envirochem (SM)

ANALYTICAL & CONSULTING CHEMISTS

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August 15, 2017

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

Report #2017-11357

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: 284733
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 PRCs 17-27208-09

17-27208 NLS ID: 1009927

COC: 226777:5 Matrix: DW
Collected: 08/03/17 10:10 Received: 08/09/17

Parameter	Result	Units	Dilution	LOD	LOQ/MCL	Analyzed	Method	Lab
Solid Phase Extraction by EPA Method 537	yes					08/10/17	EPA 537	721026460
GenX and PFCs by EPA 537	see attached					08/11/17	EPA 537	721026460

17-27709 NLS ID: 1009928

COC: 226777:6 Matrix: DW
Collected: 08/03/17 10:10 Received: 08/09/17

Parameter	Result	Units	Dilution	LOD	LOQ/MCL	Analyzed	Method	Lab
Solid Phase Extraction by EPA Method 537	yes					08/10/17	EPA 537	721026460
GenX and PFCs by EPA 537	see attached					08/11/17	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: 284733**

Project Description: GenX and other PRCs

Project Title: 17-27208-09 **Template: 537PPTGENX** **Printed: 08/14/2017 16:36**

Sample: 1009927 17-27208 Collected: 08/03/17 Analyzed: 08/11/17 - Analytes: 13

ANALYTE NAME	RESULT	UNITS WWB	DIL	LOD	LOQ	MCL	Note
perfluorobutanesulfonic acid (PFBS)	ND	ppt	1	6.6	21		
perfluorohexanoic acid (PFHxA)	9.88	ppt	1	1.3	4.0		
perfluoro-2-propoxypropanoic acid (GenX)	21.1	ppt	1	0.73	2.3		
perfluoroheptanoic acid (PFHpA)	8.61	ppt	1	0.80	2.6		
perfluorohexanesulfonic acid (PFHxS)	[5.68]	ppt	1	2.8	8.8		J
perfluorooctanoic acid (PFOA)	7.63	ppt	1	1.2	3.9		
perfluorononanoic acid (PFNA)	[1.81]	ppt	1	1.5	4.9		J
perfluorooctanesulfonic acid (PFOS)	12.1	ppt	1	1.7	5.3		
perfluorodecanoic acid (PFDA)	[1.28]	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)	75.154%						S
C13-PFDA (SURR)	86.324%						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: 1009928 17-27709 Collected: 08/03/17 Analyzed: 08/11/17 - Analytes: 13

ANALYTE NAME	RESULT	UNITS WWB	DIL	LOD	LOQ	MCL	Note
perfluorobutanesulfonic acid (PFBS)	ND	ppt	1	6.6	21		
perfluorohexanoic acid (PFHxA)	10.3	ppt	1	1.3	4.0		
perfluoro-2-propoxypropanoic acid (GenX)	22.6	ppt	1	0.73	2.3		
perfluoroheptanoic acid (PFHpA)	8.24	ppt	1	0.80	2.6		
perfluorohexanesulfonic acid (PFHxS)	[4.94]	ppt	1	2.8	8.8		J
perfluorooctanoic acid (PFOA)	5.64	ppt	1	1.2	3.9		
perfluorononanoic acid (PFNA)	ND	ppt	1	1.5	4.9		
perfluorooctanesulfonic acid (PFOS)	8.11	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)	81.538%						S
C13-PFDA (SURR)	94.345%						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

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info@environmentalchemists.com

COLLECTION AND CHAIN OF CUSTODY

CLIENT: Brunswick County Water	PROJECT NAME:	REPORT NO: 17-1357
ADDRESS: P.O. Box 249	CONTACT NAME: Glenn Walker	PO NO:
Bolivia, N.C. 28422	REPORT TO: Same	PHONE/FAX:
	COPY TO:	email: glenn.walker@brunswickcountync.gov

Sampled By: Billy Benton

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	Zn acetate	ANALYSIS REQUESTED
080317-S01	8/3/17	10 10/AM	28.7	RAW	C	(P)		27208								EPA 537 + GenX-V
	8/3/17	10 10/AM			(G)	G										
080317-E01	8/3/17	10 10/AM	28.7	DW	C	(P)		27209								↓
	8/3/17	10 10/AM			(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										
					C	P										
					G	G										

Transfer	Relinquished By:	Date/Time	Received By:	Date/Time
1.	Billy Benton	8/3/17		
2.				

Temperature when Received: 2.1 Accepted: ✓ Rejected: Resample Requested:

Delivered By: Billy Benton Received By: [signature] Date: 8/3/17 Time: 1130

Comments: TURNAROUND: