envirochem (SM)

ANALYTICAL & CONSULTING CHEMISTS

Environmental Chemists, Inc.

6602 Windmill Way, Wilmington, NC 28405 • 910.392.0223 Lab • 910.392.4424 Fax
710 Bowsertown Road, Manteo, NC 27954 • 252.473.5702 Lab/Fax
255-A Wilmington Highway, Jacksonville, NC 28540 • 910.347.5843 Lab/Fax

info@environmentalchemists.com

July 12, 2017

Brunswick County Public Utilities
Post Office Box 249
Bolivia, NC 28422
Attn: Glenn Walker

Enclosed please find you analytical reports.

Sincerely,

Tammy Duran

Tammy Duran
Environmental Chemists, Inc.

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Ph: (715)-478-2777 Fax: (715)-478-3060

ANALYTICAL REPORT

WDNR Laboratory ID No. 721026460
WDATCP Laboratory Certification No. 105-330
EPA Laboratory ID No. WI00034
Printed: 07/11/17 Page 1 of 1

Client: Environmental Chemists
Attn: Ray Porter
6602 Windmill Way
Wilmington, NC 28405

NLS Project: 282218
NLS Customer: 96259
Fax: 910 392 4424 Phone: 910 392 0223

Project: PFCs with GenX 17-22157 & 17-22158

17-22157 NLS ID: 1001475
COC: 192202:1 Matrix: DW
Collected: 06/29/17 11:00 Received: 06/30/17

Parameter	Result	Units	Dilution	LOD	LOQ/MCL	Analyzed	Method	Lab
Solid Phase Extraction by EPA Method 537	yes					07/04/17	EPA 537	721026460
GenX and PFCs by EPA 537	see attached					07/06/17	EPA 537	721026460

17-22157 FB NLS ID: 1001476
COC: 192202:1 Matrix: FB
Collected: 06/29/17 11:00 Received: 06/30/17

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Solid Phase Extraction by EPA Method 537	not analyzed					07/06/17	EPA 537	721026460
GenX and PFCs by EPA 537	not analyzed					07/06/17	EPA 537	721026460

17-22158 NLS ID: 1001477
COC: 192202:2 Matrix: DW
Collected: 06/29/17 11:00 Received: 06/30/17

Parameter	Result	Units	Dilution	LOD	LOQ/MCL	Analyzed	Method	Lab
Solid Phase Extraction by EPA Method 537	yes					07/04/17	EPA 537	721026460
GenX and PFCs by EPA 537	see attached					07/05/17	EPA 537	721026460

17-22158 FB NLS ID: 1001478
COC: 192202:3 Matrix: FB
Collected: 06/29/17 11:00 Received: 06/30/17

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Solid Phase Extraction by EPA Method 537	yes					07/06/17	EPA 537	721026460
GenX and PFCs by EPA 537	see attached					07/07/17	EPA 537	721026460

Values in brackets represent results greater than or equal to the LOD but less than the LOQ and are within a region of "Less-Certain Quantitation". Results greater than or equal to the LOQ are considered to be in the region of "Certain Quantitation". LOD and/or LOQ tagged with an asterisk(*) are considered Reporting Limits. All LOD/LOQs adjusted to reflect dilution and/or solids content.
ND = Not Detected (< LOD) LOD = Limit of Detection LOQ = Limit of Quantitation NA = Not Applicable
DWB = Dry Weight Basis %DWB = (mg/kg DWB) / 10000 1000 ug/L = 1 mg/L
MCL = Maximum Contaminant Levels for Drinking Water Samples. Shaded results indicate >MCL.

Reviewed by:

Authorized by:
R. T. Krueger
President

ANALYTICAL RESULTS: Perfluorinated Chemicals by EPA 537 Rev 1.1 Safe Drinking Water Analysis

Customer: Environmental Chemists **NLS Project: 282218**

Project Description: PFCs with GenX

Project Title: 17-22157 & 17-22158 **Template: 537PPTGENX Printed: 07/11/2017 13:04**

Sample: 1001475 17-22157 Collected: 06/29/17 Analyzed: 07/07/17 - Analytes: 13

ANALYTE NAME	RESULT	UNITS	WWB	DIL	LOD	LOQ	MCL	Note
perfluorobutanesulfonic acid (PFBS)	ND	ppt		1	6.6	21		
perfluorohexanoic acid (PFHxA)	11.6	ppt		1	1.3	4.0		
perfluoro-2-propoxypropanoic acid (GenX)	36.8	ppt		1	0.73	2.3		
perfluoroheptanoic acid (PFHpA)	10.7	ppt		1	0.80	2.6		
perfluorohexanesulfonic acid (PFHxS)	[4.68]	ppt		1	2.8	8.8		J
perfluorooctanoic acid (PFOA)	9.99	ppt		1	1.2	3.9		
perfluorononanoic acid (PFNA)	[2.22]	ppt		1	1.5	4.9		J
perfluorooctanesulfonic acid (PFOS)	14.3	ppt		1	1.7	5.3		
perfluorodecanoic acid (PFDA)	[1.56]	ppt		1	0.90	2.7		J
perfluoroundecanoic acid (PFUnA)	ND	ppt		1	1.0	3.0		
perfluorododecanoic acid (PFDoA)	ND	ppt		1	1.9	6.1		
perfluorotridecanoic acid (PFTrDA)	ND	ppt		1	3.2	10		
perfluorotetradecanoic acid (PFTA)	ND	ppt		1	2.8	8.9		
C13-PFHxA (SURR)	72.072%							S
C13-PFDA (SURR)	87.595%							S

NOTES APPLICABLE TO THIS ANALYSIS:

J = Result enclosed in brackets is between LOD and LOQ, a region of less certain quantitation.

S = This compound is a surrogate used to evaluate the quality control of a method.

Sample: 1001477 17-22158 Collected: 06/29/17 Analyzed: 07/05/17 - Analytes: 13

ANALYTE NAME	RESULT	UNITS	WWB	DIL	LOD	LOQ	MCL	Note
perfluorobutanesulfonic acid (PFBS)	ND	ppt		1	6.6	21		
perfluorohexanoic acid (PFHxA)	8.91	ppt		1	1.3	4.0		
perfluoro-2-propoxypropanoic acid (GenX)	32.8	ppt		1	0.73	2.3		
perfluoroheptanoic acid (PFHpA)	5.74	ppt		1	0.80	2.6		
perfluorohexanesulfonic acid (PFHxS)	ND	ppt		1	2.8	8.8		
perfluorooctanoic acid (PFOA)	4.88	ppt		1	1.2	3.9		
perfluorononanoic acid (PFNA)	ND	ppt		1	1.5	4.9		
perfluorooctanesulfonic acid (PFOS)	[5.22]	ppt		1	1.7	5.3		J
perfluorodecanoic acid (PFDA)	ND	ppt		1	0.90	2.7		
perfluoroundecanoic acid (PFUnA)	ND	ppt		1	1.0	3.0		
perfluorododecanoic acid (PFDoA)	ND	ppt		1	1.9	6.1		
perfluorotridecanoic acid (PFTrDA)	ND	ppt		1	3.2	10		
perfluorotetradecanoic acid (PFTA)	ND	ppt		1	2.8	8.9		
C13-PFHxA (SURR)	79.032%							S
C13-PFDA (SURR)	87.733%							S

NOTES APPLICABLE TO THIS ANALYSIS:

J = Result enclosed in brackets is between LOD and LOQ, a region of less certain quantitation.

S = This compound is a surrogate used to evaluate the quality control of a method.

The PFOA branch isotope peak is included in the PFOA calculation per EPA directive.

ANALYTICAL RESULTS: Perfluorinated Chemicals by EPA 537 Rev 1.1 Safe Drinking Water Analysis
Customer: Environmental Chemists NLS Project: 282218
Project Description: PFCs with GenX
Project Title: 17-22157 & 17-22158 Template: 537PPTGENX Printed: 07/11/2017 13:04

Sample: 1001478 17-22158 FB Collected: 06/29/17 Analyzed: 07/07/17 - Analytes: 13

ANALYTE NAME	RESULT	UNITS	WWB	DIL	LOD	LOQ	Note
perfluorobutanesulfonic acid (PFBS)	ND	ppt		1	6.6	21	
perfluorohexanoic acid (PFHxA)	ND	ppt		1	1.3	4.0	
perfluoro-2-propoxypropanoic acid (GenX)	ND	ppt		1	0.73	2.3	
perfluoroheptanoic acid (PFHpA)	ND	ppt		1	0.80	2.6	
perfluorohexanesulfonic acid (PFHxS)	ND	ppt		1	2.8	8.8	
perfluorooctanoic acid (PFOA)	ND	ppt		1	1.2	3.9	
perfluorononanoic acid (PFNA)	ND	ppt		1	1.5	4.9	
perfluorooctanesulfonic acid (PFOS)	ND	ppt		1	1.7	5.3	
perfluorodecanoic acid (PFDA)	ND	ppt		1	0.90	2.7	
perfluoroundecanoic acid (PFUnA)	ND	ppt		1	1.0	3.0	
perfluorododecanoic acid (PFDoA)	ND	ppt		1	1.9	6.1	
perfluorotridecanoic acid (PFTrDA)	ND	ppt		1	3.2	10	
perfluorotetradecanoic acid (PFTA)	ND	ppt		1	2.8	8.9	
C13-PFHxA (SURR)	101.218%						S
C13-PFDA (SURR)	116.432%						S

NOTES APPLICABLE TO THIS ANALYSIS:
S = This compound is a surrogate used to evaluate the quality control of a method.

Analytical & Consulting Chemists

ENVIRONMENTAL CHEMISTS, INC

NCDENR: DWQ CERTIFICATION # 94 NCDHHS: DLS CERTIFICATION # 37729

Windmill Way Wilmington, NC 28405
OFFICE: 910-392-0223 FAX 910-392-4424
info@environmentalchemists.com

COLLECTION AND CHAIN OF CUSTODY

CLIENT: Brunswick County PUD	PROJECT NAME: GenX + Compounds	REPORT NO: 17-9264	
ADDRESS: PO Box 249	CONTACT NAME: Glenn Walker	PO NO:	
Bolivia, NC 28422	REPORT TO: Glenn Walker	PHONE/FAX: 910-371-3490	
	COPY TO:	email: glenn.walker@brunswickcountync.gov	

Sampled By: Glenn Walker

SAMPLE TYPE: I = Influent, E = Effluent, W = Well, ST = Stream, SO = Soil, SL = Sludge, Other:

Sample Identification	Collection Date	Collection Time	Collection Temp	Sample Type	Composite or Grab	Container (P or G)	Chlorine mg/L	LAB ID NUMBER	PRESERVATION NONE	HCL	H2SO4	HNO3	NAOH	THIO	OTHER	ANALYSIS REQUESTED
S01	6/29/17	1100	26.2		C	(P)		22157								
					(G)	G									✓	EPA 537 + GenX
E01	6/29/17	1100	26.2		C	(P)		22158								
					(G)	G									✓	EPA 537 + GenX
					C	P										
					G	G										
					C	P										
					G	G										
					C	P										
					G	G										
					C	P										
					G	G										
					C	P										
					G	G										
					C	P										
					G	G										
					C	P										
					G	G										
					C	P										
					G	G										

Transfer	Relinquished By:	Date/Time	Received By:	Date/Time
1.	Glenn Walker	6/29/17 - 1159am		
2.				

Temperature when Received: 5°C Accepted: ✓ Rejected: Resample Requested:

Delivered By: Received By: [signature] Date: 6/29/17 Time: 12:02p

Comments: TURNAROUND: