envirochem (SM)

ANALYTICAL & CONSULTING CHEMISTS

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August 9, 2017

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

Report #2017-10448

Enclosed please find your analytical report.

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: 284121
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

25049 NLS ID: 1007902
COC: 192201:1 Matrix: DW
Collected: 07/20/17 10:15 Received: 08/01/17

Parameter	Result	Units	Dilution	LOD	LOQ/MCL	Analyzed	Method	Lab
Solid Phase Extraction by EPA Method 537	yes					08/02/17	EPA 537	721026460
GenX and PFCs by EPA 537	see attached					08/03/17	EPA 537	721026460

25050 NLS ID: 1007903
COC: 192201:2 Matrix: DW
Collected: 07/20/17 10:14 Received: 08/01/17

Parameter	Result	Units	Dilution	LOD	LOQ/MCL	Analyzed	Method	Lab
Solid Phase Extraction by EPA Method 537	yes					08/02/17	EPA 537	721026460
GenX and PFCs by EPA 537	see attached					08/03/17	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: 284121

Project Description: GenX and Other PFCs

Project Title: Template: 537PPTGENX Printed: 08/09/2017 17:21

Sample: 1007902 25049 Collected: 07/20/17 Analyzed: 08/03/17 - Analytes: 13

ANALYTE NAME	RESULT	UNITS	WWB	DIL	LOD	LOQ	MCL	Note
perfluorobutanesulfonic acid (PFBS)	ND	ppt		1	6.6	21		
perfluorohexanoic acid (PFHxA)	11.1	ppt		1	1.3	4.0		
perfluoro-2-propoxypropanoic acid (GenX)	50.5	ppt		1	0.73	2.3		
perfluoroheptanoic acid (PFHpA)	9.01	ppt		1	0.80	2.6		
perfluorohexanesulfonic acid (PFHxS)	[4.98]	ppt		1	2.8	8.8		J
perfluorooctanoic acid (PFOA)	8.19	ppt		1	1.2	3.9		
perfluorononanoic acid (PFNA)	[2.17]	ppt		1	1.5	4.9		J
perfluorooctanesulfonic acid (PFOS)	12.6	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)	76.658%							S
C13-PFDA (SURR)	96.924%							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: 1007903 25050 Collected: 07/20/17 Analyzed: 08/03/17 - Analytes: 13

ANALYTE NAME	RESULT	UNITS	WWB	DIL	LOD	LOQ	MCL	Note
perfluorobutanesulfonic acid (PFBS)	ND	ppt		1	6.6	21		
perfluorohexanoic acid (PFHxA)	10.6	ppt		1	1.3	4.0		
perfluoro-2-propoxypropanoic acid (GenX)	62.8	ppt		1	0.73	2.3		
perfluoroheptanoic acid (PFHpA)	8.63	ppt		1	0.80	2.6		
perfluorohexanesulfonic acid (PFHxS)	[3.96]	ppt		1	2.8	8.8		J
perfluorooctanoic acid (PFOA)	7.28	ppt		1	1.2	3.9		
perfluorononanoic acid (PFNA)	[1.55]	ppt		1	1.5	4.9		J
perfluorooctanesulfonic acid (PFOS)	8.53	ppt		1	1.7	5.3		
perfluorodecanoic acid (PFDA)	[0.97]	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)	75.989%							S
C13-PFDA (SURR)	95.881%							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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info@environmentalchemists.com

COLLECTION AND CHAIN OF CUSTODY

CLIENT: Brunswick County Water	PROJECT NAME:	REPORT NO: 17-10448
ADDRESS: PO Box 249	CONTACT NAME: Glenn Walker	PO NO:
Bolivia, NC 28422	REPORT TO: Same	PHONE/FAX:
	COPY TO:	email: glenn.walker@Brunswickcounty

Sampled By: X Thaddeus Hill

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

Sample Identification	Collection Date	Collection Time	Collection Temp	Sample Type	Composite or Grab	Container (P or G)	Chlorine mg/L	LAB ID NUMBER	NONE	HCL	H2SO4	HNO3	NAOH	THIO	Zn acetate	other	ANALYSIS REQUESTED
72017-S01	7-20-17	1015	29.5	Raw Water	C	(P)		26049								✓	EPA 537 + GenX
					(G)	G											
72017-E01	7-2017	1014	29.5	DW	C	(P)		25050								✓	
					(G)	G											
					C	P											
					G	G											
					C	P											
					G	G											
					C	P											
					G	G											
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					G	G											
					C	P											
					G	G											
					C	P											
					G	G											

Transfer	Relinquished By:	Date/Time	Received By:	Date/Time
1.	Thaddeus Hill	7/20/17		
2.				

Temperature when Received:____ Accepted:____ Rejected:____ Resample Requested:____

Delivered By: X Thaddeus Hill Received By: C. Gause Date: 07-2017 Time: 11:45

Comments:____ TURNAROUND:____