	66.90	1262.5	1113	82.9	70 - 130	EPA 200.8 Mod	AS
Arsenic	49.43	1010.0	1090	103	70 - 130	EPA 200.8 Mod	AS
Selenium	497.6	1010.0	1496	98.8	70 - 130	EPA 200.8 Mod	AS
Silver	ND	50.500	38.25	75.7	70 - 130	EPA 200.8 Mod	AS
Cadmium	2.524	101.00	85.71	82.4	70 - 130	EPA 200.8 Mod	AS
Antimony	13.59	50.500	61.29	94.5	70 - 130	EPA 200.8 Mod	AS
Barium	2475	2020.0	4750	113	70 - 130	EPA 200.8 Mod	AS
Thallium	29.95	50.500	83.65	106	70 - 130	EPA 200.8 Mod	AS
Lead	6.212	252.50	252.2	97.4	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	50.500	41.06	76.6	2.30	70 - 130	20	EPA 200.8 Mod	AS
Potassium	101000	359400	89.0	0.0202	70 - 130	20	EPA 200.8 Mod	AS
Nickel	1262.5	1319	91.4	0.0742	70 - 130	20	EPA 200.8 Mod	AS
Copper	1262.5	1108	82.4	0.501	70 - 130	20	EPA 200.8 Mod	AS
Arsenic	1010.0	1081	102	0.796	70 - 130	20	EPA 200.8 Mod	AS
Selenium	1010.0	1552	104	3.71	70 - 130	20	EPA 200.8 Mod	AS
Silver	50.500	37.71	74.7	1.41	70 - 130	20	EPA 200.8 Mod	AS
Cadmium	101.00	84.00	80.7	2.01	70 - 130	20	EPA 200.8 Mod	AS
Antimony	50.500	61.88	95.6	0.963	70 - 130	20	EPA 200.8 Mod	AS
Barium	2020.0	4853	118	2.15	70 - 130	20	EPA 200.8 Mod	AS
Thallium	50.500	82.09	103	1.88	70 - 130	20	EPA 200.8 Mod	AS
Lead	252.50	253.5	97.9	0.510	70 - 130	20	EPA 200.8 Mod	AS

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 9 of 23  
 1202262 Final Report-Revised  
 03/08/2012



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

**SOURCE: 1202262-01RE1**

Batch: F202240

Sequence: 2B27019

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202240-MS/MSD5

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Aluminum	3924	40400	42250	94.9	70 - 130	EPA 200.8 Mod	AS
Chromium	28.16	4040.0	4082	100	70 - 130	EPA 200.8 Mod	AS
Molybdenum	847.8	2020.0	2876	100	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Aluminum	40400	41800	93.7	1.08	70 - 130	20	EPA 200.8 Mod	AS
Chromium	4040.0	4049	99.5	0.803	70 - 130	20	EPA 200.8 Mod	AS
Molybdenum	2020.0	2739	93.6	4.86	70 - 130	20	EPA 200.8 Mod	AS

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 10 of 23  
 1202262 Final Report-Revised  
 03/08/2012



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

**SOURCE: 1202262-01RE2**

Batch: F202240

Sequence: 2B27019

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202240-MS/MSD6

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Boron	2975000	404000	3353000	93.4	70 - 130	EPA 200.8 Mod	AS
Sodium	4297000	10100000	14370000	99.7	70 - 130	EPA 200.8 Mod	AS
Magnesium	5449000	10100000	15630000	101	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Boron	404000	3377000	99.3	0.711	70 - 130	20	EPA 200.8 Mod	AS
Sodium	10100000	14320000	99.2	0.368	70 - 130	20	EPA 200.8 Mod	AS
Magnesium	10100000	15580000	100	0.309	70 - 130	20	EPA 200.8 Mod	AS

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 11 of 23  
 1202262 Final Report-Revised  
 03/08/2012



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

**SOURCE: 1202337-01**

Batch: F202351

Sequence: 2B29014

Preparation: BrCl Oxidation

Lab Number: F202351-MS/MSD1

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	25.26	70.700	93.70	96.8	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	70.700	98.68	104	5.18	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 12 of 23  
 1202262 Final Report-Revised  
 03/08/2012



### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1202262-01RE1

Batch: F202351

Sequence: 2B29014

Preparation: BrCl Oxidation

Lab Number: F202351-MS/MSD2

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	45.82	102.00	137.3	89.7	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	153.0	105	10.8	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 13 of 23  
1202262 Final Report-Revised  
03/08/2012



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

**SOURCE: 1202384-01**

Batch: F203070

Sequence: 2C06014

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203070-MS/MSDI

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Zinc	4.37	10.100	15.62	111	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Zinc	10.100	14.81	103	5.35	70 - 130	20	EPA 200.8 Mod	

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.*

Page 14 of 23  
 1202262 Final Report-Revised  
 03/08/2012

Liz Siska, Project Manager



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

**SOURCE: 1202384-01**

Batch: F203070

Sequence: 2C06014

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203070-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Zinc	4.37	252.50	266.7	104	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Zinc	252.50	266.8	104	0.0481	70 - 130	20	EPA 200.8 Mod	AS

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 15 of 23  
 1202262 Final Report-Revised  
 03/08/2012



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

**RECOVERY AND RPD**

Batch: F202240

Sequence: 2B27019

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202240-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Beryllium	2.0000	1.966	98.3	85 - 115	EPA 200.8 Mod	
Boron	75.000	70.26	93.7	85 - 115	EPA 200.8 Mod	
Sodium	500.00	459	91.9	85 - 115	EPA 200.8 Mod	
Magnesium	250.00	234.8	93.9	85 - 115	EPA 200.8 Mod	
Aluminum	150.00	135.6	90.4	85 - 115	EPA 200.8 Mod	
Potassium	300.00	290.7	96.9	85 - 115	EPA 200.8 Mod	
Chromium	7.0000	6.55	93.6	85 - 115	EPA 200.8 Mod	
Nickel	4.0000	4.10	103	85 - 115	EPA 200.8 Mod	
Copper	4.0000	4.29	107	85 - 115	EPA 200.8 Mod	
Arsenic	15.000	14.75	98.3	85 - 115	EPA 200.8 Mod	
Selenium	30.000	30.20	101	85 - 115	EPA 200.8 Mod	
Molybdenum	2.0000	1.81	90.3	85 - 115	EPA 200.8 Mod	
Silver	1.5000	2.270	151	85 - 115	EPA 200.8 Mod	QM-12
Cadmium	0.80000	0.809	101	85 - 115	EPA 200.8 Mod	
Antimony	0.80000	0.793	99.1	85 - 115	EPA 200.8 Mod	
Barium	10.000	10.10	101	85 - 115	EPA 200.8 Mod	
Thallium	0.40000	0.441	110	85 - 115	EPA 200.8 Mod	
Lead	1.5000	1.659	111	85 - 115	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	2.0000	1.907	95.4	3.03	85 - 115	20	EPA 200.8 Mod	
Boron	75.000	68.60	91.5	2.38	85 - 115	20	EPA 200.8 Mod	
Sodium	500.00	448	89.5	2.57	85 - 115	20	EPA 200.8 Mod	
Magnesium	250.00	235.6	94.2	0.349	85 - 115	20	EPA 200.8 Mod	
Aluminum	150.00	135.4	90.3	0.122	85 - 115	20	EPA 200.8 Mod	
Potassium	300.00	291.2	97.1	0.185	85 - 115	20	EPA 200.8 Mod	
Chromium	7.0000	6.56	93.7	0.101	85 - 115	20	EPA 200.8 Mod	
Nickel	4.0000	4.06	101	1.04	85 - 115	20	EPA 200.8 Mod	

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*





LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE

RECOVERY AND RPD

Batch: F202240

Sequence: 2B27019

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202240-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
Copper	4.0000	4.32	108	0.661	85 - 115	20	EPA 200.8 Mod	
Arsenic	15.000	15.29	102	3.58	85 - 115	20	EPA 200.8 Mod	
Selenium	30.000	31.57	105	4.46	85 - 115	20	EPA 200.8 Mod	
Molybdenum	2.0000	1.81	90.4	0.108	85 - 115	20	EPA 200.8 Mod	
Silver	1.5000	2.269	151	0.0198	85 - 115	20	EPA 200.8 Mod	QM-12
Cadmium	0.80000	0.816	102	0.806	85 - 115	20	EPA 200.8 Mod	
Antimony	0.80000	0.791	98.9	0.198	85 - 115	20	EPA 200.8 Mod	
Barium	10.000	9.98	99.8	1.14	85 - 115	20	EPA 200.8 Mod	
Thallium	0.40000	0.437	109	0.946	85 - 115	20	EPA 200.8 Mod	
Lead	1.5000	1.618	108	2.47	85 - 115	20	EPA 200.8 Mod	

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.*

Page 17 of 23  
 1202262 Final Report-Revised  
 03/08/2012

Liz Siska, Project Manager



LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE

RECOVERY AND RPD

Batch: F202351

Sequence: 2B29014

Preparation: BrCl Oxidation

Lab Number: F202351-BS/BSDI

LCS Source: LCS

Analyte	Spike Added (ng/L)	LCS Concentration (ng/L)	LCS % Recovery	Recovery Limits	Method	Notes
Mercury	15.679	14.24	90.8	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	15.95	102	11.4	80 - 120	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 18 of 23  
 1202262 Final Report-Revised  
 03/08/2012



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

**RECOVERY AND RPD**

Batch: F203070

Sequence: 2C06014

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203070-BS/BSDI

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Zinc	10.000	10.60	106	85 - 115	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Zinc	10.000	10.95	110	3.28	85 - 115	20	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 19 of 23  
 1202262 Final Report-Revised  
 03/08/2012



## PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2B27019

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F202240-BLK1	Beryllium	-0.0001	0.060	µg/L	F202240	EPA 200.8 Moc	U
F202240-BLK1	Boron	0.24	3.00	µg/L	F202240	EPA 200.8 Moc	U
F202240-BLK1	Sodium	11	20	µg/L	F202240	EPA 200.8 Moc	U
F202240-BLK1	Magnesium	0.7	2.5	µg/L	F202240	EPA 200.8 Moc	U
F202240-BLK1	Aluminum	0.07	4.0	µg/L	F202240	EPA 200.8 Moc	U
F202240-BLK1	Potassium	-6.7	40.0	µg/L	F202240	EPA 200.8 Moc	U
F202240-BLK1	Chromium	-0.01	0.10	µg/L	F202240	EPA 200.8 Moc	U
F202240-BLK1	Nickel	-0.006	0.10	µg/L	F202240	EPA 200.8 Moc	U
F202240-BLK1	Copper	-0.003	0.10	µg/L	F202240	EPA 200.8 Moc	U
F202240-BLK1	Arsenic	-0.08	0.15	µg/L	F202240	EPA 200.8 Moc	U
F202240-BLK1	Selenium	-0.18	0.60	µg/L	F202240	EPA 200.8 Moc	U
F202240-BLK1	Molybdenum	0.003	0.06	µg/L	F202240	EPA 200.8 Moc	U
F202240-BLK1	Silver	-0.0007	0.020	µg/L	F202240	EPA 200.8 Moc	U
F202240-BLK1	Cadmium	-0.001	0.020	µg/L	F202240	EPA 200.8 Moc	U
F202240-BLK1	Antimony	-0.0002	0.020	µg/L	F202240	EPA 200.8 Moc	U
F202240-BLK1	Barium	-0.005	0.20	µg/L	F202240	EPA 200.8 Moc	U
F202240-BLK1	Thallium	0.0003	0.010	µg/L	F202240	EPA 200.8 Moc	U
F202240-BLK1	Lead	0.001	0.040	µg/L	F202240	EPA 200.8 Moc	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 20 of 23  
 1202262 Final Report-Revised  
 03/08/2012



### PREPARATION BLANKS

Instrument: Hg-08

Sequence: 2B29014

Preparation: BrCl Oxidation

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F202351-BLK1	Mercury	0.00	0.50	ng/L	F202351	EPA 1631E	U
F202351-BLK2	Mercury	0.03	0.50	ng/L	F202351	EPA 1631E	U
F202351-BLK3	Mercury	0.03	0.50	ng/L	F202351	EPA 1631E	U
F202351-BLK4	Mercury	0.03	0.50	ng/L	F202351	EPA 1631E	U, QB-04

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 21 of 23  
1202262 Final Report-Revised  
03/08/2012



### PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2C06014

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F203070-BLK1	Zinc	0.15	0.20	µg/L	F203070	EPA 200.8 Moc	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

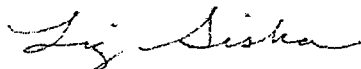
*The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Page 22 of 23  
1202262 Final Report-Revised  
03/08/2012

## Notes and Definitions

- U Analyte included in the analysis, but not detected
- QM-12 Initial or continuing calibration verification and/or blank spike/blank spike duplicate recoveries above upper control limits. All reported sample concentrations were below the reporting limit.
- 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.
- 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.
- FB-1631 Required equipment/field/filter blank not submitted by the client. The sample has been analyzed according to 1631E, but does not meet 1631E criteria
- 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

Frontier Global Sciences, Inc.



Liz Siska, Project Manager

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

Page 23 of 23  
1202262 Final Report-Revised  
03/08/2012





March 31, 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: Monthly Self Monitoring Report  
March 2012  
Merrimack Station  
Public Service of New Hampshire  
Bow, New Hampshire

Dear Ms. Daigneault:

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

On behalf of Public Service of New Hampshire (PSNH), GZA GeoEnvironmental, Inc. (GZA) is pleased to submit the attached Self-Monitoring Report (SMR) for the period March 1, 2012 through March 31, 2012. This SMR is intended to satisfy Conditions 7 and 8 of the Interim Discharge Authorization (IDA) issued to PSNH by the Lowell Regional Wastewater Utility (Utility), dated September 28, 2011. A supplemental Stream B report from samples collected on March 14, 2012 will be submitted in April. The analysis on samples collected on March 2, 2012 was performed in accordance with the United States Environmental Protection Agency (EPA) draft Standard Operating Procedure (SOP) for trace metals analysis of flue gas desulfurization (FGD) wastewater. The SOP is described below.

The attached **SMR Summary Sheet** summarizes the analytical results for all required parameters as outlined in Condition 8 of the IDA. The attached **Analytical Data Report**, however, contains a more comprehensive list of parameters. The results indicate that pollutant concentrations were within the Local Sewer Discharge Limits. Wastewater flow data for the monitoring period was estimated based on the actual number of tanker trucks sent to the Utility from March 1, 2012 through March 31, 2012 and tanker capacity.

#### **ANALYTICAL DISCUSSION**

FGD wastewater requires specialized analytical techniques to overcome matrix interference for certain analysis of trace metals. To assist you in evaluating this issue further, we offer an excerpt below from the United States Environmental Protection Agency (EPA) web site and a link to their draft SOP for trace metals analysis of FGD wastewater 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 an 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](http://water.epa.gov/scitech/wastetech/guide/upload/steam_draft_sop.pdf), EPA May 2011.

Considering that specialized analytical techniques are necessary to overcome matrix interference for certain analysis of trace metals in FGD wastewater, we recommend any analysis on FGD wastewater be conducted in accordance with the EPA draft SOP for trace metals analysis of FGD wastewater.

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.

A handwritten signature in black ink that reads 'Ronald A. Breton'.

Ronald A. Breton, P.E.  
Principal

A handwritten signature in black ink that reads 'Michael P. North'.

Michael P. North, P.E.  
Consultant/Reviewer

RAB/MPN:tmd

p:\04\jobs\0029300s\04.0029307.00\work\sampling and reporting\reports\lowell\monthly reports\march 2012\final 29307 march rpt lrwu 033112.docx

Attachments: SMR Summary Sheet  
Analytical Data Report

**SMR SUMMARY SHEET**

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

Facility Information: Company Name Public Service of New Hampshire  
Facility Address 97 River Road Bow, New Hampshire Permit No. NA (Interim Discharge Authorization)  
Facility Contact Harold Keyes Telephone (603) 224-4081

-----Use A Separate Summary Sheet For Each Monitoring Point-----

Monitoring Report: Monitoring Point End of pretreatment process Submittal Date March 31, 2012  
Reporting Period (circle applicable): Baseline Annually Semi-Annually Quarterly Monthly Re-Sample  
Reporting Period Start Date March 1, 2012 Reporting Period End Date March 31, 2012

Sample Analysis: Certified Analytical Lab Eastern Analytical, Inc. (EAI)  
Authorized Rep. Lorraine Olashaw Certification No. 1012  
Analytical Sub-Contractor Frontier Global Sciences Certification No. E87575

Sample Collection: Sampler (Lab/Self/Other) Jim Blackwell, Gregg Thompson, EAI  
Sample Type(s) (circle all that apply): Grab Time Composite Flow Composite  
Grab Sampling: Sample Date 3/02/2012 Sample Time 11:00 am

pH (Standard Units) 7.1 Instantaneous Flow Rate (GPM) N/A

Composite Sampling: Start Date/Time N/A Stop Date/Time N/A

No. Aliquots N/A Aliquot Volume N/A Sample Volume N/A

Flow Data: Sampling Interval Volume (Gal) N/A Daily Flow Rate (GPD) 9,174 (Average of discharge days)

Monitoring Period Industrial Wastewater Flow (Gal) Stream A: 24,000  
Stream B: 31,042 [ ] Meter [ X ] Estimate

Monitoring Period Start Date March 1, 2012 Monitoring Period End Date March 31, 2012

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

**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			Copper		
COD	03/05/2012	170	Cyanide (Total)		
O & G 413.1 / 1664			Fluoride		
TSS			Lead	03/08/2012	< 0.000800
TOC *			Mercury	03/08/2012	0.0000172
TTO ** 624 / 8260B - 625 / 8270			Molybdenum		
Aluminum			Nickel		
Antimony			Nitrogen (Kjeldahl)		
Arsenic	03/09/2012	0.00812	Phenols (Total)		
Barium			Selenium		
Beryllium			Silver	03/09/2012	<0.000400
Cadmium	03/09/2012	< 0.000400	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(f). 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 \_\_\_\_\_

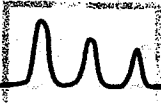
Title

3/29/2012

Date

**ANALYTICAL DATA REPORT**

---



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



Subject: Laboratory Report  
Eastern Analytical, Inc. ID: 108078  
Client Identification: Wastewater Analysis  
Date Received: 3/2/2012

Report revision/reissue: Revision, replaces report dated 3/26/12

Revision information: Per your request, Lead as been analyzed on the samples submitted to Frontier Global Sciences.

Dear Mr. Pepler:

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

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

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

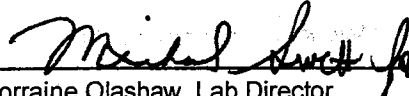
Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

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

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

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

Sincerely,

  
Lorraine Olashaw, Lab Director

3/29/12  
Date

28  
# of pages (excluding cover letter)



# SAMPLE CONDITIONS PAGE

EAI ID#: 108078

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

Client Designation: **Wastewater Analysis**

Temperature upon receipt (°C): **21**

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)
108078.01	Effluent Field Blank B-3621	3/2/12	3/2/12	aqueous		Adheres to Sample Acceptance Policy
108078.02	Final Effluent B-3625, B-3727, B-3722	3/2/12	3/2/12	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

**eastern analytical, inc.**

[www.eailabs.com](http://www.eailabs.com)

Phone: (603) 228-0525





# LABORATORY REPORT

EAI ID#: 108078

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

Client Designation: **Wastewater Analysis**

Sample ID: Final Effluent B-3625, B-3727,  
B-3722

Lab Sample ID: 108078.02

Matrix: aqueous

Date Sampled: 3/2/12

Date Received: 3/2/12

Units: ug/l

Date of Analysis: 3/7/12

Analyst: BAM

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	< 1
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)	99 %R



# LABORATORY REPORT

EAI ID#: 108078

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

Client Designation: **Wastewater Analysis**

Sample ID: Final Effluent B-3625, B-3727,  
B-3722

Lab Sample ID: 108078.02  
Matrix: aqueous  
Date Sampled: 3/2/12  
Date Received: 3/2/12  
Units: ug/l  
Date of Analysis: 3/7/12  
Analyst: BAM  
Method: 624  
Dilution Factor: 1  
Toluene-d8 (surr) 94 %R



# QC REPORT

EAI ID#: 108078

Client: GZA GeoEnvironmental, Inc. (NH)

Client Designation: Wastewater Analysis

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Chloromethane	< 5	20 (99 %R)	20 (101 %R) (2 RPD)	3/7/2012	ug/l	0 - 273	20	624
Vinyl chloride	< 2	20 (102 %R)	21 (106 %R) (4 RPD)	3/7/2012	ug/l	0 - 251	20	624
Bromomethane	< 2	19 (93 %R)	21 (103 %R) (10 RPD)	3/7/2012	ug/l	0 - 242	20	624
Chloroethane	< 5	23 (113 %R)	22 (110 %R) (3 RPD)	3/7/2012	ug/l	14 - 230	20	624
Trichlorofluoromethane	< 5	22 (108 %R)	22 (108 %R) (0 RPD)	3/7/2012	ug/l	17 - 181	20	624
Acrolein	< 50	* < 50 (%R)	* < 50 (%R N/A) (RPD N/A)	3/7/2012	ug/l	40 - 160	20	624
Acetone	< 50	* < 50 (188 %R)	< 50 (114 %R) (49 RPD) !	3/7/2012	ug/l	40 - 160	20	624
1,1-Dichloroethene	< 1	19 (97 %R)	19 (95 %R) (2 RPD)	3/7/2012	ug/l	0 - 234	20	624
Methylene chloride	< 5	22 (110 %R)	22 (108 %R) (2 RPD)	3/7/2012	ug/l	0 - 221	20	624
Carbon disulfide	< 5	17 (85 %R)	17 (83 %R) (2 RPD)	3/7/2012	ug/l	70 - 130	20	624
Acrylonitrile	< 50	< 50 (109 %R)	< 50 (104 %R) (5 RPD)	3/7/2012	ug/l	40 - 160	20	624
Methyl-t-butyl ether(MTBE)	< 10	20 (114 %R)	20 (113 %R) (1 RPD)	3/7/2012	ug/l	70 - 130	20	624
trans-1,2-Dichloroethene	< 2	19 (96 %R)	19 (96 %R) (0 RPD)	3/7/2012	ug/l	54 - 156	20	624
Vinyl acetate	< 10	30 (137 %R)	30 (134 %R) (2 RPD)	3/7/2012	ug/l	40 - 160	20	624
1,1-Dichloroethane	< 2	21 (106 %R)	21 (104 %R) (2 RPD)	3/7/2012	ug/l	59 - 155	20	624
cis-1,2-Dichloroethene	< 2	20 (101 %R)	20 (99 %R) (2 RPD)	3/7/2012	ug/l	70 - 130	20	624
2-Butanone(MEK)	< 10	30 (130 %R)	20 (100 %R) (26 RPD) !	3/7/2012	ug/l	40 - 160	20	624
Chloroform	< 2	21 (104 %R)	21 (104 %R) (0 RPD)	3/7/2012	ug/l	51 - 138	20	624
1,1,1-Trichloroethane	< 2	22 (111 %R)	22 (110 %R) (1 RPD)	3/7/2012	ug/l	52 - 162	20	624
Carbon tetrachloride	< 2	24 (122 %R)	24 (121 %R) (1 RPD)	3/7/2012	ug/l	70 - 140	20	624
Benzene	< 1	20 (100 %R)	20 (100 %R) (0 RPD)	3/7/2012	ug/l	37 - 151	20	624
1,2-Dichloroethane	< 2	22 (111 %R)	22 (110 %R) (1 RPD)	3/7/2012	ug/l	49 - 155	20	624
Trichloroethene	< 2	21 (105 %R)	20 (102 %R) (3 RPD)	3/7/2012	ug/l	71 - 157	20	624
1,2-Dichloropropane	< 2	21 (103 %R)	21 (103 %R) (0 RPD)	3/7/2012	ug/l	0 - 210	20	624
Bromodichloromethane	< 2	22 (110 %R)	22 (110 %R) (0 RPD)	3/7/2012	ug/l	35 - 155	20	624
2-Chloroethylvinylether	< 2	29 (143 %R)	29 (144 %R) (1 RPD)	3/7/2012	ug/l	0 - 305	20	624
4-Methyl-2-pentanone(MIBK)	< 10	20 (107 %R)	20 (105 %R) (2 RPD)	3/7/2012	ug/l	40 - 160	20	624
cis-1,3-Dichloropropene	< 2	23 (115 %R)	23 (115 %R) (0 RPD)	3/7/2012	ug/l	0 - 227	20	624
Toluene	< 1	20 (98 %R)	20 (98 %R) (0 RPD)	3/7/2012	ug/l	47 - 150	20	624
trans-1,3-Dichloropropene	< 2	22 (110 %R)	22 (108 %R) (2 RPD)	3/7/2012	ug/l	17 - 183	20	624
1,1,2-Trichloroethane	< 2	19 (95 %R)	19 (94 %R) (1 RPD)	3/7/2012	ug/l	52 - 150	20	624
2-Hexanone	< 10	20 (120 %R)	20 (101 %R) (17 RPD)	3/7/2012	ug/l	40 - 160	20	624
Tetrachloroethene	< 2	20 (102 %R)	20 (102 %R) (0 RPD)	3/7/2012	ug/l	64 - 148	20	624
Dibromochloromethane	< 2	22 (110 %R)	22 (109 %R) (1 RPD)	3/7/2012	ug/l	53 - 149	20	624
Chlorobenzene	< 2	20 (100 %R)	20 (99 %R) (1 RPD)	3/7/2012	ug/l	37 - 160	20	624
Ethylbenzene	< 1	20 (102 %R)	20 (101 %R) (1 RPD)	3/7/2012	ug/l	37 - 162	20	624
mp-Xylene	< 1	40 (99 %R)	40 (100 %R) (1 RPD)	3/7/2012	ug/l	70 - 130	20	624
o-Xylene	< 1	20 (100 %R)	20 (100 %R) (0 RPD)	3/7/2012	ug/l	70 - 130	20	624
Styrene	< 1	20 (102 %R)	20 (102 %R) (0 RPD)	3/7/2012	ug/l	70 - 130	20	624
Bromoform	< 2	19 (96 %R)	19 (95 %R) (1 RPD)	3/7/2012	ug/l	45 - 169	20	624
1,1,2,2-Tetrachloroethane	< 2	19 (94 %R)	19 (97 %R) (3 RPD)	3/7/2012	ug/l	46 - 157	20	624
1,3-Dichlorobenzene	< 1	20 (102 %R)	21 (106 %R) (4 RPD)	3/7/2012	ug/l	59 - 156	20	624
1,4-Dichlorobenzene	< 1	20 (102 %R)	21 (105 %R) (3 RPD)	3/7/2012	ug/l	18 - 190	20	624
1,2-Dichlorobenzene	< 1	20 (102 %R)	21 (105 %R) (3 RPD)	3/7/2012	ug/l	18 - 190	20	624
4-Bromofluorobenzene (surr)	93 %R	98 %R	99 %R	3/7/2012	% Rec	70 - 130		624



# QC REPORT

EAI ID#: 108078

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

Client Designation: **Wastewater Analysis**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
1,2-Dichlorobenzene-d4 (surr)	99 %R	105 %R	103 %R	3/7/2012	% Rec	70 - 130		624
Toluene-d8 (surr)	94 %R	96 %R	96 %R	3/7/2012	% 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.  
\*! Flagged analyte recoveries deviated from the QA/QC limits. Any impact to data is addressed below.



# LABORATORY REPORT

EAI ID#: 108078

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

Client Designation: **Wastewater Analysis**

---

Sample ID:	Final Effluent B-3625, B-3727, B-3722
Lab Sample ID:	108078.02
Matrix:	aqueous
Date Sampled:	3/2/12
Date Received:	3/2/12
Units:	mg/L
Date of Extraction/Prep:	3/12/12
Date of Analysis:	3/12/12
Analyst:	LAS
Method:	1664A
Dilution Factor:	1
Oil & Grease (HEM)	< 5



# QC REPORT

EAI ID#: 108078

Client: GZA GeoEnvironmental, Inc. (NH)

Batch ID: 734574-36453/A031212OG1661

Client Designation: Wastewater Analysis

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Oil & Grease (HEM)	< 5	36 (90 %R)	36 (90 %R) (0 RPD)	3/12/2012	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#: 108078

Client: GZA GeoEnvironmental, Inc. (NH)

Client Designation: **Wastewater Analysis**

Sample ID: Final Effluent  
B-3625, B-3727,  
B-3722

Lab Sample ID: 108078.02

Matrix: aqueous

Date Sampled: 3/2/12

Date Received: 3/2/12

Solids Suspended 43  
Solids Dissolved 24000  
Chloride 11000  
Cyanide Total 0.02  
BOD <6  
COD 170  
pH 7.1

Units	Analysis		Method	Analyst
	Date	Time		
mg/L	3/05/12	14:00	2540D	DLS
mg/L	3/05/12	15:00	2540C	DLS
mg/L	3/09/12	11:01	4500CIE	DLS
mg/L	3/06/12	9:30	4500CNE	KJR
mg/L	3/02/12	16:30	5210B	SKC
mg/L	3/05/12	10:25	H8000	KJR
SU	3/02/12	16:00	4500H+B	NZ



# QC REPORT

EAI ID#: 108078

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

Client Designation: **Wastewater Analysis**

Parameter Name	Blank	LCS	LCSD	Units	Date of Analysis	Limits	RPD	Method
Solids Suspended	< 5	100 (101 %R)		NA mg/L	3/5/12	90 - 110	20	2540D
Solids Dissolved	< 5	920 (92 %R)		NA mg/L	3/5/12	85 - 115	20	2540C
Chloride	< 1	26 (102 %R)	26 (102 %R) (0 RPD)	mg/L	3/9/12	90 - 110	20	4500CIE
Cyanide Total	< 0.02	0.26 (104 %R)		NA mg/L	3/6/12	85 - 115	20	4500CNE
BOD	< 6	360 (91 %R)	380 (96 %R) (5 RPD)	mg/L	3/2/12	84 - 115	20	5210B
COD	< 10	110 (109 %R)	110 (106 %R) (3 RPD)	mg/L	3/5/12	85 - 115	20	H8000
pH		6.0 (100 %R)	6.0 (99 %R) (1 RPD)	SU	3/2/12	5.95 - 6.07	10	4500H+B

Parameter Name	MS/MSD Parent ID	MS/MSD Parent	Matrix Spike	MSD	Units	Date of Analysis	Limits	RPD	Method
Solids Suspended		NA	NA	NA	mg/L	3/5/12		20	2540D
Solids Dissolved		NA	NA	NA	mg/L	3/5/12		20	2540C
Chloride		NA	NA	NA	mg/L	3/9/12		20	4500CIE
Cyanide Total	108078.02	0.02	0.29 (109 %R)	0.28 (104 %R) (5 RPD)	mg/L	3/6/12	75-125	20	4500CNE
BOD	108053.01	< 6	44 (110 %R)	NA	mg/L	3/2/12	75-125	20	5210B
COD	108069.07	60	110 (101 %R)	110 (89 %R) (13 RPD)	mg/L	3/5/12	80-120	20	H8000
pH		NA	NA	NA	SU	3/2/12		10	4500H+B

Parameter Name	Duplicate Parent ID	Duplicate Parent	Duplicate	Units	Date of Analysis	RPD	Method
Solids Suspended	108054.01	290	320 (10 RPD)	mg/L	3/5/12	20	2540D
Solids Dissolved	108078.02	24000	21000 (10 RPD)	mg/L	3/5/12	20	2540C
Chloride		NA	NA	mg/L	3/9/12	20	4500CIE
Cyanide Total		NA	NA	mg/L	3/6/12	20	4500CNE
BOD	108053.01	< 6	< 6 (RPD N/A)	mg/L	3/2/12	20	5210B
COD		NA	NA	mg/L	3/5/12	20	H8000
pH	108078.02	7.1	7.1 (0 RPD)	SU	3/2/12	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.





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

27 March 2012

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

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

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

Sincerely,

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

Liz Siska  
Project Manager



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

## ANALYTICAL REPORT FOR SAMPLES

Laboratory: Frontier Global Sciences, Inc.

SDG:

Client: Eastern Analytical, Inc

Project: Merrimack Station 200.8

Sample ID	Lab ID	Matrix	Date Sampled	Date Received
B-3621 Effluent Field Blank	1203055-01	Water	02-Mar-12 11:00	05-Mar-12 08:51
Final Effluent	1203055-02	Water	02-Mar-12 11:00	05-Mar-12 08:51

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 1 of 17  
1203055 Revised Report  
03/27/2012



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

## CASE NARRATIVE

Revised Report 03/26/2012- Client requested Pb be added to the work order.

### SAMPLE RECEIPT

Samples were received at Frontier Global Sciences (FGS) on March 15th, 2012. The samples were received intact, on-ice with temperatures measured at 13.2 degrees Celsius.

### SAMPLE PREPARATION AND ANALYSIS

Samples were prepared and analyzed for total metals in accordance with EPA Method 200.8 (modified).

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

### ANALYTICAL ISSUES

The Zn result for Effluent Field Blank (1203055-01) was greater than the MRL, the sample was re-digested and re-analyzed for confirmation:

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.

A handwritten signature in cursive script that reads "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.*

Page 2 of 17  
1203055 Revised Report  
03/27/2012





### CHAIN OF CUSTODY FORMS

FGS Work Order: 1203055, 1203055

Sample Receipt Checklist

Client: Eastern Analytical Date & Time Received: 3/5/12 0851 Date Logged In: 3/5/12  
 Project: Merrimack Station Received By: Owen Valentine Logged In By: Owen Valentine  
 SDG: \_\_\_\_\_ # of Coolers Received: 1 FGS PM: Liz  
 Samples Arrived By: UPS Shipping Service \_\_\_\_\_ Courier \_\_\_\_\_ Hand \_\_\_\_\_ Other (specify) \_\_\_\_\_  
 Tracking/Airbill Number(s): 1Z x46 599 B 902 8312

Cooler Information	Yes	No	NA	Comments
The coolers do not appear to be tampered with:	<input checked="" type="checkbox"/>			
Custody seals are present and intact:		<input checked="" type="checkbox"/>		
Custody seals signed by:			<input checked="" type="checkbox"/>	

Thermal Preservation: \_\_\_\_\_ Loose Ice \_\_\_\_\_  Gel/Blue Ice \_\_\_\_\_ None (Ambient) \_\_\_\_\_ Other (specify) \_\_\_\_\_

Thermometer ID: 3150 Correction Factor (CF): + 0.3 degrees C

Cooler	Temp	Cooler	Temp	Cooler	Temp
Cooler 1:	<u>13.2</u> °C	Cooler 6:	<u>/</u> °C	Cooler 11:	<u>/</u> °C
Cooler 2:	<u>/</u> °C	Cooler 7:	<u>/</u> °C	Cooler 12:	<u>/</u> °C
Cooler 3:	<u>/</u> °C	Cooler 8:	<u>/</u> °C	Cooler 13:	<u>/</u> °C
Cooler 4:	<u>/</u> °C	Cooler 9:	<u>/</u> °C	Cooler 14:	<u>/</u> °C
Cooler 5:	<u>/</u> °C	Cooler 10:	<u>/</u> °C	Cooler 15:	<u>/</u> °C

Chain of Custody

COC is present and includes the following information for each sample:

	Yes	No	NA	Comments
Sample ID/Sample Description:	<input checked="" type="checkbox"/>			
Date and Time of Sample Collection:	<input checked="" type="checkbox"/>			
Sampled By:	<input checked="" type="checkbox"/>			
Preservation Type:			<input checked="" type="checkbox"/>	
Requested Analyses:	<input checked="" type="checkbox"/>			
Required Signatures:	<input checked="" type="checkbox"/>			
Internal chain of custody required:		<input checked="" type="checkbox"/>		

Sample Condition/Integrity

	Yes	No	NA	Comments
Sample containers were received intact:	<input checked="" type="checkbox"/>			
Sample labels are present and legible:	<input checked="" type="checkbox"/>			
Sample ID on container matches COC:	<input checked="" type="checkbox"/>			
Correct sample containers used for requested analyses:	<input checked="" type="checkbox"/>			
Samples received within holding time:	<input checked="" type="checkbox"/>			
Sample volume sufficient for requested analysis:				<u>Less than ideal volume received</u>
Correct preservative used for requested analyses:			<input checked="" type="checkbox"/>	
pH of samples checked and within method requirements: if pH adjusted by laboratory, noted in logbook:	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	

Anomalies/Non-conformances:

\_\_\_\_\_

\_\_\_\_\_

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

Discussion/Resolution:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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.

Page 4 of 17  
 1203055 Revised Report  
 03/27/2012



## ANALYTICAL RESULTS

### B-3621 Effluent Field Blank

Matrix: Water

Laboratory ID: 1203055-01

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Arsenic	ND	0.05	0.15	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Cadmium	ND	0.004	0.020	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	QM-12, U
Chromium	ND	0.009	0.10	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Copper	ND	0.01	0.10	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Iron	ND	1.3	10.0	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Lead	ND	0.004	0.040	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Mercury	ND	0.08	0.50	ng/L	1	F203099	2C08017	03/08/12	EPA 1631E	U
Molybdenum	ND	0.006	0.06	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Nickel	ND	0.008	0.10	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Selenium	ND	0.19	0.60	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Silver	ND	0.006	0.020	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Zinc	0.50	0.02	0.20	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 5 of 17  
 1203055 Revised Report  
 03/27/2012



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

## ANALYTICAL RESULTS

### Final Effluent

Matrix: Water

Laboratory ID: 1203055-02

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Arsenic	8.12	1.02	3.00	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	
Cadmium	ND	0.083	0.400	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	QM-12, U
Chromium	ND	0.18	2.00	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Copper	ND	0.20	2.00	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Iron	ND	26.0	200	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Lead	ND	0.078	0.800	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Mercury	17.2	0.83	5.00	ng/L	10	F203099	2C08017	03/08/12	EPA 1631E	
Molybdenum	419	0.12	1.20	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	
Nickel	29.1	0.16	2.00	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	
Selenium	109	3.88	12.0	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	
Silver	ND	0.120	0.400	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Zinc	ND	0.33	4.00	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	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.*

Page 6 of 17  
1203055 Revised Report  
03/27/2012

Liz Siska, Project Manager



### MATRIX DUPLICATES/TRIPPLICATES

SOURCE: 1203016-05

Batch: F203099

Sequence: 2C08017

Preparation: BrCl Oxidation

Lab Number: F203099-DUP1

Analyte	Sample Concentration ng/L	Duplicate Concentration ng/L	MRL	% RPD	RPD Limit	Method	Notes
Mercury	2.48	2.44	1.01	1.48	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 7 of 17  
1203055 Revised Report  
03/27/2012





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

**SOURCE: 1203014-01**

Batch: F203099

Sequence: 2C08017

Preparation: BrCl Oxidation

Lab Number: F203099-MS/MSD1

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	7.38	25.500	32.34	97.9	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	25.500	32.44	98.3	0.314	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 8 of 17  
 1203055 Revised Report  
 03/27/2012



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

**SOURCE: 1203055-02**

Batch: F203099

Sequence: 2C08017

Preparation: BrCl Oxidation

Lab Number: F203099-MS/MSD2

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	17.16	45.450	63.67	102	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	45.450	61.91	98.4	2.81	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 9 of 17  
1203055 Revised Report  
03/27/2012



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

**SOURCE: 1203016-01**

Batch: F203099

Sequence: 2C08017

Preparation: BrCl Oxidation

Lab Number: F203099-MS/MSD3

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	19.64	51.000	70.79	100	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	51.000	72.43	104	2.30	71 - 125	24	EPA 1631E	

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.*



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

**SOURCE: 1203055-02**

Batch: F203108

Sequence: 2C12010

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203108-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Chromium	0.31	7.0700	7.78	106	70 - 130	EPA 200.8 Mod	
Iron	ND	505.00	522.4	103	70 - 130	EPA 200.8 Mod	
Nickel	29.14	4.0400	30.61	36.6	70 - 130	EPA 200.8 Mod	QM-02
Copper	0.41	4.0400	4.22	94.2	70 - 130	EPA 200.8 Mod	
Zinc	2.75	10.100	18.93	160	70 - 130	EPA 200.8 Mod	QM-07
Arsenic	8.12	15.150	25.50	115	70 - 130	EPA 200.8 Mod	
Selenium	109.3	30.300	136.9	91.2	70 - 130	EPA 200.8 Mod	
Molybdenum	418.6	2.0200	416.5	-105	70 - 130	EPA 200.8 Mod	QM-02
Silver	ND	1.5150	1.450	95.7	70 - 130	EPA 200.8 Mod	
Cadmium	0.379	0.80800	1.335	118	70 - 130	EPA 200.8 Mod	
Lead	ND	1.5150	1.636	108	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Chromium	7.0700	7.64	104	1.78	70 - 130	20	EPA 200.8 Mod	
Iron	505.00	521.1	103	0.257	70 - 130	20	EPA 200.8 Mod	
Nickel	4.0400	32.86	92.1	7.07	70 - 130	20	EPA 200.8 Mod	QM-02
Copper	4.0400	4.31	96.6	2.26	70 - 130	20	EPA 200.8 Mod	
Zinc	10.100	11.07	82.4	52.4	70 - 130	20	EPA 200.8 Mod	QM-07, QR-08
Arsenic	15.150	25.03	112	1.87	70 - 130	20	EPA 200.8 Mod	
Selenium	30.300	134.1	82.0	2.07	70 - 130	20	EPA 200.8 Mod	
Molybdenum	2.0200	416.8	-89.3	0.0753	70 - 130	20	EPA 200.8 Mod	QM-02
Silver	1.5150	1.361	89.8	6.34	70 - 130	20	EPA 200.8 Mod	
Cadmium	0.80800	1.278	111	4.34	70 - 130	20	EPA 200.8 Mod	
Lead	1.5150	1.487	98.2	9.53	70 - 130	20	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 11 of 17  
 1203055 Revised Report  
 03/27/2012



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

**SOURCE: 1203055-02**

Batch: F203108

Sequence: 2C12010

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203108-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Chromium	0.31	404.00	425.2	105	70 - 130	EPA 200.8 Mod	AS
Iron	ND	2020.0	2097	104	70 - 130	EPA 200.8 Mod	AS
Nickel	29.14	505.00	530.8	99.3	70 - 130	EPA 200.8 Mod	AS
Copper	0.41	505.00	465.9	92.2	70 - 130	EPA 200.8 Mod	AS
Zinc	2.75	1010.0	898.3	88.7	70 - 130	EPA 200.8 Mod	AS
Arsenic	8.12	404.00	429.4	104	70 - 130	EPA 200.8 Mod	AS
Selenium	109.3	404.00	534.6	105	70 - 130	EPA 200.8 Mod	AS
Molybdenum	418.6	202.00	623.4	101	70 - 130	EPA 200.8 Mod	AS
Silver	ND	20.200	18.02	89.2	70 - 130	EPA 200.8 Mod	AS
Cadmium	0.379	40.400	37.46	91.8	70 - 130	EPA 200.8 Mod	AS
Lead	ND	101.00	98.25	97.3	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Chromium	404.00	425.2	105	0.00134	70 - 130	20	EPA 200.8 Mod	AS
Iron	2020.0	2093	104	0.171	70 - 130	20	EPA 200.8 Mod	AS
Nickel	505.00	531.3	99.4	0.0878	70 - 130	20	EPA 200.8 Mod	AS
Copper	505.00	469.4	92.9	0.751	70 - 130	20	EPA 200.8 Mod	AS
Zinc	1010.0	898.8	88.7	0.0641	70 - 130	20	EPA 200.8 Mod	AS
Arsenic	404.00	439.2	107	2.27	70 - 130	20	EPA 200.8 Mod	AS
Selenium	404.00	497.7	96.1	7.14	70 - 130	20	EPA 200.8 Mod	AS
Molybdenum	202.00	616.1	97.8	1.18	70 - 130	20	EPA 200.8 Mod	AS
Silver	20.200	17.84	88.3	1.01	70 - 130	20	EPA 200.8 Mod	AS
Cadmium	40.400	37.27	91.3	0.512	70 - 130	20	EPA 200.8 Mod	AS
Lead	101.00	98.44	97.5	0.193	70 - 130	20	EPA 200.8 Mod	AS

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 12 of 17  
 1203055 Revised Report  
 03/27/2012



LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE

RECOVERY AND RPD

Batch: F203099

Sequence: 2C08017

Preparation: BrCl Oxidation

Lab Number: F203099-BS/BSD1

LCS Source: LCS

Analyte	Spike Added (ng/L)	LCS Concentration (ng/L)	LCS % Recovery	Recovery Limits	Method	Notes
Mercury	15.679	15.62	99.6	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	15.74	100	0.806	80 - 120	24	EPA 1631E	

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.*

Page 13 of 17  
 1203055 Revised Report  
 03/27/2012

Liz Siska, Project Manager



**LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE**  
**RECOVERY AND RPD**

Batch: F203108

Sequence: 2C12010

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203108-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Chromium	7.0000	6.67	95.3	85 - 115	EPA 200.8 Mod	
Iron	500.00	468.9	93.8	85 - 115	EPA 200.8 Mod	
Nickel	4.0000	4.07	102	85 - 115	EPA 200.8 Mod	
Copper	4.0000	4.22	106	85 - 115	EPA 200.8 Mod	
Zinc	10.000	10.42	104	85 - 115	EPA 200.8 Mod	
Arsenic	15.000	14.44	96.3	85 - 115	EPA 200.8 Mod	
Selenium	30.000	29.84	99.5	85 - 115	EPA 200.8 Mod	
Molybdenum	2.0000	1.80	90.0	85 - 115	EPA 200.8 Mod	
Silver	1.5000	1.476	98.4	85 - 115	EPA 200.8 Mod	
Cadmium	0.80000	0.918	115	85 - 115	EPA 200.8 Mod	
Lead	1.5000	1.542	103	85 - 115	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Chromium	7.0000	6.57	93.9	1.48	85 - 115	20	EPA 200.8 Mod	
Iron	500.00	465.2	93.0	0.801	85 - 115	20	EPA 200.8 Mod	
Nickel	4.0000	4.00	99.9	1.86	85 - 115	20	EPA 200.8 Mod	
Copper	4.0000	4.17	104	1.17	85 - 115	20	EPA 200.8 Mod	
Zinc	10.000	10.17	102	2.38	85 - 115	20	EPA 200.8 Mod	
Arsenic	15.000	14.25	95.0	1.37	85 - 115	20	EPA 200.8 Mod	
Selenium	30.000	30.40	101	1.84	85 - 115	20	EPA 200.8 Mod	
Molybdenum	2.0000	1.78	88.8	1.40	85 - 115	20	EPA 200.8 Mod	
Silver	1.5000	1.458	97.2	1.26	85 - 115	20	EPA 200.8 Mod	
Cadmium	0.80000	0.933	117	1.56	85 - 115	20	EPA 200.8 Mod	QM-12
Lead	1.5000	1.522	101	1.31	85 - 115	20	EPA 200.8 Mod	

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*

Page 14 of 17  
 1203055 Revised Report  
 03/27/2012

Liz Siska, Project Manager



### PREPARATION BLANKS

Instrument: ICPMS-3

Sequence: 2C08017

Preparation: BrCl Oxidation

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F203099-BLK1	Mercury	0.003	0.50	ng/L	F203099	EPA 1631E	U
F203099-BLK2	Mercury	0.009	0.50	ng/L	F203099	EPA 1631E	U
F203099-BLK3	Mercury	0.05	0.50	ng/L	F203099	EPA 1631E	U
F203099-BLK4	Mercury	0.03	0.50	ng/L	F203099	EPA 1631E	QB-04, U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 15 of 17  
1203055 Revised Report  
03/27/2012





### PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2C12010

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F203108-BLK1	Chromium	-0.01	0.10	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Iron	-0.1	10.0	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Nickel	0.01	0.10	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Copper	0.008	0.10	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Zinc	0.08	0.20	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Arsenic	-0.06	0.15	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Selenium	0.03	0.60	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Molybdenum	0.007	0.06	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Silver	-0.003	0.020	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Cadmium	-0.0003	0.020	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Lead	0.005	0.040	µg/L	F203108	EPA 200.8 Moc	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.*

Page 16 of 17  
 1203055 Revised Report  
 03/27/2012

Liz Siska, Project Manager



## Notes and Definitions

- U Analyte included in the analysis, but not detected
- QR-08 The RPD value for the MS/MSD was outside of acceptance limits. Batch QC acceptable based on matrix duplicate and/or LCS/LCSD RPD values within control limits.
- QM-12 Initial or continuing calibration verification and/or blank spike/blank spike duplicate recoveries above upper control limits. All reported sample concentrations were below the reporting limit.
- QM-07 The spike recovery was outside control limits for the MS and/or MSD. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
- QM-02 The MS and/or MSD recoveries outside acceptance limits, due to spike concentration less than 1 times the sample concentration. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
- QB-04 The blank was preserved to 2% BrCl rather than 1%. The control limit for blanks preserved to greater than 1% BrCl is the preservation percentage multiplied by the MRL.
- AS This MS and/or MSD is an analytical spike and/or an analytical spike duplicate.
- DET Analyte Detected
- MDL Minimum Detection Limit
- MRL Minimum Reporting Limit
- ND Analyte Not Detected at or above the reporting limit
- wet Sample results reported on a wet weight basis
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- RSD Relative Standard Deviation

Frontier Global Sciences, Inc.

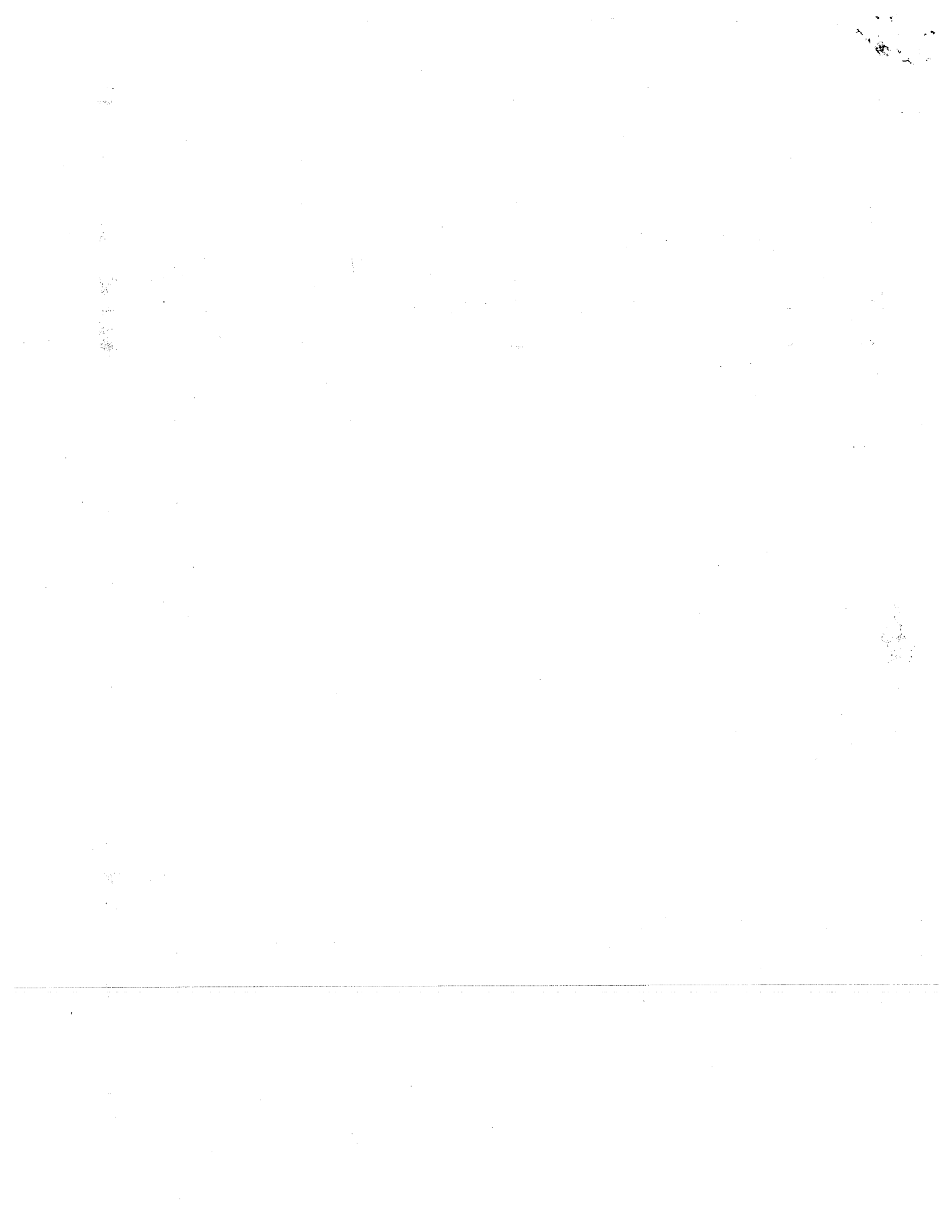
A handwritten signature in cursive script that reads "Liz Siska".

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.*

Page 17 of 17  
1203055 Revised Report  
03/27/2012





April 12, 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: Supplemental Monthly Self-Monitoring Report  
March 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 a supplement to the Self-Monitoring Report previously submitted for the period March 1, 2012 through March 31, 2012. The attached **Table 1** summarizes the data contained in the attached **Analytical Data Report** from the Stream B sample collected on March 14, 2012. The results indicate that pollutant concentrations were within the Local Sewer Discharge Limits.

The analysis on samples collected on March 14, 2012 was performed in accordance with the United States Environmental Protection Agency (EPA) draft Standard Operating Procedure (SOP) for trace metals analysis of flue gas desulfurization (FGD) wastewater. The SOP is described below.

#### **ANALYTICAL DISCUSSION**

FGD wastewater requires specialized analytical techniques to overcome matrix interference for certain analysis of trace metals. To assist you in evaluating this issue further, we offer an excerpt below from the EPA web site and a link to their draft SOP for trace metals analysis of FGD wastewater 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 quantification of certain elements of interest. These potential interferences may become significant when measuring trace elements at concentrations in the low parts-per-billion range.

Copyright © 2012 GZA GeoEnvironmental, Inc.



As part of a recent sampling effort for the steam electric power generating effluent guidelines rulemaking, EPA developed an 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 please see the following:

- Draft SOP: 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](http://water.epa.gov/scitech/wastetech/guide/upload/steam_draft_sop.pdf), EPA May 2011.

Considering that specialized analytical techniques are necessary to overcome matrix interference for certain analysis of trace metals in FGD wastewater, we recommend any analysis on FGD wastewater be conducted in accordance with the EPA draft SOP for trace metals analysis of FGD wastewater.

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.

A handwritten signature in black ink that reads "Ronald A. Breton".

Ronald A. Breton, P.E.  
Principal

A handwritten signature in black ink that reads "Michael P. North".

Michael P. North, P.E.  
Consultant/Reviewer

RAB/MPN:tmd

P:\04Jobs\00293008\04.0029307.00\WORK\SAMPLING AND REPORTING\REPORTS\Lowell\Stream BI\March B supplement\final 29307 STREAM B March Splmnt 041212.docx

Attachments: Table  
Analytical Data Report

**TABLE**

**TABLE 1**  
**SUMMARY OF STREAM B CONCENTRATIONS**  
**COMPARED TO LOWELL SEWER DISCHARGE LIMITS**  
 Public Service of New Hampshire  
 Merrimack Station  
 Bow, New Hampshire

PARAMETER	LOWELL SEWER DISCHARGE LIMITS (mg/L)	STREAM B RESULTS 3/14/2012 (mg/L)
Aluminum	24.69	0.371
Arsenic	0.556	0.0377
Cadmium	0.056	0.00248
Chromium (T)	8.108	0.0532
Copper	3.124	0.0182
Lead	0.857	< 0.00198
Mercury	0.004	0.0000612
Nickel	1.541	0.303
pH	5.0-9.5	6.9
Silver	0.053	< 0.000990
Zinc	4.959	0.0775



## **ANALYTICAL DATA REPORT**

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



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 108420  
Client Identification: MK  
Date Received: 3/14/2012

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](http://www.eailabs.com) for a copy of our NELAP certificate and accredited parameters.

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

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

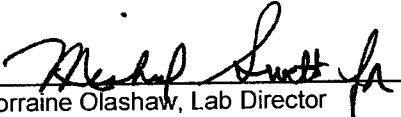
Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

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

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

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

Sincerely,

  
Lorraine Olashaw, Lab Director

4/4/12  
Date

25  
# of pages (excluding cover letter)



# SAMPLE CONDITIONS PAGE

EAI ID#: 108420

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

Client Designation: **MK**

Temperature upon receipt (°C): **18.4**

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

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date Received	Date Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
108420.01	SWWTF	3/14/12	3/14/12	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



# LABORATORY REPORT

EAI ID#: 108420

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

Client Designation: **MK**

Sample ID: **SWWTF**

Lab Sample ID: **108420.01**

Matrix: **aqueous**

Date Sampled: **3/14/12**

Date Received: **3/14/12**

Solids Suspended	<b>25000</b>
Solids Dissolved	<b>180000</b>
Chloride	<b>75000</b>
BOD	<b>140</b>
COD	<b>900</b>
pH	<b>6.9</b>

Analysis				
Units	Date	Time	Method	Analyst
mg/L	3/19/12	13:45	2540D	DLS
mg/L	3/19/12	15:00	2540C	DLS
mg/L	3/19/12	10:30	4500CIE	DLS
mg/L	3/15/12	14:12	5210B	SKC
mg/L	3/20/12	9:00	H8000	KJR
SU	3/14/12	17:05	4500H+B	JL

TDS: Due to sample matrix a constant weight of 0.0005g could not be achieved.



# QC REPORT

EAI ID#: 108420

Client: GZA GeoEnvironmental, Inc. (NH)

Client Designation: MK

Parameter Name	Blank	LCS	LCSD	Units	Date of Analysis	Limits	RPD	Method
Solids Suspended	< 5	96 (96 %R)	100 (100 %R) (4 RPD)	mg/L	3/19/12	90 - 110	20	2540D
Solids Dissolved	< 5	990 (99 %R)	NA	mg/L	3/19/12	85 - 115	20	2540C
Chloride	< 1	27 (106 %R)	26 (106 %R) (0 RPD)	mg/L	3/19/12	90 - 110	20	4500CIE
BOD	< 6	400 (100 %R)	410 (102 %R) (2 RPD)	mg/L	3/15/12	84 - 115	20	5210B
COD	< 10	100 (97 %R)	100 (101 %R) (4 RPD)	mg/L	3/20/12	85 - 115	20	H8000
pH		6.0 (100 %R)	6.0 (100 %R) (0 RPD)	SU	3/14/12	5.95 - 6.07	10	4500H+B

Parameter Name	Duplicate Parent ID	Duplicate Parent	Duplicate	Units	Date of Analysis	RPD	Method
Solids Suspended	108503.03	200	190 (4 RPD)	mg/L	3/19/12	20	2540D
Solids Dissolved	108431.01	270	270 (0 RPD)	mg/L	3/19/12	20	2540C
Chloride		NA	NA	mg/L	3/19/12	20	4500CIE
BOD		NA	NA	mg/L	3/15/12	20	5210B
COD		NA	NA	mg/L	3/20/12	20	H8000
pH	108386.01	8.2	8.2 (0 RPD)	SU	3/14/12	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.



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

04 April 2012

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

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

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

Sincerely, 44

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

Liz Siska  
Project Manager



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

## ANALYTICAL REPORT FOR SAMPLES

Laboratory: Frontier Global Sciences, Inc.

SDG:

Client: Eastern Analytical, Inc

Project: Merrimack Station 200.8

Sample ID	Lab ID	Matrix	Date Sampled	Date Received
SWWTF	1203203-01	Water	14-Mar-12 13:05	16-Mar-12 09:40

Frontier Global Sciences, Inc.

A handwritten signature in cursive script that reads "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.*

Page 1 of 20  
1203203 Final Report- SWWTF REV2  
04/04/2012



## CASE NARRATIVE

Revised Report 4/4/12- Sample name corrected to SWWTF.

### SAMPLE RECEIPT

Samples were received at Frontier Global Sciences (FGS) on March 16th, 2012. The samples were received intact, on-ice with temperatures measured at 2.2 degrees Celsius.

### SAMPLE PREPARATION AND ANALYSIS

Samples were prepared and analyzed for total metals in accordance with EPA Method 200.8 (modified).

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

### ANALYTICAL ISSUES

The client requested sample SWWTF (1203203-01) be analyzed for Mn via email on 3/15/12.

Samples were received in a cooler of melted ice. There was water in the inner most bag of sample Evaporator (1203203-02)

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.

A handwritten signature in cursive script that reads "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.*

Page 2 of 20  
1203203 Final Report- SWWTF REV2  
04/04/2012





## CHAIN OF CUSTODY FORMS

Work Order: 1203203

### Sample Receipt Checklist

Client: Eastern Analy Date & Time Received: 3-16-12 09:45 Date Logged In: 3-16-12 11:14  
 Project: Marrimack Station Received By: ALEXA BAHN Logged In By: ALEXA BAHN  
 SDG: \_\_\_\_\_ # of Coolers Received: 1 (024) FGS PM: LIZ SLSKA  
 Samples Arrived By: \_\_\_\_\_ Shipping Service \_\_\_\_\_ Courier \_\_\_\_\_ Hand \_\_\_\_\_ Other (specify) \_\_\_\_\_  
 Tracking/Airbill Number(s): 1E X46 599 01 9508 7221F

Cooler Information	Yes	No	NA	Comments
The coolers do not appear to be tampered with:	<input checked="" type="checkbox"/>			
Custody seals are present and intact:			<input checked="" type="checkbox"/>	
Custody seals signed by:			<input checked="" type="checkbox"/>	

Thermal Preservation:  Loose Ice     Gel/Blue Ice     None (Ambient)     Other (specify) \_\_\_\_\_

Thermometer ID: 315D    Correction Factor (CF): +0.3 degrees C

Cooler #	Temp	Cooler #	Temp	Cooler #	Temp
Cooler 1:	<u>2.2</u> °C	Cooler 6:	°C	Cooler 11:	°C
Cooler 2:	°C	Cooler 7:	°C	Cooler 12:	°C
Cooler 3:	°C	Cooler 8:	°C	Cooler 13:	°C
Cooler 4:	°C	Cooler 9:	°C	Cooler 14:	°C
Cooler 5:	°C	Cooler 10:	°C	Cooler 15:	°C

Chain of Custody  
 COC is present and includes the following information for each sample:

Sample ID/Sample Description:	Yes	No	NA	Comments
Date and Time of Sample Collection:	<input checked="" type="checkbox"/>			
Sampled By:	<input checked="" type="checkbox"/>			
Preservation Type:			<input checked="" type="checkbox"/>	
Requested Analyses:	<input checked="" type="checkbox"/>			
Required Signatures:	<input checked="" type="checkbox"/>			
Internal chain of custody required:			<input checked="" type="checkbox"/>	

Sample Condition/Integrity

Sample containers were received intact:	Yes	No	NA	Comments
Sample labels are present and legible:	<input checked="" type="checkbox"/>			<u>SEE BELOW</u>
Sample ID on container matches COC:	<input checked="" type="checkbox"/>			
Correct sample containers used for requested analyses:	<input checked="" type="checkbox"/>			
Samples received within holding time:	<input checked="" type="checkbox"/>			
Sample volume sufficient for requested analysis:	<input checked="" type="checkbox"/>			
Correct preservative used for requested analyses:	<input checked="" type="checkbox"/>			
pH of samples checked and within method requirements:			<input checked="" type="checkbox"/>	
If pH adjusted by laboratory, noted in logbook:	<input checked="" type="checkbox"/>			

Anomalies/Non-conformances: \* Mn added to sample "B-3683 SWWTF" per Client  
Cooler was leaking melted ice upon receipt. Inside bottles were  
surrounded by melted ice with a bag of half full still frozen ice.  
Water was inside innermost bag of sample "B-3564 Everparater."

Client Communication    Person Contacted: \_\_\_\_\_    Date/Time: \_\_\_\_\_    Method: \_\_\_\_\_  
 Discussion/Resolution: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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.



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

# CHAIN OF CUSTODY FORMS



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

Page 1 of 1

1203203

414 Pontius Ave. N. Seattle WA 98111  
 Phone: 206-622-6911  
 Fax: 206-622-6071  
 info@frontiergs.com  
 http://www.frontiergs.com

Client: <b>Edgerton Analytical, Inc.</b>		Contact: <b>Jeff Gustin</b>	
Address: <b>35 Cleaveland Ave</b>		Phone: <b>(206) 790-7100</b>	
Contact: <b>Neil Gustin</b>		E-mail: <b>neil@edgerton.com</b>	
Project Name: <b>Waterways &amp; Parks/10/11/12</b>		Contact: <b>Neil Gustin</b>	
Report To: <b>Steve</b>		Invoice To: <b>Edgerton Analytical</b>	
Address:		Address:	
Phone: <b>(206) 790-7100</b>		Phone: <b>(206) 790-7100</b>	
E-mail: <b>neil@edgerton.com</b>		E-mail: <b>jeff@frontiergs.com</b>	
FSS No. <b>10384</b>		FSS No. <b>10384</b>	
No. <b>1</b>		No. <b>1</b>	
Sample ID <b>Edgerton</b>		Sample ID <b>Edgerton</b>	
Date <b>10/12/12</b>		Date <b>10/12/12</b>	
Operator <b>Edgerton</b>		Operator <b>Edgerton</b>	
Matrix <b>Water</b>		Matrix <b>Water</b>	
Date & Time <b>10/12/12</b>		Date & Time <b>10/12/12</b>	
Field Filtered (Y/N) <b>-</b>		Field Filtered (Y/N) <b>-</b>	
Field Preserved (Y/N) <b>-</b>		Field Preserved (Y/N) <b>-</b>	
Total Moisture <b>-</b>		Total Moisture <b>-</b>	
Analysis Requested:		Analysis Requested:	
Date: <b>10/12/12</b>		Date: <b>10/12/12</b>	
TAT (business days) <b>20</b> (for TAT < 10 days, contact 1)		TAT (business days) <b>20</b> (for TAT < 10 days, contact 1)	
Saturday delivery? <b>Y</b> (if yes, please contact 1)		Saturday delivery? <b>Y</b> (if yes, please contact 1)	
EOD <b>Y</b> <input type="checkbox"/> <input checked="" type="checkbox"/> N		EOD <b>Y</b> <input type="checkbox"/> <input checked="" type="checkbox"/> N	
QA <input type="checkbox"/> Standard <input checked="" type="checkbox"/> High		QA <input type="checkbox"/> Standard <input checked="" type="checkbox"/> High	
Comments:		Comments:	
As Ash for GC/MS		As Ash for GC/MS	
Cu, Fe, Pb, Mg, Hg, Ni, Se, Ag, Tl, Zn, B, Cd, Mn, K		Cu, Fe, Pb, Mg, Hg, Ni, Se, Ag, Tl, Zn, B, Cd, Mn, K	
Received By: <b>URS</b>		Received By: <b>URS</b>	
Name: <b>URS</b>		Name: <b>URS</b>	
Organization: <b>URS</b>		Organization: <b>URS</b>	
Date & Time: <b>10/12/12</b>		Date & Time: <b>10/12/12</b>	
Tracking number: <b>12 X46 599 01 9508 7224</b>		Tracking number: <b>12 X46 599 01 9508 7224</b>	
By signing, you declare that you agree with FSS terms and conditions, and the you authorize FSS to perform the specified analyses.		By signing, you declare that you agree with FSS terms and conditions, and the you authorize FSS to perform the specified analyses.	
Customer Approval: <b>[Signature]</b>		Customer Approval: <b>[Signature]</b>	
Date: <b>10/12</b>		Date: <b>10/12</b>	

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.

Page 4 of 20  
 1203203 Final Report- SWWTF REV2  
 04/04/2012





## ANALYTICAL RESULTS

### SWWTF

Matrix: Water

Laboratory ID: 1203203-01

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Aluminum	371	22.0	198	µg/L	5	F203232	2C20001	03/19/12	EPA 200.8 Mod	
Arsenic	37.7	2.52	7.43	µg/L	5	F203232	2C20001	03/19/12	EPA 200.8 Mod	
Cadmium	2.48	0.205	0.990	µg/L	5	F203232	2C20001	03/19/12	EPA 200.8 Mod	
Chromium	53.2	0.45	4.95	µg/L	5	F203232	2C20001	03/19/12	EPA 200.8 Mod	
Copper	18.2	0.50	4.95	µg/L	5	F203232	2C20001	03/19/12	EPA 200.8 Mod	
Iron	1100	64.4	495	µg/L	5	F203232	2C20001	03/19/12	EPA 200.8 Mod	
Lead	ND	0.193	1.98	µg/L	5	F203232	2C20001	03/19/12	EPA 200.8 Mod	U
Manganese	7180	0.37	4.95	µg/L	5	F203232	2C20001	03/19/12	EPA 200.8 Mod	
Mercury	61.2	8.42	50.5	ng/L	100	F203288	2C22016	03/22/12	EPA 1631E	FB-1631
Molybdenum	2000	2.97	29.7	µg/L	50	F203260	2C22001	03/21/12	EPA 200.8 Mod	
Nickel	303	0.40	4.95	µg/L	5	F203232	2C20001	03/19/12	EPA 200.8 Mod	
Selenium	587	9.59	29.7	µg/L	5	F203232	2C20001	03/19/12	EPA 200.8 Mod	
Silver	ND	0.297	0.990	µg/L	5	F203232	2C20001	03/19/12	EPA 200.8 Mod	U
Zinc	77.5	0.81	9.90	µg/L	5	F203232	2C20001	03/19/12	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 6 of 20  
 1203203 Final Report- SWWTF REV2  
 04/04/2012



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

### MATRIX DUPLICATES/TRIPPLICATES

SOURCE: 1203203-01

Batch: F203288

Sequence: 2C22016

Preparation: BrCl Oxidation

Lab Number: F203288-DUP1

Analyte	Sample Concentration ng/L	Duplicate Concentration ng/L	MRL	% RPD	RPD Limit	Method	Notes
Mercury	61.16	58.48	50.5	4.48	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 7 of 20  
1203203 Final Report- SWWTF REV2  
04/04/2012



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

**SOURCE: 1203203-01**

Batch: F203232

Sequence: 2C20001

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203232-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Aluminum	370.7	1515.2	1853	97.8	70 - 130	EPA 200.8 Mod	
Chromium	53.16	70.707	127.0	104	70 - 130	EPA 200.8 Mod	
Manganese	7181	60.606	7231	82.1	70 - 130	EPA 200.8 Mod	
Iron	1098	5050.5	6090	98.8	70 - 130	EPA 200.8 Mod	
Nickel	302.5	40.404	342.5	98.8	70 - 130	EPA 200.8 Mod	
Copper	18.16	40.404	51.82	83.3	70 - 130	EPA 200.8 Mod	
Arsenic	37.70	151.52	190.4	101	70 - 130	EPA 200.8 Mod	
Selenium	587.1	303.03	929.7	113	70 - 130	EPA 200.8 Mod	
Silver	ND	15.152	10.99	72.5	70 - 130	EPA 200.8 Mod	
Cadmium	2.484	8.0808	9.508	86.9	70 - 130	EPA 200.8 Mod	
Lead	0.763	15.152	15.44	96.8	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Aluminum	1515.2	1826	96.1	1.45	70 - 130	20	EPA 200.8 Mod	
Chromium	70.707	128.8	107	1.38	70 - 130	20	EPA 200.8 Mod	
Manganese	60.606	7230	80.4	0.0140	70 - 130	20	EPA 200.8 Mod	
Iron	5050.5	6065	98.3	0.414	70 - 130	20	EPA 200.8 Mod	
Nickel	40.404	337.8	87.2	1.38	70 - 130	20	EPA 200.8 Mod	
Copper	40.404	51.40	82.3	0.807	70 - 130	20	EPA 200.8 Mod	
Arsenic	151.52	192.8	102	1.23	70 - 130	20	EPA 200.8 Mod	
Selenium	303.03	906.3	105	2.55	70 - 130	20	EPA 200.8 Mod	
Silver	15.152	10.75	70.9	2.19	70 - 130	20	EPA 200.8 Mod	
Cadmium	8.0808	9.347	84.9	1.70	70 - 130	20	EPA 200.8 Mod	
Lead	15.152	15.31	96.0	0.815	70 - 130	20	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 8 of 20  
 1203203 Final Report- SWWTF REV2  
 04/04/2012



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

**SOURCE: 1203203-01**

Batch: F203232

Sequence: 2C20001

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203232-MS/MSD3

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Aluminum	370.7	10000	10270	99.0	70 - 130	EPA 200.8 Mod	AS
Chromium	53.16	1000.0	1137	108	70 - 130	EPA 200.8 Mod	AS
Manganese	7181	1000.0	8207	103	70 - 130	EPA 200.8 Mod	AS
Iron	1098	5000.0	6185	102	70 - 130	EPA 200.8 Mod	AS
Nickel	302.5	1250.0	1433	90.5	70 - 130	EPA 200.8 Mod	AS
Copper	18.16	1250.0	1061	83.4	70 - 130	EPA 200.8 Mod	AS
Zinc	77.52	2500.0	1995	76.7	70 - 130	EPA 200.8 Mod	AS
Arsenic	37.70	1000.0	1073	104	70 - 130	EPA 200.8 Mod	AS
Selenium	587.1	1000.0	1530	94.3	70 - 130	EPA 200.8 Mod	AS
Silver	ND	50.000	36.90	73.8	70 - 130	EPA 200.8 Mod	AS
Cadmium	2.484	100.00	85.31	82.8	70 - 130	EPA 200.8 Mod	AS
Lead	0.763	250.00	250.5	99.9	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Aluminum	10000	10150	97.8	1.21	70 - 130	20	EPA 200.8 Mod	AS
Chromium	1000.0	1140	109	0.293	70 - 130	20	EPA 200.8 Mod	AS
Manganese	1000.0	8278	110	0.854	70 - 130	20	EPA 200.8 Mod	AS
Iron	5000.0	6243	103	0.937	70 - 130	20	EPA 200.8 Mod	AS
Nickel	1250.0	1441	91.1	0.525	70 - 130	20	EPA 200.8 Mod	AS
Copper	1250.0	1066	83.8	0.496	70 - 130	20	EPA 200.8 Mod	AS
Zinc	2500.0	1990	76.5	0.245	70 - 130	20	EPA 200.8 Mod	AS
Arsenic	1000.0	1094	106	1.93	70 - 130	20	EPA 200.8 Mod	AS
Selenium	1000.0	1554	96.7	1.55	70 - 130	20	EPA 200.8 Mod	AS
Silver	50.000	36.82	73.6	0.222	70 - 130	20	EPA 200.8 Mod	AS
Cadmium	100.00	83.94	81.5	1.62	70 - 130	20	EPA 200.8 Mod	AS
Lead	250.00	250.5	99.9	0.0263	70 - 130	20	EPA 200.8 Mod	AS

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*

Liz Siska, Project Manager



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

**SOURCE: 1203203-01RE3**

**Batch:** F203260

**Sequence:** 2C22001

**Preparation:** Closed Vessel Nitric Oven Digestion

**Lab Number:** F203260-MS/MSD3

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Molybdenum	1999	20.200	2041	206	70 - 130	EPA 200.8 Mod	QM-02

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Molybdenum	20.200	2041	207	0.0141	70 - 130	20	EPA 200.8 Mod	QM-02

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 10 of 20  
 1203203 Final Report- SWWTF REV2  
 04/04/2012





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

**SOURCE: 1203203-01RE3**

Batch: F203260

Sequence: 2C22001

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203260-MS/MSD6

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Molybdenum	1999	5000.0	7034	101	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Molybdenum	5000.0	7124	102	1.28	70 - 130	20	EPA 200.8 Mod	AS

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 11 of 20  
 1203203 Final Report- SWWTF REV2  
 04/04/2012



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

**SOURCE: 1203203-01**

Batch: F203288

Sequence: 2C22016

Preparation: BrCl Oxidation

Lab Number: F203288-MS/MSD1

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	61.16	255.00	309.6	97.4	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	255.00	261.1	78.4	17.0	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 12 of 20  
 1203203 Final Report- SWWTF REV2  
 04/04/2012



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

**SOURCE: 1203194-17**

**Batch: F203288**

**Sequence: 2C22016**

**Preparation: BrCl Oxidation**

**Lab Number: F203288-MS/MSD2**

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	142800	505000	627200	95.9	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	505000	632700	97.0	0.879	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



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

**RECOVERY AND RPD**

Batch: F203232

Sequence: 2C20001

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203232-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Aluminum	150.00	144.4	96.3	85 - 115	EPA 200.8 Mod	
Chromium	7.0000	6.54	93.4	85 - 115	EPA 200.8 Mod	
Manganese	6.0000	5.80	96.7	85 - 115	EPA 200.8 Mod	
Iron	500.00	461.0	92.2	85 - 115	EPA 200.8 Mod	
Nickel	4.0000	3.94	98.5	85 - 115	EPA 200.8 Mod	
Copper	4.0000	4.18	104	85 - 115	EPA 200.8 Mod	
Zinc	10.000	10.17	102	85 - 115	EPA 200.8 Mod	
Arsenic	15.000	14.45	96.3	85 - 115	EPA 200.8 Mod	
Selenium	30.000	29.75	99.2	85 - 115	EPA 200.8 Mod	
Molybdenum	2.0000	1.85	92.6	85 - 115	EPA 200.8 Mod	
Silver	1.5000	1.555	104	85 - 115	EPA 200.8 Mod	
Cadmium	0.80000	0.802	100	85 - 115	EPA 200.8 Mod	
Lead	1.5000	1.565	104	85 - 115	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Aluminum	150.00	142.4	94.9	1.40	85 - 115	20	EPA 200.8 Mod	
Chromium	7.0000	6.44	92.0	1.58	85 - 115	20	EPA 200.8 Mod	
Manganese	6.0000	5.75	95.8	0.920	85 - 115	20	EPA 200.8 Mod	
Iron	500.00	458.0	91.6	0.660	85 - 115	20	EPA 200.8 Mod	
Nickel	4.0000	3.94	98.5	0.00457	85 - 115	20	EPA 200.8 Mod	
Copper	4.0000	4.16	104	0.367	85 - 115	20	EPA 200.8 Mod	
Zinc	10.000	10.32	103	1.47	85 - 115	20	EPA 200.8 Mod	
Arsenic	15.000	14.40	96.0	0.305	85 - 115	20	EPA 200.8 Mod	
Selenium	30.000	28.67	95.6	3.69	85 - 115	20	EPA 200.8 Mod	
Molybdenum	2.0000	1.86	92.8	0.196	85 - 115	20	EPA 200.8 Mod	
Silver	1.5000	1.559	104	0.233	85 - 115	20	EPA 200.8 Mod	
Cadmium	0.80000	0.809	101	0.843	85 - 115	20	EPA 200.8 Mod	
Lead	1.5000	1.539	103	1.70	85 - 115	20	EPA 200.8 Mod	

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.*

Page 14 of 20  
 1203203 Final Report- SWWTF REV2  
 04/04/2012

Liz Siska, Project Manager



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

**RECOVERY AND RPD**

Batch: F203260

Sequence: 2C22001

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203260-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Molybdenum	2.0000	1.82	91.0	85 - 115	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Molybdenum	2.0000	1.86	93.0	2.13	85 - 115	20	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 15 of 20  
 1203203 Final Report- SWWTF REV2  
 04/04/2012



LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE

RECOVERY AND RPD

Batch: F203288

Sequence: 2C22016

Preparation: BrCl Oxidation

Lab Number: F203288-BS/BSD1

LCS Source: NIST 1641d

Analyte	Spike Added (ng/L)	LCS Concentration (ng/L)	LCS % Recovery	Recovery Limits	Method	Notes
Mercury	15.679	15.25	97.3	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	15.16	96.7	0.622	80 - 120	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 16 of 20  
 1203203 Final Report- SWWTF REV2  
 04/04/2012

## PREPARATION BLANKS

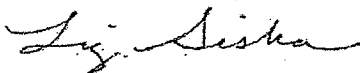
Instrument: ICPMS-6

Sequence: 2C20001

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F203232-BLK1	Aluminum	0.1	4.0	µg/L	F203232	EPA 200.8 Moc	U
F203232-BLK1	Chromium	-0.007	0.10	µg/L	F203232	EPA 200.8 Moc	U
F203232-BLK1	Manganese	0.002	0.10	µg/L	F203232	EPA 200.8 Moc	U
F203232-BLK1	Iron	-0.04	10.0	µg/L	F203232	EPA 200.8 Moc	U
F203232-BLK1	Nickel	0.005	0.10	µg/L	F203232	EPA 200.8 Moc	U
F203232-BLK1	Copper	0.01	0.10	µg/L	F203232	EPA 200.8 Moc	U
F203232-BLK1	Zinc	0.11	0.20	µg/L	F203232	EPA 200.8 Moc	U
F203232-BLK1	Arsenic	-0.009	0.15	µg/L	F203232	EPA 200.8 Moc	U
F203232-BLK1	Selenium	0.25	0.60	µg/L	F203232	EPA 200.8 Moc	U
F203232-BLK1	Molybdenum	0.01	0.06	µg/L	F203232	EPA 200.8 Moc	U
F203232-BLK1	Silver	-0.0009	0.020	µg/L	F203232	EPA 200.8 Moc	U
F203232-BLK1	Cadmium	0.002	0.020	µg/L	F203232	EPA 200.8 Moc	U
F203232-BLK1	Lead	0.024	0.040	µg/L	F203232	EPA 200.8 Moc	U

Frontier Global Sciences, Inc.



Liz Siska, Project Manager

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

Page 17 of 20  
1203203 Final Report-SWWTF REV2  
04/04/2012



### PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2C22001

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F203260-BLK1	Molybdenum	0.01	0.06	µg/L	F203260	EPA 200.8 Moc	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 18 of 20  
1203203 Final Report- SWWTF REV2  
04/04/2012





### PREPARATION BLANKS

Instrument: Hg-17

Sequence: 2C22016

Preparation: BrCl Oxidation

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F203288-BLK1	Mercury	0.07	0.50	ng/L	F203288	EPA 1631E	U
F203288-BLK2	Mercury	0.06	0.50	ng/L	F203288	EPA 1631E	U
F203288-BLK3	Mercury	0.06	0.50	ng/L	F203288	EPA 1631E	U
F203288-BLK4	Mercury	0.18	0.50	ng/L	F203288	EPA 1631E	U, QB-04

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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

Page 19 of 20  
1203203 Final Report- SWWTF REV2  
04/04/2012



## 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.
- FB-1631 Required equipment/field/filter blank not submitted by the client. The sample has been analyzed according to 1631E, but does not meet 1631E criteria
- 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

Frontier Global Sciences, Inc.

A handwritten signature in cursive script that reads "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.*

Page 20 of 20  
1203203 Final Report- SWWTF REV2  
04/04/2012





April 27, 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: Monthly Self Monitoring Report  
March 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 the attached Analytical Data Report to replace the report previously submitted on March 31, 2012. As outlined in the attached Analytical Data Report, total suspended solids (TSS) were initially detected at 43 milligrams per liter (mg/L). It is our opinion that dissolved solids interferences resulted in a falsely high positive value of 43 mg/L that was not representative of the treated effluent on that day of sampling. Consistent with Standard Methods for the Examination of Water and Wastewater, 21<sup>st</sup> Edition, TSS were reanalyzed by Method 2540D which prescribes "For samples high in dissolved solids thoroughly wash the filter to ensure removal of dissolved material." When the sample was rerun using the suggested rinsing technique, TSS was detected at 2 mg/L. The attached Analytical Data Report contains both analytical results. Our contract laboratory plans to use this methodology for all future TSS analyses.

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:tmd

04.0029307.00\work\sampling and reporting\reports\lowell\monthly reports\march 2012\final 29307 march rpt lrwu 042712.docx

Attachment: Analytical Data Report

**ANALYTICAL DATA REPORT**



**eastern analytical**

*professional laboratory services*

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



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 108078

Client Identification: Wastewater Analysis

Date Received: 3/2/2012

Report revision/reissue: Revision, replaces report dated 3/29/2012

Revision information: Per customer request, TSS has been rerun.

Dear Mr. Pepler:

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

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

Solid samples are reported on a dry weight basis, unless otherwise noted

< : "less than" followed by the reporting limit

> : "greater than" followed by the reporting limit

%R : % Recovery

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

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

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

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

Sincerely,

Lorraine Olashaw, Lab Director

4.5.12

Date

29

# of pages (excluding cover letter)



# SAMPLE CONDITIONS PAGE

EAI ID#: 108078

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

Client Designation: **Wastewater Analysis**

Temperature upon receipt (°C): **21**

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)
108078.01	Effluent Field Blank B-3621	3/2/12	3/2/12	aqueous		Adheres to Sample Acceptance Policy
108078.02	Final Effluent B-3625, B-3727, B-3722	3/2/12	3/2/12	aqueous		Adheres to Sample Acceptance Policy
108078.03	Final Effluent B-3625, B-3727, B-3722 Rerun	3/2/12	3/2/12	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





# LABORATORY REPORT

EAI ID#: 108078

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

Client Designation: **Wastewater Analysis**

Sample ID: Final Effluent B-3625, B-3727,  
B-3722

Lab Sample ID: 108078.02

Matrix: aqueous

Date Sampled: 3/2/12

Date Received: 3/2/12

Units: ug/l

Date of Analysis: 3/7/12

Analyst: BAM

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	< 1
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)	99 %R



# LABORATORY REPORT

EAI ID#: 108078

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

Client Designation: **Wastewater Analysis**

Sample ID: Final Effluent B-3625, B-3727,  
B-3722

Lab Sample ID: 108078.02

Matrix: aqueous

Date Sampled: 3/2/12

Date Received: 3/2/12

Units: ug/l

Date of Analysis: 3/7/12

Analyst: BAM

Method: 624

Dilution Factor: 1

Toluene-d8 (surr) 94 %R



# QC REPORT

EAI ID#: 108078

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

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Chloromethane	< 5	20 (99 %R)	20 (101 %R) (2 RPD)	3/7/2012	ug/l	0 - 273	20	624
Vinyl chloride	< 2	20 (102 %R)	21 (106 %R) (4 RPD)	3/7/2012	ug/l	0 - 251	20	624
Bromomethane	< 2	19 (93 %R)	21 (103 %R) (10 RPD)	3/7/2012	ug/l	0 - 242	20	624
Chloroethane	< 5	23 (113 %R)	22 (110 %R) (3 RPD)	3/7/2012	ug/l	14 - 230	20	624
Trichlorofluoromethane	< 5	22 (108 %R)	22 (108 %R) (0 RPD)	3/7/2012	ug/l	17 - 181	20	624
Acrolein	< 50	* < 50 (%R)	* < 50 (%R N/A) (RPD N/A)	3/7/2012	ug/l	40 - 160	20	624
Acetone	< 50	* < 50 (188 %R)	< 50 (114 %R) (49 RPD) !	3/7/2012	ug/l	40 - 160	20	624
1,1-Dichloroethene	< 1	19 (97 %R)	19 (95 %R) (2 RPD)	3/7/2012	ug/l	0 - 234	20	624
Methylene chloride	< 5	22 (110 %R)	22 (108 %R) (2 RPD)	3/7/2012	ug/l	0 - 221	20	624
Carbon disulfide	< 5	17 (85 %R)	17 (83 %R) (2 RPD)	3/7/2012	ug/l	70 - 130	20	624
Acrylonitrile	< 50	< 50 (109 %R)	< 50 (104 %R) (5 RPD)	3/7/2012	ug/l	40 - 160	20	624
Methyl-t-butyl ether(MTBE)	< 10	20 (114 %R)	20 (113 %R) (1 RPD)	3/7/2012	ug/l	70 - 130	20	624
trans-1,2-Dichloroethene	< 2	19 (96 %R)	19 (96 %R) (0 RPD)	3/7/2012	ug/l	54 - 156	20	624
Vinyl acetate	< 10	30 (137 %R)	30 (134 %R) (2 RPD)	3/7/2012	ug/l	40 - 160	20	624
1,1-Dichloroethane	< 2	21 (106 %R)	21 (104 %R) (2 RPD)	3/7/2012	ug/l	59 - 155	20	624
cis-1,2-Dichloroethene	< 2	20 (101 %R)	20 (99 %R) (2 RPD)	3/7/2012	ug/l	70 - 130	20	624
2-Butanone(MEK)	< 10	30 (130 %R)	20 (100 %R) (26 RPD) !	3/7/2012	ug/l	40 - 160	20	624
Chloroform	< 2	21 (104 %R)	21 (104 %R) (0 RPD)	3/7/2012	ug/l	51 - 138	20	624
1,1,1-Trichloroethane	< 2	22 (111 %R)	22 (110 %R) (1 RPD)	3/7/2012	ug/l	52 - 162	20	624
Carbon tetrachloride	< 2	24 (122 %R)	24 (121 %R) (1 RPD)	3/7/2012	ug/l	70 - 140	20	624
Benzene	< 1	20 (100 %R)	20 (100 %R) (0 RPD)	3/7/2012	ug/l	37 - 151	20	624
1,2-Dichloroethane	< 2	22 (111 %R)	22 (110 %R) (1 RPD)	3/7/2012	ug/l	49 - 155	20	624
Trichloroethene	< 2	21 (105 %R)	20 (102 %R) (3 RPD)	3/7/2012	ug/l	71 - 157	20	624
1,2-Dichloropropane	< 2	21 (103 %R)	21 (103 %R) (0 RPD)	3/7/2012	ug/l	0 - 210	20	624
Bromodichloromethane	< 2	22 (110 %R)	22 (110 %R) (0 RPD)	3/7/2012	ug/l	35 - 155	20	624
2-Chloroethylvinylether	< 2	29 (143 %R)	29 (144 %R) (1 RPD)	3/7/2012	ug/l	0 - 305	20	624
4-Methyl-2-pentanone(MIBK)	< 10	20 (107 %R)	20 (105 %R) (2 RPD)	3/7/2012	ug/l	40 - 160	20	624
cis-1,3-Dichloropropene	< 2	23 (115 %R)	23 (115 %R) (0 RPD)	3/7/2012	ug/l	0 - 227	20	624
Toluene	< 1	20 (98 %R)	20 (98 %R) (0 RPD)	3/7/2012	ug/l	47 - 150	20	624
trans-1,3-Dichloropropene	< 2	22 (110 %R)	22 (108 %R) (2 RPD)	3/7/2012	ug/l	17 - 183	20	624
1,1,2-Trichloroethane	< 2	19 (95 %R)	19 (94 %R) (1 RPD)	3/7/2012	ug/l	52 - 150	20	624
2-Hexanone	< 10	20 (120 %R)	20 (101 %R) (17 RPD)	3/7/2012	ug/l	40 - 160	20	624
Tetrachloroethene	< 2	20 (102 %R)	20 (102 %R) (0 RPD)	3/7/2012	ug/l	64 - 148	20	624
Dibromochloromethane	< 2	22 (110 %R)	22 (109 %R) (1 RPD)	3/7/2012	ug/l	53 - 149	20	624
Chlorobenzene	< 2	20 (100 %R)	20 (99 %R) (1 RPD)	3/7/2012	ug/l	37 - 160	20	624
Ethylbenzene	< 1	20 (102 %R)	20 (101 %R) (1 RPD)	3/7/2012	ug/l	37 - 162	20	624
mp-Xylene	< 1	40 (99 %R)	40 (100 %R) (1 RPD)	3/7/2012	ug/l	70 - 130	20	624
o-Xylene	< 1	20 (100 %R)	20 (100 %R) (0 RPD)	3/7/2012	ug/l	70 - 130	20	624
Styrene	< 1	20 (102 %R)	20 (102 %R) (0 RPD)	3/7/2012	ug/l	70 - 130	20	624
Bromoform	< 2	19 (96 %R)	19 (95 %R) (1 RPD)	3/7/2012	ug/l	45 - 169	20	624
1,1,2,2-Tetrachloroethane	< 2	19 (94 %R)	19 (97 %R) (3 RPD)	3/7/2012	ug/l	46 - 157	20	624
1,3-Dichlorobenzene	< 1	20 (102 %R)	21 (106 %R) (4 RPD)	3/7/2012	ug/l	59 - 156	20	624
1,4-Dichlorobenzene	< 1	20 (102 %R)	21 (105 %R) (3 RPD)	3/7/2012	ug/l	18 - 190	20	624
1,2-Dichlorobenzene	< 1	20 (102 %R)	21 (105 %R) (3 RPD)	3/7/2012	ug/l	18 - 190	20	624
4-Bromofluorobenzene (surr)	93 %R	98 %R	99 %R	3/7/2012	% Rec	70 - 130		624



# QC REPORT

EAI ID#: 108078

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

Client Designation: **Wastewater Analysis**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
1,2-Dichlorobenzene-d4 (surr)	99 %R	105 %R	103 %R	3/7/2012	% Rec	70 - 130		624
Toluene-d8 (surr)	94 %R	96 %R	96 %R	3/7/2012	% 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.  
\*! Flagged analyte recoveries deviated from the QA/QC limits. Any impact to data is addressed below.



# LABORATORY REPORT

EAI ID#: 108078

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

Client Designation: **Wastewater Analysis**

---

Sample ID:	Final Effluent B-3625, B-3727, B-3722
Lab Sample ID:	108078.02
Matrix:	aqueous
Date Sampled:	3/2/12
Date Received:	3/2/12
Units:	mg/L
Date of Extraction/Prep:	3/12/12
Date of Analysis:	3/12/12
Analyst:	LAS
Method:	1664A
Dilution Factor:	1
Oil & Grease (HEM)	< 5



# QC REPORT

EAI ID#: 108078

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

Batch ID: 734574-36453/A031212OG1661

Client Designation: **Wastewater Analysis**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Oil & Grease (HEM)	< 5	36 (90 %R)	36 (90 %R) (0 RPD)	3/12/2012	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#: 108078

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

Client Designation: **Wastewater Analysis**

Sample ID: Final Effluent  
B-3625, B-3727,  
B-3722

Lab Sample ID: 108078.02

Matrix: aqueous

Date Sampled: 3/2/12

Date Received: 3/2/12

Solids Suspended	43
Solids Dissolved	24000
Chloride	11000
Cyanide Total	0.02
BOD	< 6
COD	170
pH	7.1

Units	Analysis			Method	Analyst
	Date	Time			
mg/L	3/05/12	14:00		2540D	DLS
mg/L	3/05/12	15:00		2540C	DLS
mg/L	3/09/12	11:01		4500CIE	DLS
mg/L	3/06/12	9:30		4500CNE	KJR
mg/L	3/02/12	16:30		5210B	SKC
mg/L	3/05/12	10:25		H8000	KJR
SU	3/02/12	16:00		4500H+B	NZ



# LABORATORY REPORT

EAI ID#: 108078

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

Client Designation: **Wastewater Analysis**

**Sample ID:** Final Effluent  
B-3625, B-3727,  
B-3722 Rerun

**Lab Sample ID:** 108078.03

**Matrix:** aqueous

**Date Sampled:** 3/2/12

**Date Received:** 3/2/12

**Solids Suspended** 2

Units	Analysis		Method	Analyst
	Date	Time		
mg/L	4/03/12	13:30	2540D	DLS

Solids Suspended: The sample was reanalyzed past the hold time at the request of the client, with an additional 1000 mLs of rinse water.





# QC REPORT

EAI ID#: 108078

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

Client Designation: **Wastewater Analysis**

Parameter Name	Blank	LCS	LCSD	Units	Date of Analysis	Limits	RPD	Method
Solids Suspended	< 5	100 (101 %R)		NA mg/L	3/5/12	90 - 110	20	2540D
Solids Suspended	< 2	92 (92 %R)	93 (93 %R) (1 RPD)	mg/L	4/3/12	90 - 110	20	2540D
Solids Dissolved	< 5	920 (92 %R)		NA mg/L	3/5/12	85 - 115	20	2540C
Chloride	< 1	26 (102 %R)	26 (102 %R) (0 RPD)	mg/L	3/9/12	90 - 110	20	4500CIE
Cyanide Total	< 0.02	0.26 (104 %R)		NA mg/L	3/6/12	85 - 115	20	4500CNE
BOD	< 6	360 (91 %R)	380 (96 %R) (5 RPD)	mg/L	3/2/12	84 - 115	20	5210B
COD	< 10	110 (109 %R)	110 (106 %R) (3 RPD)	mg/L	3/5/12	85 - 115	20	H8000
pH		6.0 (100 %R)	6.0 (99 %R) (1 RPD)	SU	3/2/12	5.95 - 6.07	10	4500H+B

Parameter Name	MS/MSD Parent ID	MS/MSD Parent	Matrix Spike	MSD	Units	Date of Analysis	Limits	RPD	Method
Solids Suspended		NA	NA	NA	mg/L	3/5/12		20	2540D
Solids Suspended		NA	NA	NA	mg/L	4/3/12		20	2540D
Solids Dissolved		NA	NA	NA	mg/L	3/5/12		20	2540C
Chloride		NA	NA	NA	mg/L	3/9/12		20	4500CIE
Cyanide Total	108078.02	0.02	0.29 (109 %R)	0.28 (104 %R) (5 RPD)	mg/L	3/6/12	75-125	20	4500CNE
BOD	108053.01	< 6	44 (110 %R)	NA	mg/L	3/2/12	75-125	20	5210B
COD	108069.07	60	110 (101 %R)	110 (89 %R) (13 RPD)	mg/L	3/5/12	80-120	20	H8000
pH		NA	NA	NA	SU	3/2/12		10	4500H+B

Parameter Name	Duplicate Parent ID	Duplicate Parent	Duplicate	Units	Date of Analysis	RPD	Method
Solids Suspended	108054.01	290	320 (10 RPD)	mg/L	3/5/12	20	2540D
Solids Suspended	108826.01	17	19 (14 RPD)	mg/L	4/3/12	20	2540D
Solids Dissolved	108078.02	24000	21000 (10 RPD)	mg/L	3/5/12	20	2540C
Chloride		NA	NA	mg/L	3/9/12	20	4500CIE
Cyanide Total		NA	NA	mg/L	3/6/12	20	4500CNE
BOD	108053.01	< 6	< 6 (RPD N/A)	mg/L	3/2/12	20	5210B
COD		NA	NA	mg/L	3/5/12	20	H8000
pH	108078.02	7.1	7.1 (0 RPD)	SU	3/2/12	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.



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

27 March 2012

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

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

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

Sincerely,

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

Liz Siska  
Project Manager



## ANALYTICAL REPORT FOR SAMPLES

Laboratory: Frontier Global Sciences, Inc.

SDG:

Client: Eastern Analytical, Inc

Project: Merrimack Station 200.8

Sample ID	Lab ID	Matrix	Date Sampled	Date Received
B-3621 Effluent Field Blank	1203055-01	Water	02-Mar-12 11:00	05-Mar-12 08:51
Final Effluent	1203055-02	Water	02-Mar-12 11:00	05-Mar-12 08:51

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.*

Page 1 of 17  
1203055 Revised Report  
03/27/2012

Liz Siska, Project Manager



## CASE NARRATIVE

Revised Report 03/26/2012- Client requested Pb be added to the work order.

### SAMPLE RECEIPT

Samples were received at Frontier Global Sciences (FGS) on March 15th, 2012. The samples were received intact, on-ice with temperatures measured at 13.2 degrees Celsius.

### SAMPLE PREPARATION AND ANALYSIS

Samples were prepared and analyzed for total metals in accordance with EPA Method 200.8 (modified).

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

### ANALYTICAL ISSUES

The Zn result for Effluent Field Blank (1203055-01) was greater than the MRL, the sample was re-digested and re-analyzed for confirmation.

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.

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

*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.*

Page 2 of 17  
1203055 Revised Report  
03/27/2012

---

Liz Siska, Project Manager



### CHAIN OF CUSTODY FORMS



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

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

1203055 Page 1 of 1

Client: <u>Eastern Analytical Inc</u>		Contact: <u>Jeff Gyal</u>		FGS PM: <u>Liz Siska</u>							
Address: <u>25 Cheney Drive Concord NH 03301</u>		Phone: <u>238-5725</u> Fax: <u>238-4591</u>		Date: <u>3/2/2012</u>							
Project Name: <u>Merrimack Station</u>		E-mail: <u>jeff.gyal@ealabs.com</u>		TAT (business days): <u>20 (std)</u> <u>15 (10) 5 4 3 2 24 hrs.</u> (For TAT < 10 days, contact PM. Surcharges apply for expedited TAT)							
Report To: <u>Same</u>		Contract/PO:		Saturday delivery? <input type="checkbox"/> Y <input checked="" type="checkbox"/> N (if yes, please contact PM)							
Address:		Invoice To: <u>Same PO 27842</u>		EDD: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N							
Phone: Fax:		Phone: Fax:		QA <input type="checkbox"/> Standard <input type="checkbox"/> High							
E-mail: <u>CustomerService@ealabs.com</u>		E-mail: <u>CustomerService@ealabs.com</u>		Comments							
No.	Engraved Bottle ID	Sample ID	# of Bottles	Matrix	Date & Time	Sampled By	Field Filtered (Y/N)	Field Preserved: HNO <sub>3</sub> , HCl, BrCl, Other (%)	Total Metals	Analyses Requested	Comments
1	B-3621	Effluent Field Blank	1	AQ	3/2/2012 11:00	GT/SB	-	-			Metals include: Se, Hg, As, Fe, Cd, Cr, Cu, Ni, Mn, Ag, Zn
2											
3	B-3625 B-3727 B-3722	Final Effluent	3	WW	2/2/2012 11:00	GT/SB	-	-			2008 Prod FGD WW
4											
5											
6											
7											
8											
9											
10											
11											
12											
For Laboratory Use Only		Matrix Codes:		Relinquished By:		Received By:		Received By:			
COC Seal: <u>N/A</u>	Comments: <u>7110 3650</u>	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		<u>[Signature]</u>		<u>[Signature]</u>					
Cooler Temp: <u>6.2°C</u>				Name: <u>Jim Blackwell</u>		Name: <u>Deany Zink</u>		Name:			
Carrier: <u>UPS</u>				Organization: <u>Eastern Analytical Inc</u>		Organization: <u>EA</u>		Organization:			
VTSR: <u>0851</u>				Date & Time: <u>3/2/2012 13:50</u>		Date & Time: <u>05/12/13:50</u>		Date & Time:			
# of Coolers:				Tracking number: <u>1Z X46 599 15 9152 8312</u>							
Sample Disposal: <input type="checkbox"/> Return (shipping fees may apply) <input type="checkbox"/> Standard Disposal - 30 Days after report <input type="checkbox"/> 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: <u>[Signature]</u> Date: <u>3/2/12</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.

[Signature]



## CHAIN OF CUSTODY FORMS

FGS Work Order: 1205054, 1203055

### Sample Receipt Checklist

Client: Eastern Analytical Date & Time Received: 3/5/12 0851 Date Logged In: 3/5/12  
 Project: Merrimack Station Received By: Owen Valentine Logged In By: Owen Valentine  
 SDG: \_\_\_\_\_ # of Coolers Received: 1 FGS PM: Liz  
 Samples Arrived By: UPS Shipping Service Courier \_\_\_\_\_ Hand \_\_\_\_\_ Other (specify) \_\_\_\_\_  
 Tracking/Airbill Number(s): 1Z x 46 599 B 952 8312

Cooler Information	Yes	No	NA	Comments
The coolers do not appear to be tampered with:	<input checked="" type="checkbox"/>			
Custody seals are present and intact:		<input checked="" type="checkbox"/>		
Custody seals signed by:			<input checked="" type="checkbox"/>	

Thermal Preservation: \_\_\_\_\_ Loose Ice \_\_\_\_\_  Gel/Blue Ice \_\_\_\_\_ Nones (Ambient) \_\_\_\_\_ Other (specify) \_\_\_\_\_

Thermometer ID: 3150 Correction Factor (CF): + 0.3 degrees C

Cooler 1: <u>13.2</u> °C	Cooler 6: _____ °C	Cooler 11: _____ °C
Cooler 2: _____ °C	Cooler 7: _____ °C	Cooler 12: _____ °C
Cooler 3: _____ °C	Cooler 8: _____ °C	Cooler 13: _____ °C
Cooler 4: _____ °C	Cooler 9: _____ °C	Cooler 14: _____ °C
Cooler 5: _____ °C	Cooler 10: _____ °C	Cooler 15: _____ °C

#### Chain of Custody

COC is present and includes the following information for each sample:

Chain of Custody	Yes	No	NA	Comments
Sample ID/Sample Description:	<input checked="" type="checkbox"/>			
Date and Time of Sample Collection:	<input checked="" type="checkbox"/>			
Sampled By:	<input checked="" type="checkbox"/>			
Preservation Type:			<input checked="" type="checkbox"/>	
Requested Analyses:	<input checked="" type="checkbox"/>			
Required Signatures:	<input checked="" type="checkbox"/>			
Internal chain of custody required:		<input checked="" type="checkbox"/>		

#### Sample Condition/Integrity

Sample Condition/Integrity	Yes	No	NA	Comments
Sample containers were received intact:	<input checked="" type="checkbox"/>			
Sample labels are present and legible:	<input checked="" type="checkbox"/>			
Sample ID on container matches COC:	<input checked="" type="checkbox"/>			
Correct sample containers used for requested analyses:	<input checked="" type="checkbox"/>			
Samples received within holding time:	<input checked="" type="checkbox"/>			
Sample volume sufficient for requested analysis:				<input checked="" type="checkbox"/>
Correct preservative used for requested analyses:			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
pH of samples checked and within method requirements:			<input checked="" type="checkbox"/>	
if pH adjusted by laboratory, noted in logbook:	<input checked="" type="checkbox"/>			

Anomalies/Non-conformances:

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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

Discussion/Resolution:

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Frontier Global Sciences, Inc.

*Liz Siska*

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.



## ANALYTICAL RESULTS

### B-3621 Effluent Field Blank

Matrix: Water

Laboratory ID: 1203055-01

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Arsenic	ND	0.05	0.15	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Cadmium	ND	0.004	0.020	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	QM-12, U
Chromium	ND	0.009	0.10	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Copper	ND	0.01	0.10	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Iron	ND	1.3	10.0	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Lead	ND	0.004	0.040	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Mercury	ND	0.08	0.50	ng/L	1	F203099	2C08017	03/08/12	EPA 1631E	U
Molybdenum	ND	0.006	0.06	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Nickel	ND	0.008	0.10	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Selenium	ND	0.19	0.60	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Silver	ND	0.006	0.020	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Zinc	<b>0.50</b>	0.02	0.20	µg/L	1	F203108	2C12010	03/09/12	EPA 200.8 Mod	

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.*

Page 5 of 17  
 1203055 Revised Report  
 03/27/2012

Liz Siska, Project Manager



## ANALYTICAL RESULTS

### Final Effluent

Matrix: Water

Laboratory ID: 1203055-02

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Arsenic	8.12	1.02	3.00	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	
Cadmium	ND	0.083	0.400	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	QM-12, U
Chromium	ND	0.18	2.00	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Copper	ND	0.20	2.00	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Iron	ND	26.0	200	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Lead	ND	0.078	0.800	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Mercury	17.2	0.83	5.00	ng/L	10	F203099	2C08017	03/08/12	EPA 1631E	
Molybdenum	419	0.12	1.20	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	
Nickel	29.1	0.16	2.00	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	
Selenium	109	3.88	12.0	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	
Silver	ND	0.120	0.400	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	U
Zinc	ND	0.33	4.00	µg/L	20	F203108	2C12010	03/09/12	EPA 200.8 Mod	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.*

Page 6 of 17  
 1203055 Revised Report  
 03/27/2012

Liz Siska, Project Manager





### MATRIX DUPLICATES/TRIPPLICATES

SOURCE: 1203016-05

Batch: F203099

Sequence: 2C08017

Preparation: BrCl Oxidation

Lab Number: F203099-DUP1

Analyte	Sample Concentration ng/L	Duplicate Concentration ng/L	MRL	% RPD	RPD Limit	Method	Notes
Mercury	2.48	2.44	1.01	1.48	24	EPA 1631E	

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.*

Page 7 of 17  
1203055 Revised Report  
03/27/2012

Liz Siska, Project Manager



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

**SOURCE: 1203014-01**

**Batch:** F203099

**Sequence:** 2C08017

**Preparation:** BrCl Oxidation

**Lab Number:** F203099-MS/MSD1

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	7.38	25.500	32.34	97.9	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	25.500	32.44	98.3	0.314	71 - 125	24	EPA 1631E	

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.*



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

**SOURCE: 1203055-02**

Batch: F203099

Sequence: 2C08017

Preparation: BrCl Oxidation

Lab Number: F203099-MS/MSD2

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	17.16	45.450	63.67	102	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	45.450	61.91	98.4	2.81	71 - 125	24	EPA 1631E	

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.*

Page 9 of 17  
 1203055 Revised Report  
 03/27/2012

Liz Siska, Project Manager



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

**SOURCE: 1203016-01**

Batch: F203099

Sequence: 2C08017

Preparation: BrCl Oxidation

Lab Number: F203099-MS/MSD3

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	19.64	51.000	70.79	100	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	51.000	72.43	104	2.30	71 - 125	24	EPA 1631E	

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.*

Page 10 of 17  
 1203055 Revised Report  
 03/27/2012

Liz Siska, Project Manager



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

**SOURCE: 1203055-02**

Batch: F203108

Sequence: 2C12010

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203108-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Chromium	0.31	7.0700	7.78	106	70 - 130	EPA 200.8 Mod	
Iron	ND	505.00	522.4	103	70 - 130	EPA 200.8 Mod	
Nickel	29.14	4.0400	30.61	36.6	70 - 130	EPA 200.8 Mod	QM-02
Copper	0.41	4.0400	4.22	94.2	70 - 130	EPA 200.8 Mod	
Zinc	2.75	10.100	18.93	160	70 - 130	EPA 200.8 Mod	QM-07
Arsenic	8.12	15.150	25.50	115	70 - 130	EPA 200.8 Mod	
Selenium	109.3	30.300	136.9	91.2	70 - 130	EPA 200.8 Mod	
Molybdenum	418.6	2.0200	416.5	-105	70 - 130	EPA 200.8 Mod	QM-02
Silver	ND	1.5150	1.450	95.7	70 - 130	EPA 200.8 Mod	
Cadmium	0.379	0.80800	1.335	118	70 - 130	EPA 200.8 Mod	
Lead	ND	1.5150	1.636	108	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Chromium	7.0700	7.64	104	1.78	70 - 130	20	EPA 200.8 Mod	
Iron	505.00	521.1	103	0.257	70 - 130	20	EPA 200.8 Mod	
Nickel	4.0400	32.86	92.1	7.07	70 - 130	20	EPA 200.8 Mod	QM-02
Copper	4.0400	4.31	96.6	2.26	70 - 130	20	EPA 200.8 Mod	
Zinc	10.100	11.07	82.4	52.4	70 - 130	20	EPA 200.8 Mod	QM-07, QR-08
Arsenic	15.150	25.03	112	1.87	70 - 130	20	EPA 200.8 Mod	
Selenium	30.300	134.1	82.0	2.07	70 - 130	20	EPA 200.8 Mod	
Molybdenum	2.0200	416.8	-89.3	0.0753	70 - 130	20	EPA 200.8 Mod	QM-02
Silver	1.5150	1.361	89.8	6.34	70 - 130	20	EPA 200.8 Mod	
Cadmium	0.80800	1.278	111	4.34	70 - 130	20	EPA 200.8 Mod	
Lead	1.5150	1.487	98.2	9.53	70 - 130	20	EPA 200.8 Mod	

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.*



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

**SOURCE: 1203055-02**

Batch: F203108

Sequence: 2C12010

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203108-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Chromium	0.31	404.00	425.2	105	70 - 130	EPA 200.8 Mod	AS
Iron	ND	2020.0	2097	104	70 - 130	EPA 200.8 Mod	AS
Nickel	29.14	505.00	530.8	99.3	70 - 130	EPA 200.8 Mod	AS
Copper	0.41	505.00	465.9	92.2	70 - 130	EPA 200.8 Mod	AS
Zinc	2.75	1010.0	898.3	88.7	70 - 130	EPA 200.8 Mod	AS
Arsenic	8.12	404.00	429.4	104	70 - 130	EPA 200.8 Mod	AS
Selenium	109.3	404.00	534.6	105	70 - 130	EPA 200.8 Mod	AS
Molybdenum	418.6	202.00	623.4	101	70 - 130	EPA 200.8 Mod	AS
Silver	ND	20.200	18.02	89.2	70 - 130	EPA 200.8 Mod	AS
Cadmium	0.379	40.400	37.46	91.8	70 - 130	EPA 200.8 Mod	AS
Lead	ND	101.00	98.25	97.3	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Chromium	404.00	425.2	105	0.00134	70 - 130	20	EPA 200.8 Mod	AS
Iron	2020.0	2093	104	0.171	70 - 130	20	EPA 200.8 Mod	AS
Nickel	505.00	531.3	99.4	0.0878	70 - 130	20	EPA 200.8 Mod	AS
Copper	505.00	469.4	92.9	0.751	70 - 130	20	EPA 200.8 Mod	AS
Zinc	1010.0	898.8	88.7	0.0641	70 - 130	20	EPA 200.8 Mod	AS
Arsenic	404.00	439.2	107	2.27	70 - 130	20	EPA 200.8 Mod	AS
Selenium	404.00	497.7	96.1	7.14	70 - 130	20	EPA 200.8 Mod	AS
Molybdenum	202.00	616.1	97.8	1.18	70 - 130	20	EPA 200.8 Mod	AS
Silver	20.200	17.84	88.3	1.01	70 - 130	20	EPA 200.8 Mod	AS
Cadmium	40.400	37.27	91.3	0.512	70 - 130	20	EPA 200.8 Mod	AS
Lead	101.00	98.44	97.5	0.193	70 - 130	20	EPA 200.8 Mod	AS

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*

Liz Siska, Project Manager



**LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE**  
**RECOVERY AND RPD**

Batch: F203099

Sequence: 2C08017

Preparation: BrCl Oxidation

Lab Number: F203099-BS/BSD1

LCS Source: LCS

Analyte	Spike Added (ng/L)	LCS Concentration (ng/L)	LCS % Recovery	Recovery Limits	Method	Notes
Mercury	15.679	15.62	99.6	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	15.74	100	0.806	80 - 120	24	EPA 1631E	

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.*



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

**RECOVERY AND RPD**

Batch: F203108

Sequence: 2C12010

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203108-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Chromium	7.0000	6.67	95.3	85 - 115	EPA 200.8 Mod	
Iron	500.00	468.9	93.8	85 - 115	EPA 200.8 Mod	
Nickel	4.0000	4.07	102	85 - 115	EPA 200.8 Mod	
Copper	4.0000	4.22	106	85 - 115	EPA 200.8 Mod	
Zinc	10.000	10.42	104	85 - 115	EPA 200.8 Mod	
Arsenic	15.000	14.44	96.3	85 - 115	EPA 200.8 Mod	
Selenium	30.000	29.84	99.5	85 - 115	EPA 200.8 Mod	
Molybdenum	2.0000	1.80	90.0	85 - 115	EPA 200.8 Mod	
Silver	1.5000	1.476	98.4	85 - 115	EPA 200.8 Mod	
Cadmium	0.80000	0.918	115	85 - 115	EPA 200.8 Mod	
Lead	1.5000	1.542	103	85 - 115	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Chromium	7.0000	6.57	93.9	1.48	85 - 115	20	EPA 200.8 Mod	
Iron	500.00	465.2	93.0	0.801	85 - 115	20	EPA 200.8 Mod	
Nickel	4.0000	4.00	99.9	1.86	85 - 115	20	EPA 200.8 Mod	
Copper	4.0000	4.17	104	1.17	85 - 115	20	EPA 200.8 Mod	
Zinc	10.000	10.17	102	2.38	85 - 115	20	EPA 200.8 Mod	
Arsenic	15.000	14.25	95.0	1.37	85 - 115	20	EPA 200.8 Mod	
Selenium	30.000	30.40	101	1.84	85 - 115	20	EPA 200.8 Mod	
Molybdenum	2.0000	1.78	88.8	1.40	85 - 115	20	EPA 200.8 Mod	
Silver	1.5000	1.458	97.2	1.26	85 - 115	20	EPA 200.8 Mod	
Cadmium	0.80000	0.933	117	1.56	85 - 115	20	EPA 200.8 Mod	QM-12
Lead	1.5000	1.522	101	1.31	85 - 115	20	EPA 200.8 Mod	

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*

Page 14 of 17  
 1203055 Revised Report  
 03/27/2012

Liz Siska, Project Manager





### PREPARATION BLANKS

Instrument: ICPMS-3

Sequence: 2C08017

Preparation: BrCl Oxidation

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F203099-BLK1	Mercury	0.003	0.50	ng/L	F203099	EPA 1631E	U
F203099-BLK2	Mercury	0.009	0.50	ng/L	F203099	EPA 1631E	U
F203099-BLK3	Mercury	0.05	0.50	ng/L	F203099	EPA 1631E	U
F203099-BLK4	Mercury	0.03	0.50	ng/L	F203099	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.*

Page 15 of 17  
1203055 Revised Report  
03/27/2012

Liz Siska, Project Manager



## PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2C12010

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F203108-BLK1	Chromium	-0.01	0.10	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Iron	-0.1	10.0	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Nickel	0.01	0.10	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Copper	0.008	0.10	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Zinc	0.08	0.20	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Arsenic	-0.06	0.15	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Selenium	0.03	0.60	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Molybdenum	0.007	0.06	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Silver	-0.003	0.020	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Cadmium	-0.0003	0.020	µg/L	F203108	EPA 200.8 Moc	U
F203108-BLK1	Lead	0.005	0.040	µg/L	F203108	EPA 200.8 Moc	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.*

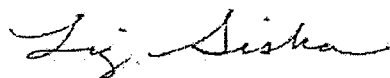
Page 16 of 17  
 1203055 Revised Report  
 03/27/2012

Liz Siska, Project Manager

## Notes and Definitions

- U Analyte included in the analysis, but not detected
- QR-08 The RPD value for the MS/MSD was outside of acceptance limits. Batch QC acceptable based on matrix duplicate and/or LCS/LCSD RPD values within control limits.
- QM-12 Initial or continuing calibration verification and/or blank spike/blank spike duplicate recoveries above upper control limits. All reported sample concentrations were below the reporting limit.
- QM-07 The spike recovery was outside control limits for the MS and/or MSD. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
- QM-02 The MS and/or MSD recoveries outside acceptance limits, due to spike concentration less than 1 times the sample concentration. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
- QB-04 The blank was preserved to 2% BrCl rather than 1%. The control limit for blanks preserved to greater than 1% BrCl is the preservation percentage multiplied by the MRL.
- AS This MS and/or MSD is an analytical spike and/or an analytical spike duplicate.
- DET Analyte Detected
- MDL Minimum Detection Limit
- MRL Minimum Reporting Limit
- ND Analyte Not Detected at or above the reporting limit
- wet Sample results reported on a wet weight basis
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- RSD Relative Standard Deviation

Frontier Global Sciences, Inc.



Liz Siska, Project Manager

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

Page 17 of 17  
1203055 Revised Report  
03/27/2012



**VIA EMAIL**

April 27, 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 Data Report  
Treated Wastewater  
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. is pleased to submit the attached **Analytical Data Report** for sampling conducted on January 5, 2012, previously submitted on January 16, 2012. In anticipation of extremely low metals concentrations, the previous analysis was performed by Environmental Protection Agency (EPA) Method 1638 which was specifically developed by EPA to enable metals detection by Inductively Coupled Plasma/Mass Spectrometry (ICP-MS) at extremely low concentrations in ambient water when used in conjunction with sampling Method 1669: Sampling Ambient Water for Determination of Trace Metals at EPA Water Quality Criteria Levels.

Total metals were reanalyzed using Method 200.8MOD within the sample hold time, in accordance with Chapter 272-64 of the Code of Ordinances, City of Lowell, Massachusetts, requiring that all analysis be performed in accordance with 40 CFR 136. This method is specified in the United States EPA draft Standard Operating Procedure (SOP) for trace metals analysis of flue gas desulfurization (FGD) wastewater. The SOP is discussed below.

**ANALYTICAL DISCUSSION**

FGD wastewater requires specialized analytical techniques to overcome matrix interference for certain analysis of trace metals. To assist you in evaluating this issue further, we offer an excerpt below from the EPA web site and a link to their draft SOP for trace metals analysis of FGD wastewater 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 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 an 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 SOP. 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](http://water.epa.gov/scitech/wastetech/guide/upload/steam_draft_sop.pdf), EPA May 2011.

Considering that specialized analytical techniques are necessary to overcome matrix interference for certain analysis of trace metals in FDG wastewater, we recommend any analysis on FGD wastewater be conducted in accordance with the EPA draft SOP for trace metals analysis of FGD wastewater.

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.

A handwritten signature in black ink that reads 'Ronald A. Breton'.

Ronald A. Breton, P.E.  
Principal

A handwritten signature in black ink that reads 'Michael P. North'.

Michael P. North, P.E.  
Consultant/Reviewer

RAB/MPN:tmd

\\GZAMAN\Jobs\04\Jobs\0029300\04.0029307.00\Work\SAMPLING AND REPORTING\REPORTS\Lowell\Monthly Reports\Jan 2012\final 04.0029307.00 Lowell 010512 rerun 042712.docx

Attachment: Analytical Data Report

**ANALYTICAL DATA REPORT**



# eastern analytical

*professional laboratory services*

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



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 107555  
Client Identification: Merrimack Station  
Date Received: 1/5/2012

Dear Mr. Pepler :

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

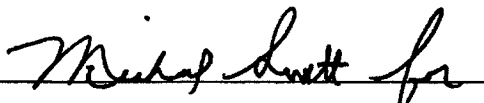
Analysis: Subcontract - Metals Method 200.8  
(Al, Sb, Ba, Be, Cd, Ca, Cr, Cu, Fe, Pb, Mn, Mo, Na, Ni, Ag, Tl, Zn, As, Se & Hg)

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

4/25/12  
Date

29  
# of pages (excluding cover letter)

**REVISED**  
Pg 4/25/12





# SAMPLE CONDITIONS PAGE

EAI ID#: 107555

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

Client Designation: **Merrimack Station**

**Temperature upon receipt (°C): 4.7**

**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)
107555.01	Treat Tank Eff Composite	1/5/12	1/5/12	aqueous		Adheres to Sample Acceptance Policy
107555.02	Treat Tank Eff Grab	1/5/12	1/5/12	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*



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

25 April 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,

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

Liz Siska  
Project Manager



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

## ANALYTICAL REPORT FOR SAMPLES

**Laboratory:** Frontier Global Sciences, Inc.

**SDG:**

**Client:** Eastern Analytical, Inc

**Project:** Merrimack Station

Sample ID	Lab ID	Matrix	Date Sampled	Date Received
Treat Tank Eff Composite	1201073-01	Water	05-Jan-12 10:00	06-Jan-12 09:50
Treat Tank Eff Grab	1201073-02	Water	05-Jan-12 08:00	06-Jan-12 09:50

Frontier Global Sciences, Inc.

A handwritten signature in cursive script that reads "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.*

Page 1 of 26  
1201073 Final Report  
04/25/2012



## CASE NARRATIVE

Revised Report 4/25/12:

Per client request Boron was removed from report.

Revised Report 3/28/12:

Per client request samples were prepared and analyzed for total metals in accordance with EPA 200.8 (modified).

### SAMPLE RECEIPT

Samples were received at Frontier Global Sciences (FGS) on January 6th, 2012. The samples were received intact, on-ice with temperatures measured at 3.4 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 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, Inc.

A handwritten signature in cursive script that reads "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.*



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

### CHAIN OF CUSTODY FORMS

1201073

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

424 Fourth Ave. N. Seattle WA 98105  
 Phone: 206-622-6969  
 Fax: 206-622-6976  
 email: info@fgs.com  
 http://www.FrontierGS.com



Page 1 of 1

1201073

Client: <u>Alona Bahua</u>		Contact: <u>Alona Bahua</u>		Project: <u>1201073</u>	
Address: <u>1201073</u>		Phone: <u>206-622-6969</u>		Fax: <u>206-622-6976</u>	
Order Number: <u>1201073</u>		Contract ID: <u>1201073</u>		Analysis Requested:	
Report To: <u>Alona Bahua</u>		Date of Test: <u>04/25/12</u>		<input type="checkbox"/> PCBs <input type="checkbox"/> PAHs <input type="checkbox"/> Metals <input type="checkbox"/> Volatiles <input type="checkbox"/> Other: <u>Asbestos</u>	
Address: <u>1201073</u>		Address: <u>1201073</u>		<input type="checkbox"/> Lead <input type="checkbox"/> Cadmium <input type="checkbox"/> Mercury <input type="checkbox"/> Copper <input type="checkbox"/> Zinc <input type="checkbox"/> Nickel <input type="checkbox"/> Manganese <input type="checkbox"/> Chromium <input type="checkbox"/> Selenium <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Cobalt <input type="checkbox"/> Silver <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Boron <input type="checkbox"/> Fluorine <input type="checkbox"/> Chlorine <input type="checkbox"/> Bromine <input type="checkbox"/> Iodine <input type="checkbox"/> Phosphorus <input type="checkbox"/> Sulfur <input type="checkbox"/> Nitrogen <input type="checkbox"/> Oxygen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen	
Phone: <u>206-622-6969</u>		Phone: <u>206-622-6969</u>		<input type="checkbox"/> Lead <input type="checkbox"/> Cadmium <input type="checkbox"/> Mercury <input type="checkbox"/> Copper <input type="checkbox"/> Zinc <input type="checkbox"/> Nickel <input type="checkbox"/> Manganese <input type="checkbox"/> Chromium <input type="checkbox"/> Selenium <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Cobalt <input type="checkbox"/> Silver <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Boron <input type="checkbox"/> Fluorine <input type="checkbox"/> Chlorine <input type="checkbox"/> Bromine <input type="checkbox"/> Iodine <input type="checkbox"/> Phosphorus <input type="checkbox"/> Sulfur <input type="checkbox"/> Nitrogen <input type="checkbox"/> Oxygen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen	
E-mail: <u>alona@alona.com</u>		E-mail: <u>alona@alona.com</u>		<input type="checkbox"/> Lead <input type="checkbox"/> Cadmium <input type="checkbox"/> Mercury <input type="checkbox"/> Copper <input type="checkbox"/> Zinc <input type="checkbox"/> Nickel <input type="checkbox"/> Manganese <input type="checkbox"/> Chromium <input type="checkbox"/> Selenium <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Cobalt <input type="checkbox"/> Silver <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Boron <input type="checkbox"/> Fluorine <input type="checkbox"/> Chlorine <input type="checkbox"/> Bromine <input type="checkbox"/> Iodine <input type="checkbox"/> Phosphorus <input type="checkbox"/> Sulfur <input type="checkbox"/> Nitrogen <input type="checkbox"/> Oxygen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen	
NO. Engraved Bottle ID		Sample ID		# of Bottles	
1		1		1	
2		2		1	
3		3		1	
4		4		1	
5		5		1	
6		6		1	
7		7		1	
8		8		1	
9		9		1	
10		10		1	
11		11		1	
12		12		1	
13		13		1	
14		14		1	
15		15		1	
16		16		1	
17		17		1	
18		18		1	
19		19		1	
20		20		1	
21		21		1	
22		22		1	
23		23		1	
24		24		1	
25		25		1	
26		26		1	
27		27		1	
28		28		1	
29		29		1	
30		30		1	
31		31		1	
32		32		1	
33		33		1	
34		34		1	
35		35		1	
36		36		1	
37		37		1	
38		38		1	
39		39		1	
40		40		1	
41		41		1	
42		42		1	
43		43		1	
44		44		1	
45		45		1	
46		46		1	
47		47		1	
48		48		1	
49		49		1	
50		50		1	
51		51		1	
52		52		1	
53		53		1	
54		54		1	
55		55		1	
56		56		1	
57		57		1	
58		58		1	
59		59		1	
60		60		1	
61		61		1	
62		62		1	
63		63		1	
64		64		1	
65		65		1	
66		66		1	
67		67		1	
68		68		1	
69		69		1	
70		70		1	
71		71		1	
72		72		1	
73		73		1	
74		74		1	
75		75		1	
76		76		1	
77		77		1	
78		78		1	
79		79		1	
80		80		1	
81		81		1	
82		82		1	
83		83		1	
84		84		1	
85		85		1	
86		86		1	
87		87		1	
88		88		1	
89		89		1	
90		90		1	
91		91		1	
92		92		1	
93		93		1	
94		94		1	
95		95		1	
96		96		1	
97		97		1	
98		98		1	
99		99		1	
100		100		1	

Received by: A-B2 ALONA BAHUA, FGS, 1-6-12, 11:07

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.



## ANALYTICAL RESULTS

### Treat Tank Eff Composite

Matrix: Water

Laboratory ID: 1201073-01

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Aluminum	ND	8.9	80.0	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	U
Antimony	0.408	0.092	0.400	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	
Barium	240	0.54	4.00	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	
Beryllium	ND	0.454	1.20	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	U
Cadmium	ND	0.083	0.400	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	U
Calcium	5010000	16200	200000	µg/L	5000	F203271	2C22005	03/22/12	EPA 200.8 Mod	
Chromium	ND	0.18	2.00	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	U
Copper	ND	0.20	2.00	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	U
Iron	ND	26.0	200	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	U
Lead	ND	0.078	0.800	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	U
Manganese	280	0.15	2.00	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	
Molybdenum	134	0.12	1.20	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	
Nickel	9.79	0.16	2.00	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	
Silver	ND	0.120	0.400	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	U
Sodium	259000	23	400	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	
Thallium	5.56	0.250	1.00	µg/L	100	F203314	2C25005	03/25/12	EPA 200.8 Mod	
Zinc	ND	0.33	4.00	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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



## ANALYTICAL RESULTS

### Treat Tank Eff Grab

Matrix: Water

Laboratory ID: 1201073-02

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Arsenic	8.51	1.02	3.00	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	
Mercury	10.5	0.34	2.02	ng/L	4	F201063	2A09010	01/09/12	EPA 1631E	FB-1631
Selenium	68.9	3.88	12.0	µg/L	20	F203271	2C22005	03/22/12	EPA 200.8 Mod	

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



### MATRIX DUPLICATES/TRIPPLICATES

SOURCE: 1201073-02

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-DUP1

Analyte	Sample Concentration ng/L	Duplicate Concentration ng/L	MRL	% RPD	RPD Limit	Method	Notes
Mercury	10.48	10.54	2.02	0.617	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

*The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*





**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1201073-02**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-MS/MSD1

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	10.48	20.400	31.36	102	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	20.400	27.08	81.4	14.7	71 - 125	24	EPA 1631E	

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



**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1112278-02**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-MS/MSD2

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	7.61	20.400	27.86	99.2	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	20.400	28.37	102	1.82	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

*The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1201029-01**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-MS/MSD3

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	5.34	10.200	15.58	100	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	14.07	85.6	10.2	71 - 125	24	EPA 1631E	

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



**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1201030-02**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-MS/MSD4

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	5.54	10.200	14.82	91.0	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	14.61	89.0	1.40	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

*The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1201073-01RE3**

Batch: F203271

Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203271-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Calcium	5013000	1515.0	4802000	-13900	70 - 130	EPA 200.8 Mod	QM-02

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Calcium	1515.0	4943000	-4600	2.89	70 - 130	20	EPA 200.8 Mod	QM-02

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

*The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1201073-01RE4**

Batch: F203271

Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203271-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Beryllium	0.507	2.0200	2.442	95.8	70 - 130	EPA 200.8 Mod	
Sodium	258800	505.00	257700	-213	70 - 130	EPA 200.8 Mod	QM-02
Aluminum	52.9	151.50	202.3	98.6	70 - 130	EPA 200.8 Mod	
Chromium	0.57	7.0700	8.04	106	70 - 130	EPA 200.8 Mod	
Manganese	280.5	6.0600	283.4	47.6	70 - 130	EPA 200.8 Mod	QM-02
Iron	ND	505.00	520.0	103	70 - 130	EPA 200.8 Mod	
Nickel	9.79	4.0400	14.11	107	70 - 130	EPA 200.8 Mod	
Copper	0.55	4.0400	4.34	93.9	70 - 130	EPA 200.8 Mod	
Zinc	0.40	10.100	8.42	79.4	70 - 130	EPA 200.8 Mod	
Arsenic	10.30	15.150	24.18	91.6	70 - 130	EPA 200.8 Mod	
Selenium	63.40	30.300	89.73	86.9	70 - 130	EPA 200.8 Mod	
Molybdenum	133.8	2.0200	136.7	142	70 - 130	EPA 200.8 Mod	QM-02
Silver	ND	1.5150	1.388	91.6	70 - 130	EPA 200.8 Mod	
Cadmium	0.332	0.80800	1.105	95.6	70 - 130	EPA 200.8 Mod	
Antimony	0.408	0.80800	1.259	105	70 - 130	EPA 200.8 Mod	
Barium	239.7	10.100	249.5	96.8	70 - 130	EPA 200.8 Mod	
Lead	ND	1.5150	1.542	102	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	2.0200	2.561	102	4.74	70 - 130	20	EPA 200.8 Mod	
Sodium	505.00	257100	-336	0.243	70 - 130	20	EPA 200.8 Mod	QM-02
Aluminum	151.50	203.4	99.3	0.564	70 - 130	20	EPA 200.8 Mod	
Chromium	7.0700	7.73	101	3.85	70 - 130	20	EPA 200.8 Mod	
Manganese	6.0600	285.2	76.9	0.625	70 - 130	20	EPA 200.8 Mod	
Iron	505.00	518.7	103	0.242	70 - 130	20	EPA 200.8 Mod	
Nickel	4.0400	13.81	99.5	2.13	70 - 130	20	EPA 200.8 Mod	
Copper	4.0400	4.19	90.2	3.47	70 - 130	20	EPA 200.8 Mod	
Zinc	10.100	9.16	86.8	8.49	70 - 130	20	EPA 200.8 Mod	
Arsenic	15.150	22.25	78.9	8.31	70 - 130	20	EPA 200.8 Mod	
Selenium	30.300	94.00	101	4.64	70 - 130	20	EPA 200.8 Mod	
Molybdenum	2.0200	136.6	137	0.0771	70 - 130	20	EPA 200.8 Mod	QM-02

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



**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1201073-01RE4**

Batch: F203271

Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203271-MS/MSD2

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	1.5150	1.387	91.5	0.0874	70 - 130	20	EPA 200.8 Mod	
Cadmium	0.80800	1.061	90.2	4.03	70 - 130	20	EPA 200.8 Mod	
Antimony	0.80800	1.274	107	1.21	70 - 130	20	EPA 200.8 Mod	
Barium	10.100	251.4	116	0.781	70 - 130	20	EPA 200.8 Mod	
Lead	1.5150	1.534	101	0.525	70 - 130	20	EPA 200.8 Mod	

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



**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1201073-01RE3**

Batch: F203271

Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203271-MS/MSD3

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Calcium	5013000	10100000	15120000	100	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Calcium	10100000	16140000	110	6.53	70 - 130	20	EPA 200.8 Mod	AS

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





**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1201073-01RE4**

Batch: F203271

Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203271-MS/MSD4

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Beryllium	0.507	20.200	20.41	98.5	70 - 130	EPA 200.8 Mod	AS
Sodium	258800	40400	292900	84.5	70 - 130	EPA 200.8 Mod	AS
Aluminum	52.9	4040.0	3956	96.6	70 - 130	EPA 200.8 Mod	AS
Chromium	0.57	404.00	430.1	106	70 - 130	EPA 200.8 Mod	AS
Manganese	280.5	404.00	704.2	105	70 - 130	EPA 200.8 Mod	AS
Iron	ND	2020.0	2121	105	70 - 130	EPA 200.8 Mod	AS
Nickel	9.79	505.00	511.2	99.3	70 - 130	EPA 200.8 Mod	AS
Copper	0.55	505.00	475.4	94.0	70 - 130	EPA 200.8 Mod	AS
Zinc	0.40	1010.0	907.4	89.8	70 - 130	EPA 200.8 Mod	AS
Arsenic	10.30	404.00	431.7	104	70 - 130	EPA 200.8 Mod	AS
Selenium	63.40	404.00	468.8	100	70 - 130	EPA 200.8 Mod	AS
Molybdenum	133.8	202.00	338.1	101	70 - 130	EPA 200.8 Mod	AS
Silver	ND	20.200	18.50	91.6	70 - 130	EPA 200.8 Mod	AS
Cadmium	0.332	40.400	39.37	96.6	70 - 130	EPA 200.8 Mod	AS
Antimony	0.408	20.200	20.91	102	70 - 130	EPA 200.8 Mod	AS
Barium	239.7	808.00	1056	101	70 - 130	EPA 200.8 Mod	AS
Lead	ND	101.00	99.32	98.3	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	20.200	20.07	96.8	1.71	70 - 130	20	EPA 200.8 Mod	AS
Sodium	40400	292600	83.7	0.114	70 - 130	20	EPA 200.8 Mod	AS
Aluminum	4040.0	3954	96.6	0.0362	70 - 130	20	EPA 200.8 Mod	AS
Chromium	404.00	428.7	106	0.337	70 - 130	20	EPA 200.8 Mod	AS
Manganese	404.00	694.4	102	1.40	70 - 130	20	EPA 200.8 Mod	AS
Iron	2020.0	2077	103	2.11	70 - 130	20	EPA 200.8 Mod	AS
Nickel	505.00	512.6	99.6	0.276	70 - 130	20	EPA 200.8 Mod	AS
Copper	505.00	470.7	93.1	0.997	70 - 130	20	EPA 200.8 Mod	AS
Zinc	1010.0	905.9	89.6	0.166	70 - 130	20	EPA 200.8 Mod	AS
Arsenic	404.00	429.9	104	0.419	70 - 130	20	EPA 200.8 Mod	AS
Selenium	404.00	468.2	100	0.141	70 - 130	20	EPA 200.8 Mod	AS
Molybdenum	202.00	336.5	100	0.473	70 - 130	20	EPA 200.8 Mod	AS

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



**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1201073-01RE4**

Batch: F203271

Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203271-MS/MSD4

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	20.200	18.95	93.8	2.42	70 - 130	20	EPA 200.8 Mod	AS
Cadmium	40.400	39.33	96.5	0.104	70 - 130	20	EPA 200.8 Mod	AS
Antimony	20.200	21.07	102	0.736	70 - 130	20	EPA 200.8 Mod	AS
Barium	808.00	1058	101	0.205	70 - 130	20	EPA 200.8 Mod	AS
Lead	101.00	98.77	97.8	0.549	70 - 130	20	EPA 200.8 Mod	AS

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

*The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1201073-01RE6**

Batch: F203314

Sequence: 2C25005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203314-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Thallium	5.563	0.40400	5.875	77.3	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Thallium	0.40400	5.880	78.5	0.0859	70 - 130	20	EPA 200.8 Mod	

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



**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1201073-01RE6**

Batch: F203314

Sequence: 2C25005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203314-MS/MSD4

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Thallium	5.563	101.00	103.3	96.8	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Thallium	101.00	103.7	97.1	0.341	70 - 130	20	EPA 200.8 Mod	AS

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

*The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



**LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE**

**RECOVERY AND RPD**

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-BS/BSD1

LCS Source: Nist 1641d

Analyte	Spike Added (ng/L)	LCS Concentration (ng/L)	LCS % Recovery	Recovery Limits	Method	Notes
Mercury	15.679	15.50	98.8	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	15.95	102	2.89	80 - 120	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

*The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



**LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE**

**RECOVERY AND RPD**

Batch: F203271

Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203271-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Beryllium	2.0000	1.930	96.5	85 - 115	EPA 200.8 Mod	
Sodium	500.00	499	99.8	85 - 115	EPA 200.8 Mod	
Aluminum	150.00	146.0	97.3	85 - 115	EPA 200.8 Mod	
Calcium	1500.0	1528	102	85 - 115	EPA 200.8 Mod	
Chromium	7.0000	6.57	93.9	85 - 115	EPA 200.8 Mod	
Manganese	6.0000	5.86	97.6	85 - 115	EPA 200.8 Mod	
Iron	500.00	475.3	95.1	85 - 115	EPA 200.8 Mod	
Nickel	4.0000	4.01	100	85 - 115	EPA 200.8 Mod	
Copper	4.0000	4.18	105	85 - 115	EPA 200.8 Mod	
Zinc	10.000	10.33	103	85 - 115	EPA 200.8 Mod	
Arsenic	15.000	14.37	95.8	85 - 115	EPA 200.8 Mod	
Selenium	30.000	29.66	98.9	85 - 115	EPA 200.8 Mod	
Molybdenum	2.0000	1.81	90.5	85 - 115	EPA 200.8 Mod	
Silver	1.5000	1.517	101	85 - 115	EPA 200.8 Mod	
Cadmium	0.80000	0.781	97.6	85 - 115	EPA 200.8 Mod	
Antimony	0.80000	0.815	102	85 - 115	EPA 200.8 Mod	
Barium	10.000	9.69	96.9	85 - 115	EPA 200.8 Mod	
Lead	1.5000	1.597	106	85 - 115	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	2.0000	1.949	97.4	0.955	85 - 115	20	EPA 200.8 Mod	
Sodium	500.00	500	100	0.216	85 - 115	20	EPA 200.8 Mod	
Aluminum	150.00	148.5	99.0	1.71	85 - 115	20	EPA 200.8 Mod	
Calcium	1500.0	1544	103	1.03	85 - 115	20	EPA 200.8 Mod	
Chromium	7.0000	6.67	95.3	1.48	85 - 115	20	EPA 200.8 Mod	
Manganese	6.0000	5.96	99.4	1.75	85 - 115	20	EPA 200.8 Mod	
Iron	500.00	485.2	97.0	2.06	85 - 115	20	EPA 200.8 Mod	
Nickel	4.0000	4.02	101	0.246	85 - 115	20	EPA 200.8 Mod	

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



**LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE**

**RECOVERY AND RPD**

Batch: F203271

Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203271-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Copper	4.0000	4.28	107	2.24	85 - 115	20	EPA 200.8 Mod	
Zinc	10.000	10.39	104	0.570	85 - 115	20	EPA 200.8 Mod	
Arsenic	15.000	14.52	96.8	0.977	85 - 115	20	EPA 200.8 Mod	
Selenium	30.000	30.15	101	1.66	85 - 115	20	EPA 200.8 Mod	
Molybdenum	2.0000	1.82	91.0	0.564	85 - 115	20	EPA 200.8 Mod	
Silver	1.5000	1.502	100	1.03	85 - 115	20	EPA 200.8 Mod	
Cadmium	0.80000	0.828	103	5.85	85 - 115	20	EPA 200.8 Mod	
Antimony	0.80000	0.808	101	0.848	85 - 115	20	EPA 200.8 Mod	
Barium	10.000	9.86	98.6	1.77	85 - 115	20	EPA 200.8 Mod	
Lead	1.5000	1.620	108	1.42	85 - 115	20	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

*The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



**LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE**

**RECOVERY AND RPD**

Batch: F203314

Sequence: 2C25005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F203314-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Thallium	0.40000	0.396	98.9	85 - 115	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Thallium	0.40000	0.391	97.8	1.12	85 - 115	20	EPA 200.8 Mod	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

*The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*





### PREPARATION BLANKS

Instrument: Hg-17

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F201063-BLK1	Mercury	-0.009	0.50	ng/L	F201063	EPA 1631E	U
F201063-BLK2	Mercury	-0.006	0.50	ng/L	F201063	EPA 1631E	U
F201063-BLK3	Mercury	-0.02	0.50	ng/L	F201063	EPA 1631E	U
F201063-BLK4	Mercury	0.03	0.50	ng/L	F201063	EPA 1631E	U, QB-04
F201063-BLK5	Mercury	0.11	0.52	ng/L	F201063	EPA 1631E	U, QB-06

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

*The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



### PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2C22005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F203271-BLK1	Beryllium	0.00008	0.060	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Sodium	2	20	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Aluminum	-0.04	4.0	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Calcium	1	40	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Chromium	-0.02	0.10	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Manganese	0.01	0.10	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Iron	-0.02	10.0	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Nickel	0.004	0.10	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Copper	0.003	0.10	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Zinc	0.007	0.20	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Arsenic	-0.06	0.15	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Selenium	-0.02	0.60	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Molybdenum	0.01	0.06	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Silver	-0.0005	0.020	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Cadmium	0.004	0.020	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Antimony	0.002	0.020	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Barium	0.01	0.20	µg/L	F203271	EPA 200.8 Moc	U
F203271-BLK1	Lead	0.010	0.040	µg/L	F203271	EPA 200.8 Moc	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

*The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



11720 North Creek Parkway North, Suite 400  
Bothell, WA 98011  
Ph: 425-686-1996  
Fx: 425-686-3096

### PREPARATION BLANKS

Instrument: ICPMS-3

Sequence: 2C25005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F203314-BLK1	Thallium	0.0007	0.010	µg/L	F203314	EPA 200.8 Mo	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

*The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



## 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-06 The blank was preserved to 5% BrCl rather than 1%. The control limit for blanks preserved to greater than 1% BrCl is the preservation percentage multiplied by the MRL.
- 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.
- FB-1631 Required equipment/field/filter blank not submitted by the client. The sample has been analyzed according to 1631E, but does not meet 1631E criteria
- 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

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

*The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*











January 16, 2012  
File No. 04.0029307.00



Mr. Thomas Neforas  
Laboratory Manager  
City of Concord  
125 Hall Street  
Concord, New Hampshire 03301

Re: Industrial Wastewater Discharge Monitoring  
Public Service of New Hampshire (PSNH)  
Merrimack Station  
Bow, New Hampshire

380 Harvey Road  
Manchester  
New Hampshire  
03103-3347  
603-623-3600  
FAX 603-624-9463  
www.gza.com

Dear Tom:

On behalf of PSNH, GZA GeoEnvironmental, Inc. is pleased to submit the attached Analytical Report from PSNH's technologically advanced wastewater treatment system (WWTS). The WWTS has now been operating in accordance with the design criteria for several weeks. The attached analytical results obtained from sampling on January 5, 2012 are representative of the Flue Gas Desulfurization (FGD) treated wastewater generated. The characteristics of the treated wastewater are expected to be consistent going forward.

In consideration of available representative analytical data, we respectfully request that the City accept the attached analytical report to satisfy the Baseline Monitoring required prior to the first discharge as established in PSNH's Permit to Discharge Industrial Wastewater Transported Waste.

#### **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 the Environmental Protection Agency's (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. Standard Operating Procedure: Inductively Coupled Plasma/Mass Spectrometry for Trace Element Analysis in Flue Gas Desulfurization Wastewaters (30 pp, 174K)

We trust that this submittal adequately address your informational needs. Should you have any questions, please contact me at 232-8744.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

A handwritten signature in black ink that reads "Ronald A. Breton". The signature is written in a cursive, flowing style.

Ronald A. Breton, P.E.  
Principal

RAB/tmd

p:\04\jobs\0029300s\04.0029307.00\work\sampling and reporting\reports\final 29307.00 cover letters 011612.docx

Attachment(s)

**SUMMARY ANALYTICAL DATA**  
Public Service Company of New Hampshire  
Merrimack Station  
Bow, New Hampshire

PARAMETER	RESULTS (mg/L) 1/05/2012
Alkalinity	180
Aluminum	0.0411
Ammonia	0.92
Antimony	0.000520
Arsenic	0.00498
Barium	0.300
Beryllium	0.000522
BOD	< 6
Cadmium	0.000207
Calcium	5,050
Chloride	11,000
Chlorine (Total Residual)	< 0.05
Chromium (T)	< 0.00050
COD	130
Copper	< 0.00050
Cyanide (T)	0.02
Fluoride	10
Iron	< 0.050
Lead	< 0.000200
Manganese	0.293
Mercury	0.0000105
Molybdenum	0.140
Nitrate	100
Nickel	0.00803
O&G	< 5
pH	7.3
Selenium	0.074
Silver	< 0.000100
Sodium	277.4
Sulfate	1,200
Sulfide	< 0.1
Sulfite	< 2
TDS	21,000
Thallium	0.00664
TSS	14
TTO	ND (1)
Zinc	< 0.001
VOC EPA 624	(2)
Semi VOCs 625	ND (3)
Phenolic Compounds	< 0.3
PCBs	ND (4)

NOTES:

1. No TTO compounds were detected above 0.01 mg/L.
2. One compound was detected by Method 624: Toluene at 2 µg/L.
3. Semi VOCs were not detected by Method 625 above detection limits (1 µg/L and 5 µg/L depending on parameter and 50 µg/L for benzoic acid).
4. PCB compounds analyzed by method 608 were not detected at concentrations greater than 0.3 µg/L.

Arthur Auclair  
Northeast Utilities  
97 River Road  
Bow, NH 03304



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 106677  
Client Identification: Merrimack Station  
Date Received: 1/5/2012

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](http://www.eailabs.com) for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

- Solid samples are reported on a dry weight basis, unless otherwise noted
- < : "less than" followed by the reporting limit
- > : "greater than" followed by the reporting limit
- %R : % Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

  
Lorraine Olashaw, Lab Director

1.13.12  
Date

44  
# of pages (excluding cover letter)



# SAMPLE CONDITIONS PAGE

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Temperature upon receipt (°C): **4.7**

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)
106677.01	Treat Tank Eff Composite	1/5/12	1/5/12	aqueous		Adheres to Sample Acceptance Policy
106677.02	Treat Tank Eff Grab	1/5/12	1/5/12	aqueous		Adheres to Sample Acceptance Policy
106677.03	Treat Tank Eff Grab	1/5/12	1/5/12	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



# LABORATORY REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Sample ID: Treat Tank Eff Grab

Lab Sample ID: 106677.02  
Matrix: aqueous  
Date Sampled: 1/5/12  
Date Received: 1/5/12  
Units: ug/l  
Date of Analysis: 1/6/12  
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) 98 %R  
1,2-Dichlorobenzene-d4 (surr) 90 %R  
Toluene-d8 (surr) 100 %R



# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**Client Designation: **Merrimack Station**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Chloromethane	< 5	19 (97 %R)	21 (105 %R) (8 RPD)	1/6/2012	ug/l	0 - 273	20	624
Vinyl chloride	< 2	18 (91 %R)	20 (101 %R) (10 RPD)	1/6/2012	ug/l	0 - 251	20	624
Bromomethane	< 2	21 (105 %R)	23 (113 %R) (7 RPD)	1/6/2012	ug/l	0 - 242	20	624
Chloroethane	< 5	19 (95 %R)	20 (101 %R) (6 RPD)	1/6/2012	ug/l	14 - 230	20	624
Trichlorofluoromethane	< 5	17 (84 %R)	18 (88 %R) (5 RPD)	1/6/2012	ug/l	17 - 181	20	624
Acrolein	< 50	< 50 (%R N/A)	< 50 (%R) ( RPD)	1/6/2012	ug/l			624
Acetone	< 50	< 50 (78 %R)	< 50 (90 %R) (14 RPD)	1/6/2012	ug/l			624
1,1-Dichloroethene	< 1	17 (83 %R)	18 (89 %R) (7 RPD)	1/6/2012	ug/l	0 - 234	20	624
Methylene chloride	< 5	18 (88 %R)	19 (93 %R) (6 RPD)	1/6/2012	ug/l	0 - 221	20	624
Carbon disulfide	< 5	17 (%R)	19 (%R) ( RPD)	1/6/2012	ug/l			624
Acrylonitrile	< 50	< 50 (%R)	< 50 (%R) ( RPD)	1/6/2012	ug/l			624
Methyl-t-butyl ether(MTBE)	< 10	20 (%R)	20 (%R) ( RPD)	1/6/2012	ug/l			624
trans-1,2-Dichloroethene	< 2	18 (89 %R)	18 (92 %R) (3 RPD)	1/6/2012	ug/l	54 - 156	20	624
Vinyl acetate	< 10	30 (%R)	30 (%R) ( RPD)	1/6/2012	ug/l			624
1,1-Dichloroethane	< 2	19 (93 %R)	20 (98 %R) (5 RPD)	1/6/2012	ug/l	59 - 155	20	624
cis-1,2-Dichloroethene	< 2	19 (%R)	20 (%R) ( RPD)	1/6/2012	ug/l			624
2-Butanone(MEK)	< 10	20 (%R)	20 (%R) ( RPD)	1/6/2012	ug/l			624
Chloroform	< 2	19 (94 %R)	20 (99 %R) (5 RPD)	1/6/2012	ug/l	51 - 138	20	624
1,1,1-Trichloroethane	< 2	18 (91 %R)	19 (97 %R) (6 RPD)	1/6/2012	ug/l	52 - 162	20	624
Carbon tetrachloride	< 2	18 (91 %R)	19 (95 %R) (4 RPD)	1/6/2012	ug/l	70 - 140	20	624
Benzene	< 1	19 (97 %R)	20 (102 %R) (5 RPD)	1/6/2012	ug/l	37 - 151	20	624
1,2-Dichloroethane	< 2	18 (91 %R)	19 (94 %R) (3 RPD)	1/6/2012	ug/l	49 - 155	20	624
Trichloroethene	< 2	19 (93 %R)	20 (98 %R) (5 RPD)	1/6/2012	ug/l	71 - 157	20	624
1,2-Dichloropropane	< 2	19 (95 %R)	20 (98 %R) (3 RPD)	1/6/2012	ug/l	0 - 210	20	624
Bromodichloromethane	< 2	19 (96 %R)	20 (100 %R) (4 RPD)	1/6/2012	ug/l	35 - 155	20	624
2-Chloroethylvinylether	< 2	23 (115 %R)	24 (121 %R) (5 RPD)	1/6/2012	ug/l	0 - 305	20	624
4-Methyl-2-pentanone(MIBK)	< 10	20 (%R)	20 (%R) ( RPD)	1/6/2012	ug/l			624
cis-1,3-Dichloropropene	< 2	22 (109 %R)	23 (113 %R) (4 RPD)	1/6/2012	ug/l	0 - 227	20	624
Toluene	< 1	20 (101 %R)	21 (103 %R) (2 RPD)	1/6/2012	ug/l	47 - 150	20	624
trans-1,3-Dichloropropene	< 2	18 (90 %R)	19 (93 %R) (3 RPD)	1/6/2012	ug/l	17 - 183	20	624
1,1,2-Trichloroethane	< 2	20 (100 %R)	21 (104 %R) (4 RPD)	1/6/2012	ug/l	52 - 150	20	624
2-Hexanone	< 10	20 (%R)	20 (%R) ( RPD)	1/6/2012	ug/l			624
Tetrachloroethene	< 2	20 (100 %R)	21 (106 %R) (6 RPD)	1/6/2012	ug/l	64 - 148	20	624
Dibromochloromethane	< 2	20 (102 %R)	21 (104 %R) (2 RPD)	1/6/2012	ug/l	53 - 149	20	624
Chlorobenzene	< 2	20 (98 %R)	20 (100 %R) (2 RPD)	1/6/2012	ug/l	37 - 160	20	624
Ethylbenzene	< 1	20 (101 %R)	21 (105 %R) (4 RPD)	1/6/2012	ug/l	37 - 162	20	624
mp-Xylene	< 1	40 (101 %R)	43 (106 %R) (5 RPD)	1/6/2012	ug/l	70 - 130	20	624
o-Xylene	< 1	21 (104 %R)	22 (109 %R) (5 RPD)	1/6/2012	ug/l	70 - 130	20	624
Styrene	< 1	21 (%R)	22 (%R) ( RPD)	1/6/2012	ug/l			624
Bromoform	< 2	18 (88 %R)	18 (90 %R) (2 RPD)	1/6/2012	ug/l	45 - 169	20	624
1,1,2,2-Tetrachloroethane	< 2	20 (99 %R)	20 (100 %R) (1 RPD)	1/6/2012	ug/l	46 - 157	20	624
1,3-Dichlorobenzene	< 1	20 (100 %R)	21 (104 %R) (4 RPD)	1/6/2012	ug/l	59 - 156	20	624
1,4-Dichlorobenzene	< 1	20 (98 %R)	20 (102 %R) (4 RPD)	1/6/2012	ug/l	18 - 190	20	624
1,2-Dichlorobenzene	< 1	20 (98 %R)	20 (102 %R) (4 RPD)	1/6/2012	ug/l	18 - 190	20	624
4-Bromofluorobenzene (surr)	100 %R	101 %R	102 %R	1/6/2012	% Rec	70 - 130		624



# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
1,2-Dichlorobenzene-d4 (surr)	93 %R	90 %R	89 %R	1/6/2012	% Rec	70 - 130		624
Toluene-d8 (surr)	100 %R	102 %R	102 %R	1/6/2012	% 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.  
\*! Flagged analyte recoveries deviated from the QA/QC limits. Any impact to data is addressed below.





# LABORATORY REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Sample ID: Treat Tank Eff Grab

Lab Sample ID: 106677.02  
Matrix: aqueous  
Date Sampled: 1/5/12  
Date Received: 1/5/12  
Units: ug/l  
Date of Extraction/Preparation: 1/6/12  
Date of Analysis: 1/6/12  
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



# LABORATORY REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Sample ID: Treat Tank Eff Grab

Lab Sample ID: 106677.02  
Matrix: aqueous  
Date Sampled: 1/5/12  
Date Received: 1/5/12  
Units: ug/l  
Date of Extraction/Preparation: 1/6/12  
Date of Analysis: 1/6/12  
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) 33 %R  
Phenol-d6 (surr) 24 %R  
2,4,6-Tribromophenol (surr) 90 %R  
Nitrobenzene-D5 (surr) 71 %R  
2-Fluorobiphenyl (surr) 72 %R  
p-Terphenyl-D14 (surr) 84 %R



# QC REPORT

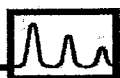
EAI ID#: 106677

Client: Northeast Utilities

Batch ID: 734507-32510/A010512E6251

Client Designation: Merrimack Station

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Phenol	< 1	14 (27 %R)	14 (29 %R) (7 RPD)	1/5/2012	ug/l	15 - 130	20	625mod
2-Chlorophenol	< 1	29 (59 %R)	30 (60 %R) (2 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
2,4-Dichlorophenol	< 1	35 (70 %R)	36 (72 %R) (3 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
2,4,5-Trichlorophenol	< 1	18 (72 %R)	19 (75 %R) (4 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
2,4,6-Trichlorophenol	< 1	34 (68 %R)	36 (71 %R) (4 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
Pentachlorophenol	< 5	34 (68 %R)	39 (78 %R) (14 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
2-Nitrophenol	< 1	35 (70 %R)	37 (73 %R) (4 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
4-Nitrophenol	< 5	16 (32 %R)	17 (35 %R) (9 RPD)	1/5/2012	ug/l	15 - 130	20	625mod
2,4-Dinitrophenol	< 5	38 (75 %R)	40 (81 %R) (8 RPD)	1/5/2012	ug/l	15 - 130	20	625mod
2-Methylphenol	< 1	15 (61 %R)	16 (64 %R) (5 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
3/4-Methylphenol	< 1	13 (53 %R)	14 (54 %R) (2 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
2,4-Dimethylphenol	< 1	33 (66 %R)	34 (67 %R) (2 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
4-Chloro-3-methylphenol	< 1	36 (73 %R)	36 (73 %R) (0 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
4,6-Dinitro-2-methylphenol	< 5	39 (77 %R)	41 (81 %R) (5 RPD)	1/5/2012	ug/l	30 - 130	20	625mod
Benzoic Acid	< 50	< 50 (31 %R)	< 50 (34 %R) (9 RPD)	1/5/2012	ug/l	15 - 140	20	625mod
N-Nitrosodimethylamine	< 1	12 (46 %R)	12 (47 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
n-Nitroso-di-n-propylamine	< 1	17 (67 %R)	17 (69 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
n-Nitrosodiphenylamine	< 1	22 (90 %R)	23 (90 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
bis(2-Chloroethyl)ether	< 1	16 (63 %R)	16 (64 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
bis(2-chloroisopropyl)ether	< 1	15 (61 %R)	15 (62 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
bis(2-Chloroethoxy)methane	< 1	17 (69 %R)	18 (70 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
1,3-Dichlorobenzene	< 1	13 (52 %R)	13 (52 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
1,4-Dichlorobenzene	< 1	13 (52 %R)	13 (52 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
1,2-Dichlorobenzene	< 1	14 (54 %R)	14 (55 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
1,2,4-Trichlorobenzene	< 1	14 (57 %R)	14 (58 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
2-Chloronaphthalene	< 1	16 (63 %R)	16 (65 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
4-Chlorophenyl-phenylether	< 1	18 (71 %R)	18 (72 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
4-Bromophenyl-phenylether	< 1	19 (75 %R)	19 (75 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Hexachloroethane	< 1	11 (43 %R)	11 (43 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Hexachlorobutadiene	< 1	10 (40 %R)	10 (42 %R) (5 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Hexachlorocyclopentadiene	< 5	* 9 (37 %R)	10 (41 %R) (10 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Hexachlorobenzene	< 1	18 (73 %R)	19 (78 %R) (7 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
4-Chloroaniline	< 1	20 (80 %R)	20 (80 %R) (0 RPD)	1/5/2012	ug/l	15 - 140	20	625mod
2-Nitroaniline	< 5	17 (67 %R)	18 (71 %R) (6 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
3-Nitroaniline	< 1	18 (73 %R)	19 (76 %R) (4 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
4-Nitroaniline	< 1	18 (73 %R)	19 (77 %R) (5 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzyl alcohol	< 5	16 (65 %R)	17 (67 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Nitrobenzene	< 1	16 (65 %R)	17 (68 %R) (5 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Isophorone	< 1	20 (79 %R)	20 (81 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
2,4-Dinitrotoluene	< 1	20 (81 %R)	21 (85 %R) (5 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
2,6-Dinitrotoluene	< 1	19 (75 %R)	20 (79 %R) (5 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzidine (estimated)	< 5	23 (92 %R)	20 (81 %R) (13 RPD)	1/5/2012	ug/l	15 - 168	20	625mod
3,3'-Dichlorobenzidine	< 1	19 (75 %R)	19 (76 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Pyridine	< 5	11 (45 %R)	11 (46 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Azobenzene	< 1	18 (71 %R)	18 (71 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod



# QC REPORT

EAI ID#: 106677

Client: Northeast Utilities

Batch ID: 734507-32510/A010512E6251

Client Designation: Merrimack Station

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Carbazole	< 1	20 (79 %R)	20 (81 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Dimethylphthalate	< 1	18 (73 %R)	18 (74 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Diethylphthalate	< 1	19 (76 %R)	19 (77 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Di-n-butylphthalate	< 5	19 (77 %R)	19 (76 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Butylbenzylphthalate	< 1	19 (76 %R)	19 (77 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
bis(2-Ethylhexyl)phthalate	< 5	19 (76 %R)	19 (76 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Di-n-octylphthalate	< 1	18 (73 %R)	19 (75 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Dibenzofuran	< 1	16 (66 %R)	17 (67 %R) (2 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Naphthalene	< 1	17 (67 %R)	17 (67 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
2-Methylnaphthalene	< 1	16 (62 %R)	16 (62 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Acenaphthylene	< 1	16 (63 %R)	16 (65 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Acenaphthene	< 1	17 (70 %R)	18 (71 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Fluorene	< 1	17 (70 %R)	18 (71 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Phenanthrene	< 1	19 (74 %R)	19 (76 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Anthracene	< 1	19 (77 %R)	19 (77 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Fluoranthene	< 1	19 (75 %R)	19 (76 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Pyrene	< 1	18 (73 %R)	18 (73 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzo[a]anthracene	< 1	19 (75 %R)	19 (76 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Chrysene	< 1	19 (77 %R)	19 (77 %R) (0 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzo[b]fluoranthene	< 1	19 (75 %R)	19 (77 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzo[k]fluoranthene	< 1	19 (77 %R)	20 (79 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzo[a]pyrene	< 1	19 (76 %R)	19 (77 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Indeno[1,2,3-cd]pyrene	< 1	19 (78 %R)	19 (77 %R) (1 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Dibenz[a,h]anthracene	< 1	20 (80 %R)	19 (77 %R) (4 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
Benzo[g,h,i]perylene	< 1	20 (79 %R)	19 (77 %R) (3 RPD)	1/5/2012	ug/l	40 - 140	20	625mod
2-Fluorophenol (surr)	39 %R	39 %R	39 %R	1/5/2012	% Rec	21 - 110	20	625mod
Phenol-d6 (surr)	28 %R	28 %R	29 %R	1/5/2012	% Rec	15 - 94	20	625mod
2,4,6-Tribromophenol (surr)	76 %R	92 %R	82 %R	1/5/2012	% Rec	15 - 110	20	625mod
Nitrobenzene-D5 (surr)	76 %R	75 %R	77 %R	1/5/2012	% Rec	35 - 114	20	625mod
2-Fluorobiphenyl (surr)	77 %R	73 %R	75 %R	1/5/2012	% Rec	43 - 116	20	625mod
p-Terphenyl-D14 (surr)	89 %R	95 %R	90 %R	1/5/2012	% 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.

Hexachlorocyclopentadiene exhibited recovery below acceptance limits in the LCS. Hexachlorocyclopentadiene was not detected in the sample.



# LABORATORY REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Sample ID: Treat Tank Eff  
Grab

Lab Sample ID: 106677.02

Matrix: aqueous

Date Sampled: 1/5/12

Date Received: 1/5/12

Units: mg/L

Date of Extraction/Prep: 1/9/12

Date of Analysis: 1/9/12

Analyst: LAS

Method: 1664A

Dilution Factor: 1

Oil & Grease (HEM) < 5



# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Oil & Grease (HEM)	< 5	37 (93 %R)	33 (82 %R) (13 RPD)	1/9/2012	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. Any impact to data is addressed below.



# LABORATORY REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Sample ID: Treat Tank Eff  
Grab

Lab Sample ID: 106677.02  
Matrix: aqueous  
Date Sampled: 1/5/12  
Date Received: 1/5/12  
Units: ug/l  
Date of Extraction/Prep: 1/6/12  
Date of Analysis: 1/6/12  
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)	81 %R
DCB (surr)	96 %R



# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Batch ID: 734508-43146/A010612E608P1

Client Designation: **Merrimack Station**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
PCB-1016	< 0.3	2.0 (101 %R)	2.1 (106 %R) (5 RPD)	1/6/2012	ug/l	40 - 140	20	608
PCB-1221	< 0.3	< 0.3 (%R N/A)	< 0.3 (%R N/A) (RPD N/A)	1/6/2012	ug/l			608
PCB-1232	< 0.3	< 0.3 (%R N/A)	< 0.3 (%R N/A) (RPD N/A)	1/6/2012	ug/l			608
PCB-1242	< 0.3	< 0.3 (%R N/A)	< 0.3 (%R N/A) (RPD N/A)	1/6/2012	ug/l			608
PCB-1248	< 0.3	< 0.3 (%R N/A)	< 0.3 (%R N/A) (RPD N/A)	1/6/2012	ug/l			608
PCB-1254	< 0.3	< 0.3 (%R N/A)	< 0.3 (%R N/A) (RPD N/A)	1/6/2012	ug/l			608
PCB-1260	< 0.3	2.0 (102 %R)	2.1 (105 %R) (3 RPD)	1/6/2012	ug/l	40 - 140	20	608
TMX (surr)	84 %R	88 %R	90 %R	1/6/2012	% Rec	30 - 150		608
DCB (surr)	95 %R	101 %R	100 %R	1/6/2012	% 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#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

**Sample ID:** Treat Tank Eff Composite

**Lab Sample ID:** 106677.01

**Matrix:** aqueous

**Date Sampled:** 1/5/12

**Date Received:** 1/5/12

Solids Suspended	14
Solids Dissolved	21000
Fluoride	10
Sulfate	1200
Chloride	11000
Nitrate-N	100
Alkalinity Total (CaCO3)	180
Ammonia-N	0.92
BOD	< 6
COD	130
pH	7.3

Units	Analysis			Method	Analyst
	Date	Time			
mg/L	01/10/12	15:40	2540D	DLS	
mg/L	01/11/12	13:15	2540C	DLS	
mg/L	01/11/12	11:23	300.0	KL	
mg/L	01/11/12	11:23	300.0	KL	
mg/L	01/10/12	12:17	4500CIE	DLS	
mg/L	01/06/12	12:57	353.2	DLS	
mg/L	01/11/12	9:40	2320B	SEL	
mg/L	01/10/12	8:30	4500NH3D	SEL	
mg/L	01/06/12	14:05	52T0B	SKC	
mg/L	01/12/12	10:20	H8000	SKC	
SU	01/05/12	15:10	4500H+B	NZ	

**Sample ID:** Treat Tank Eff Grab

**Lab Sample ID:** 106677.02

**Matrix:** aqueous

**Date Sampled:** 1/5/12

**Date Received:** 1/5/12

Cyanide Total	0.02
Sulfide	< 0.1
Sulfite	< 2
Total Residual Chlorine	< 0.05
Total Phenols	< 0.3

Units	Analysis			Method	Analyst
	Date	Time			
mg/L	01/11/12	8:45	4500CNE	KJR	
mg/L	01/11/12	13:20	8131HACH	KJR	
mg/L	01/05/12	17:30	377.1	JL	
mg/L	01/05/12	16:50	4500CIG	NZ	
mg/L	01/09/12	9:00	420.1	JCC	

Total Phenols: The reporting limit for Total Phenols has been elevated due to matrix interferences.



# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Parameter Name	Blank	LCS	LCSD	Units	Date of Analysis	Limits	RPD	Method
Solids Suspended	< 5	90 (90 %R)	93 (93 %R) (3 RPD)	mg/L	1/10/12	90 - 110	20	2540D
Solids Dissolved	< 5	970 (97 %R)	NA	mg/L	1/11/12	85 - 115		2540C
Fluoride	< 0.1	2.0 (101 %R)	2.0 (101 %R) (0 RPD)	mg/L	1/11/12	90 - 110	20	300.0
Sulfate	< 1	21 (106 %R)	21 (103 %R) (3 RPD)	mg/L	1/11/12	90 - 110	20	300.0
Chloride	< 1	26 (103 %R)	26 (103 %R) (0 RPD)	mg/L	1/10/12	90 - 110	20	4500CIE
Nitrate-N	< 0.05	5.3 (106 %R)	5.3 (106 %R) (0 RPD)	mg/L	1/6/12	90 - 110	20	353.2
Alkalinity Total (CaCO3)	< 1	10 (99 %R)	10 (100 %R) (1 RPD)	mg/L	1/11/12	85 - 115	20	2320B
Cyanide Total	< 0.02	0.27 (106 %R)	0.23 (91 %R) (15 RPD)	mg/L	1/11/12	85 - 115	20	4500CNE
Ammonia-N	< 0.05	2.0 (100 %R)	2.1 (105 %R) (5 RPD)	mg/L	1/10/12	90 - 110	20	4500NH3DN
Sulfide	< 0.1	0.4 (98 %R)	0.4 (90 %R) (9 RPD)	mg/L	1/11/12	80 - 120	20	8131HACH
Sulfite	< 2	NA	NA	mg/L	1/5/12			377.1
Total Residual Chlorine	< 0.05	0.88 (101 %R)	0.87 (100 %R) (1 RPD)	mg/L	1/5/12	80 - 120	20	4500CIG
BOD	< 6	430 (109 %R)	390 (97 %R) (12 RPD)	mg/L	1/6/12	84 - 115	20	5210B
COD	< 10	100 (101 %R)	100 (98 %R) (3 RPD)	mg/L	1/12/12	85 - 115	20	H8000
Total Phenols	< 0.05	0.28 (112 %R)	0.27 (106 %R) (6 RPD)	mg/L	1/9/12	85 - 115	20	420.1
pH		6.0 (101 %R)	6.05 (101 %R) (0 RPD)	SU	1/5/12	5.95 - 6.07	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.



# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Parameter Name	Duplicate Parent ID	Duplicate Parent	Duplicate	Units	Date of Analysis	RPD	Method
Solids Suspended	106692.03	180	160 (13 RPD)	mg/L	1/10/12	20	2540D
Solids Dissolved		NA	NA	mg/L	1/11/12		2540C
Fluoride		NA	NA	mg/L	1/11/12	20	300.0
Sulfate		NA	NA	mg/L	1/11/12	20	300.0
Chloride		NA	NA	mg/L	1/10/12	20	4500CIE
Nitrate-N		NA	NA	mg/L	1/6/12	20	353.2
Alkalinity Total (CaCO3)		NA	NA	mg/L	1/11/12	20	2320B
Cyanide Total		NA	NA	mg/L	1/11/12	20	4500CNE
Ammonia-N	106627.02	13	13 (2 RPD)	mg/L	1/10/12	20	4500NH3D
Sulfide		NA	NA	mg/L	1/11/12	20	8131HACH
Sulfite	106677.02	< 2	< 2 (RPD N/A)	mg/L	1/5/12	20	377.1
Total Residual Chlorine		NA	NA	mg/L	1/5/12	20	4500CIG
BOD	106657.02	410	400 (3 RPD)	mg/L	1/6/12	20	5210B
COD		NA	NA	mg/L	1/12/12	20	H8000
Total Phenols		NA	NA	mg/L	1/9/12	20	420.1
pH	106649.01	6.3	6.3 (0 RPD)	SU	1/5/12	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.



# QC REPORT

EAI ID#: 106677

Client: **Northeast Utilities**

Client Designation: **Merrimack Station**

Parameter Name	MS/MSD Parent ID	MS/MSD Parent	Matrix Spike	MSD	Date of Analysis	Units	Limits	RPD	Method
Solids Suspended		NA	NA	NA	mg/L	1/10/12		20	2540D
Solids Dissolved		NA	NA	NA	mg/L	1/11/12			2540C
Fluoride		NA	NA	NA	mg/L	1/11/12		20	300.0
Sulfate		NA	NA	NA	mg/L	1/11/12		20	300.0
Chloride	106632.02	11	22 (110 %R)	22 (109 %R) (1 RPD)	mg/L	1/10/12	80-120	20	4500CIE
Nitrate-N	106678.01	1.2	12 (110 %R)	12 (109 %R) (1 RPD)	mg/L	1/6/12	80-120	20	353.2
Alkalinity Total (CaCO3)	106607.01	29	48 (98 %R)	NA	mg/L	1/11/12	80-120	20	2320B
Cyanide Total	106677.02	0.02	0.25 (93 %R)	0.23 (86 %R) (8 RPD)	mg/L	1/11/12	75-125	20	4500CNE
Ammonia-N	106627.02	13	16 (115 %R)	15 (85 %R) (30 RPD)	mg/L	1/10/12	80-120	20	4500NH3
Sulfide		NA	NA	NA	mg/L	1/11/12		20	8131HAC
Sulfite		NA	NA	NA	mg/L	1/5/12			377.1
Total Residual Chlorine		NA	NA	NA	mg/L	1/5/12		20	4500CIG
BOD	106657.02	410	760 (82 %R)	NA	mg/L	1/6/12	75-125	20	5210B
COD	106677.01	130	220 (92 %R)	230 (99 %R) (7 RPD)	mg/L	1/12/12	80-120	20	H8000
Total Phenols	106677.02	< 0.3	0.4 (42 %R)	0.4 (42 %R) (133 RPD)	mg/L	1/9/12	80-120	20	420.1
pH		NA	NA	NA	SU	1/5/12		10	4500H+B

Total Phenols: The MS and MSD recoveries were below acceptance criteria even when the parent sample was diluted indicating a matrix interference.

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.



414 Pontius Ave North  
Seattle, WA 98109  
Ph: 206-622-6960  
Fx: 206-622-6870

11 January 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,

A handwritten signature in cursive script that reads "Liz Siska".

Liz Siska  
Project Manager



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
Treat Tank Eff Composite	1201073-01	Water	05-Jan-12 10:00	06-Jan-12 09:50
Treat Tank Eff Grab	1201073-02	Water	05-Jan-12 08:00	06-Jan-12 09:50

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.*

Page 1 of 26  
1201073 Final Report  
01/11/2012

Liz Siska, Project Manager



414 Pontius Ave North  
Seattle, WA 98109  
Ph: 206-622-6960  
Fx: 206-622-6870

## CASE NARRATIVE

### SAMPLE RECEIPT

Samples were received at Frontier Global Sciences (FGS) on January 6th, 2012. The samples were received intact, on-ice with temperatures measured at 3.4 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 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, Inc.

A handwritten signature in cursive script that reads "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.*

Page 2 of 26  
1201073 Final Report  
01/11/2012







## ANALYTICAL RESULTS

### Treat Tank Eff Composite

Matrix: Water

Laboratory ID: 1201073-01

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Aluminium	41.1	2.2	20.0	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Antimony	0.520	0.023	0.100	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Barium	300	0.14	1.00	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Beryllium	0.522	0.114	0.300	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Cadmium	0.207	0.021	0.100	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Calcium	5050000	16200	200000	µg/L	5000	F201077	2A10015	01/10/12	FGS-054	
Chromium	ND	0.04	0.50	µg/L	5	F201062	2A10002	01/09/12	FGS-054	U
Copper	ND	0.05	0.50	µg/L	5	F201062	2A10002	01/09/12	FGS-054	U
Iron	ND	6.5	50.0	µg/L	5	F201062	2A10002	01/09/12	FGS-054	U
Lead	ND	0.020	0.200	µg/L	5	F201062	2A10002	01/09/12	FGS-054	U
Manganese	293	0.74	10.0	µg/L	100	F201062	2A10002	01/09/12	FGS-054	
Molybdenum	140	0.03	0.30	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Nickel	8.03	0.04	0.50	µg/L	5	F201062	2A10002	01/09/12	FGS-054	
Silver	ND	0.030	0.100	µg/L	5	F201062	2A10002	01/09/12	FGS-054	U
Sodium	277000	115	2000	µg/L	100	F201062	2A10002	01/09/12	FGS-054	
Thallium	6.64	0.006	0.025	µg/L	5	F201062	2A10002	01/09/12	FGS-054	QB-01
Zinc	ND	0.08	1.00	µg/L	5	F201062	2A10002	01/09/12	FGS-054	U

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

*The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Page 4 of 26  
 1201073 Final Report  
 01/11/2012



414 Pontius Ave North  
Seattle, WA 98109  
Ph: 206-622-6960  
Fx: 206-622-6870

## ANALYTICAL RESULTS

### Treat Tank Eff Grab

Matrix: Water

Laboratory ID: 1201073-02

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Arsenic	4.98	1.02	3.00	µg/L	20	F201062	2A10015	01/10/12	FGS-054	
Mercury	10.5	0.34	2.02	ng/L	4	F201063	2A09010	01/09/12	EPA 1631E	FB-1631
Selenium	74.0	3.88	12.0	µg/L	20	F201062	2A10015	01/10/12	FGS-054	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

*The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Page 5 of 26  
1201073 Final Report  
01/11/2012



414 Pontius Ave North  
Seattle, WA 98109  
Ph: 206-622-6960  
Fx: 206-622-6870

### MATRIX DUPLICATES/TRIPPLICATES

SOURCE: 1201073-02

Batch: F201063

Sequence: 2A09010

Preparation: BrCl Oxidation

Lab Number: F201063-DUP1

Analyte	Sample Concentration ng/L	Duplicate Concentration ng/L	MRL	% RPD	RPD Limit	Method	Notes
Mercury	10.48	10.54	2.02	0.617	24	EPA 1631E	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

*The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Page 6 of 26  
1201073 Final Report  
01/11/2012



**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1201073-01**

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201062-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Beryllium	0.522	2.0200	2.676	107	75 - 135	FGS-054	
Aluminum	41.1	151.50	210.7	112	80 - 115	FGS-054	
Chromium	0.47	7.0700	8.59	115	85 - 115	FGS-054	
Iron	ND	505.00	563.6	112	75 - 125	FGS-054	
Nickel	8.03	4.0400	11.98	97.7	68 - 134	FGS-054	
Copper	0.29	4.0400	4.00	91.8	51 - 145	FGS-054	
Zinc	0.27	10.100	9.10	87.4	46 - 146	FGS-054	
Arsenic	5.32	15.150	22.17	111	85 - 115	FGS-054	
Selenium	71.73	30.300	100.6	95.3	59 - 149	FGS-054	
Molybdenum	140.3	2.0200	142.1	88.8	80 - 115	FGS-054	
Silver	ND	1.5150	1.216	80.3	74 - 119	FGS-054	
Cadmium	0.207	0.80800	1.076	108	84 - 113	FGS-054	
Antimony	0.520	0.80800	1.360	104	79 - 122	FGS-054	
Barium	300.0	10.100	305.0	49.8	80 - 120	FGS-054	QM-02
Thallium	6.645	0.40400	6.882	58.7	64 - 137	FGS-054	QB-01, QM-02
Lead	ND	1.5150	1.635	108	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	2.639	105	1.39	75 - 135	20	FGS-054	
Aluminum	151.50	213.8	114	1.50	80 - 115	20	FGS-054	
Chromium	7.0700	8.59	115	0.0611	85 - 115	20	FGS-054	
Iron	505.00	553.8	110	1.76	75 - 125	20	FGS-054	
Nickel	4.0400	12.20	103	1.83	68 - 134	20	FGS-054	
Copper	4.0400	3.95	90.7	1.15	51 - 145	20	FGS-054	
Zinc	10.100	8.87	85.2	2.51	46 - 146	20	FGS-054	
Arsenic	15.150	22.81	115	2.84	85 - 115	20	FGS-054	
Selenium	30.300	110.8	129	9.65	59 - 149	20	FGS-054	
Molybdenum	2.0200	143.5	159	0.993	80 - 115	20	FGS-054	QM-02
Silver	1.5150	1.226	81.0	0.852	74 - 119	20	FGS-054	
Cadmium	0.80800	0.956	92.7	11.8	84 - 113	20	FGS-054	

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.*

Page 7 of 26  
 1201073 Final Report  
 01/11/2012

Liz Siska, Project Manager



414 Pontius Ave North  
Seattle, WA 98109  
Ph: 206-622-6960  
Fx: 206-622-6870

### MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1201073-01

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201062-MS/MSD1

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Antimony	0.80800	1.373	106	0.924	79 - 122	20	FGS-054	
Barium	10.100	307.1	71.1	0.703	80 - 120	20	FGS-054	QM-02
Thallium	0.40400	6.918	67.6	0.520	64 - 137	20	FGS-054	QB-01
Lead	1.5150	1.580	104	3.44	72 - 143	20	FGS-054	

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

*The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Page 8 of 26  
1201073 Final Report  
01/11/2012



**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1201073-01RE1**

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201062-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Sodium	277400	505.00	264500	-2560	75 - 125	FGS-054	QM-02
Manganese	293.1	6.0600	287.1	-98.7	80 - 120	FGS-054	QM-02

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Sodium	505.00	270000	-1460	2.06	75 - 125	20	FGS-054	QM-02
Manganese	6.0600	289.7	-55.3	0.912	80 - 120	20	FGS-054	QM-02

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*

Page 9 of 26  
 1201073 Final Report  
 01/11/2012

Liz Siska, Project Manager



**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1201073-01**

Batch: F201062

Sequence: 2A10002

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F201062-MS/MSD3

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Beryllium	0.522	10.100	10.96	103	75 - 135	FGS-054	AS
Aluminum	41.1	2020.0	2166	105	80 - 115	FGS-054	AS
Chromium	0.47	202.00	230.0	114	85 - 115	FGS-054	AS
Iron	ND	1010.0	1103	109	75 - 125	FGS-054	AS
Nickel	8.03	252.50	255.1	97.8	68 - 134	FGS-054	AS
Copper	0.29	252.50	224.5	88.8	51 - 145	FGS-054	AS
Zinc	0.27	505.00	422.7	83.7	46 - 146	FGS-054	AS
Arsenic	5.32	202.00	235.0	114	85 - 115	FGS-054	AS
Selenium	71.73	202.00	287.2	107	59 - 149	FGS-054	AS
Molybdenum	140.3	101.00	244.7	103	80 - 115	FGS-054	AS
Silver	ND	10.100	8.224	81.4	74 - 119	FGS-054	AS
Cadmium	0.207	20.200	19.18	93.9	84 - 113	FGS-054	AS
Antimony	0.520	10.100	11.16	105	79 - 122	FGS-054	AS
Barium	300.0	404.00	775.3	118	80 - 120	FGS-054	AS
Thallium	6.645	10.100	17.46	107	64 - 137	FGS-054	AS, QB-01
Lead	ND	50.500	51.95	103	72 - 143	FGS-054	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	10.100	11.25	106	2.66	75 - 135	20	FGS-054	AS
Aluminum	2020.0	2171	105	0.234	80 - 115	20	FGS-054	AS
Chromium	202.00	231.3	114	0.528	85 - 115	20	FGS-054	AS
Iron	1010.0	1112	110	0.802	75 - 125	20	FGS-054	AS
Nickel	252.50	255.9	98.2	0.346	68 - 134	20	FGS-054	AS
Copper	252.50	225.5	89.2	0.424	51 - 145	20	FGS-054	AS
Zinc	505.00	425.5	84.2	0.647	46 - 146	20	FGS-054	AS
Arsenic	202.00	236.5	114	0.629	85 - 115	20	FGS-054	AS
Selenium	202.00	287.0	107	0.0540	59 - 149	20	FGS-054	AS
Molybdenum	101.00	246.7	105	0.806	80 - 115	20	FGS-054	AS
Silver	10.100	8.290	82.1	0.798	74 - 119	20	FGS-054	AS
Cadmium	20.200	19.31	94.6	0.670	84 - 113	20	FGS-054	AS
Antimony	10.100	11.31	107	1.29	79 - 122	20	FGS-054	AS

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