envirochem (SM)
ANALYTICAL & CONSULTING CHEMISTS

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July 26, 2017

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

Report #2017-10095
Enclosed please find your 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

NLS Project: 283238
NLS Customer: 96259

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

Fax: 910 392 4424 Phone: 910 392 0223

Project: GenX and other PFCs

24198 NLS ID: 1004650
COC: 192203:1 Matrix: DW
Collected: 07/13/17 10:03 Received: 07/19/17

Parameter	Result	Units	Dilution	LOD	LOQ/MCL	Analyzed	Method	Lab
Solid Phase Extraction by EPA Method 537	yes					07/20/17	EPA 537	721026460
GenX and PFCs by EPA 537	see attached					07/21/17	EPA 537	721026460

24198 FB NLS ID: 1004651
COC: 192203:1 Matrix: FB
Collected: 07/13/17 10:03 Received: 07/19/17

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Solid Phase Extraction by EPA Method 537	not analyzed					07/21/17	EPA 537	721026460
GenX and PFCs by EPA 537	not analyzed					07/21/17	EPA 537	721026460

24197 NLS ID: 1004652
COC: 192203:2 Matrix: DW
Collected: 07/13/17 10:03 Received: 07/19/17

Parameter	Result	Units	Dilution	LOD	LOQ/MCL	Analyzed	Method	Lab
Solid Phase Extraction by EPA Method 537	yes					07/20/17	EPA 537	721026460
GenX and PFCs by EPA 537	see attached					07/21/17	EPA 537	721026460

24197 FB NLS ID: 1004653
COC: 192203:2 Matrix: FB
Collected: 07/13/17 10:03 Received: 07/19/17

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Solid Phase Extraction by EPA Method 537	not analyzed					07/21/17	EPA 537	721026460
GenX and PFCs by EPA 537	not analyzed					07/21/17	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: 283238**

Project Description: GenX and other PFCs

Project Title: **Template: 537PPTGENX** **Printed: 07/25/2017 13:39**

Sample: 1004650 24198 Collected: 07/13/17 Analyzed: 07/21/17 - Analytes: 13

ANALYTE NAME	RESULT	UNITS WWB	DIL	LOD	LOQ	MCL	Note
perfluorobutanesulfonic acid (PFBS)	ND	ppt	1	6.6	21		
perfluorohexanoic acid (PFHxA)	7.95	ppt	1	1.3	4.0		
perfluoro-2-propoxypropanoic acid (GenX)	65.2	ppt	1	0.73	2.3		
perfluoroheptanoic acid (PFHpA)	5.61	ppt	1	0.80	2.6		
perfluorohexanesulfonic acid (PFHxS)	ND	ppt	1	2.8	8.8		
perfluorooctanoic acid (PFOA)	4.21	ppt	1	1.2	3.9		
perfluorononanoic acid (PFNA)	ND	ppt	1	1.5	4.9		
perfluorooctanesulfonic acid (PFOS)	[4.35]	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)	84.889%						S
C13-PFDA (SURR)	103.865%						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: 1004652 24197 Collected: 07/13/17 Analyzed: 07/21/17 - Analytes: 13

ANALYTE NAME	RESULT	UNITS WWB	DIL	LOD	LOQ	MCL	Note
perfluorobutanesulfonic acid (PFBS)	ND	ppt	1	6.6	21		
perfluorohexanoic acid (PFHxA)	9.73	ppt	1	1.3	4.0		
perfluoro-2-propoxypropanoic acid (GenX)	71.2	ppt	1	0.73	2.3		
perfluoroheptanoic acid (PFHpA)	7.87	ppt	1	0.80	2.6		
perfluorohexanesulfonic acid (PFHxS)	[6.11]	ppt	1	2.8	8.8		J
perfluorooctanoic acid (PFOA)	7.43	ppt	1	1.2	3.9		
perfluorononanoic acid (PFNA)	[1.95]	ppt	1	1.5	4.9		J
perfluorooctanesulfonic acid (PFOS)	12.4	ppt	1	1.7	5.3		
perfluorodecanoic acid (PFDA)	[1.36]	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)	78.538%						S
C13-PFDA (SURR)	97.234%						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. GenX analysis performed by Modified EPA Method 537.

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

6602 Windmill Way Wilmington, NC 28405
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COLLECTION AND CHAIN OF CUSTODY

Client: Brunswick County Water	PROJECT NAME:	REPORT NO: 17-10095
ADDRESS: PO Box 249	CONTACT NAME: Glenn Walker	PO NO:
Bolivia, NC 28422	REPORT TO: Same	PHONE/FAX:
	COPY TO:	email: glenn.walker@brunswickcountync.gov

Sampled By: _____

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
71317-SO1	7/13/17	1003	29°	Raw water	C	(P)		24197							✓	EPA 537 + benx
					(G)	G										
71317-EO1	7/13/17	1003	29°	DW	C	(P)		24198							✓	
					(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.	Billy Benton	7/13/17	Cindy	7/13/17 10:15A
2.				

Temperature when Received: 1.8 Accepted: ✓ Rejected: _____ Resample Requested: _____

Delivered By: Cindy Received By: R. Kroeller Date: 7/13/17 Time: 3:45P

Comments: _____ TURNAROUND: _____