Pace Analytical Services, LLC
8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

January 24, 2022

Glenn Walker
Brunswick County Water Systems
PO Box 249
Bolivia, NC 28422

RE: Project: 1,4-DX-522 (Weekly)
Pace Project No.: 35690216

Dear Glenn Walker:

Enclosed are the analytical results for sample(s) received by the laboratory on January 11, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Ormond Beach

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Bill White
bill.white@pacelabs.com
(386) 672-5668
Project Manager

Enclosures

cc: Billy Benton, BRUNSWICK COUNTY PUBLIC UTILITIES

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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CERTIFICATIONS

Project: 1,4-DX-522 (Weekly)
Pace Project No.: 35690216

Pace Analytical Services Ormond Beach
8 East Tower Circle, Ormond Beach, FL 32174
Alaska DEC- CS/UST/LUST
Alabama Certification #: 41320
Colorado Certification: FL NELAC Reciprocity
Connecticut Certification #: PH-0216
Delaware Certification: FL NELAC Reciprocity
Florida Certification #: E83079
Georgia Certification #: 955
Guam Certification: FL NELAC Reciprocity
Hawaii Certification: FL NELAC Reciprocity
Illinois Certification #: 200068
Indiana Certification: FL NELAC Reciprocity
Kansas Certification #: E-10383
Kentucky Certification #: 90050
Louisiana Certification #: FL NELAC Reciprocity
Louisiana Environmental Certificate #: 05007
Maine Certification #: FL01264
Maryland Certification: #346
Michigan Certification #: 9911
Mississippi Certification: FL NELAC Reciprocity
Missouri Certification #: 236
Montana Certification #: Cert 0074
Nebraska Certification: NE-OS-28-14
New Hampshire Certification #: 2958
New Jersey Certification #: FL022
New York Certification #: 11608
North Carolina Environmental Certificate #: 667
North Carolina Certification #: 12710
North Dakota Certification #: R-216
Ohio DEP 87780
Oklahoma Certification #: D9947
Pennsylvania Certification #: 68-00547
Puerto Rico Certification #: FL01264
South Carolina Certification: #96042001
Tennessee Certification #: TN02974
Texas Certification: FL NELAC Reciprocity
US Virgin Islands Certification: FL NELAC Reciprocity
Virginia Environmental Certification #: 460165
West Virginia Certification #: 9962C
Wisconsin Certification #: 399079670
Wyoming (EPA Region 8): FL NELAC Reciprocity

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SAMPLE SUMMARY

Project: 1,4-DX-522 (Weekly)
Pace Project No.: 35690216

Lab ID	Sample ID	Matrix	Date Collected	Date Received
35690216001	**010622-S01**	Water	01/06/22 09:00	01/11/22 10:57
35690216002	**010622-E01**	Drinking Water	01/06/22 09:00	01/11/22 10:57

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1,4-DX-522 (Weekly)
Pace Project No.: 35690216

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
35690216001	**010622-S01**	EPA 522	PFG	2	PASI-O
35690216002	**010622-E01**	EPA 522	PFG	2	PASI-O

PASI-O = Pace Analytical Services - Ormond Beach

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PROJECT NARRATIVE

Project: 1,4-DX-522 (Weekly)
Pace Project No.: 35690216

Date: January 24, 2022

Samples were received outside of the recommended temperature range of 0-6 degrees Celsius. The samples were received at 14.6 degrees Celsius. Per client email, authorization given to proceed with analysis.

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ANALYTICAL RESULTS

Project: 1,4-DX-522 (Weekly)
Pace Project No.: 35690216

Sample: 010622-S01 **Lab ID: 35690216001** Collected: 01/06/22 09:00 Received: 01/11/22 10:57 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
522 MSS 1,4 Dioxane	Analytical Method: EPA 522 Preparation Method: EPA 522 Pace Analytical Services - Ormond Beach								
1,4-Dioxane (p-Dioxane)	**1.4**	ug/L	0.20	0.12	1	01/19/22 09:37	01/20/22 13:13	123-91-1	
Surrogates									
1,4-Dioxane-d8 (S)	91	%	70-130		1	01/19/22 09:37	01/20/22 13:13		

Sample: 010622-E01 **Lab ID: 35690216002** Collected: 01/06/22 09:00 Received: 01/11/22 10:57 Matrix: Drinking Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
522 MSS 1,4 Dioxane	Analytical Method: EPA 522 Preparation Method: EPA 522 Pace Analytical Services - Ormond Beach								
1,4-Dioxane (p-Dioxane)	**4.3**	ug/L	0.20	0.12	1	01/19/22 09:37	01/20/22 13:29	123-91-1	
Surrogates									
1,4-Dioxane-d8 (S)	89	%	70-130		1	01/19/22 09:37	01/20/22 13:29		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1,4-DX-522 (Weekly)
Pace Project No.: 35690216

QC Batch: 793346
QC Batch Method: EPA 522
Analysis Method: EPA 522
Analysis Description: 522 MSS 1,4 Dioxane
Laboratory: Pace Analytical Services - Ormond Beach
Associated Lab Samples: 35690216001, 35690216002

METHOD BLANK: 4356150 Matrix: Water
Associated Lab Samples: 35690216001, 35690216002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.12 U	0.20	0.12	01/20/22 12:24	
1,4-Dioxane-d8 (S)	%	94	70-130		01/20/22 12:24	

LABORATORY CONTROL SAMPLE: 4356151

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	2	1.7	83	70-130	
1,4-Dioxane-d8 (S)	%			90	70-130	

LABORATORY CONTROL SAMPLE: 4356152

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.2	0.20 I	98	50-150	
1,4-Dioxane-d8 (S)	%			95	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 4356153 4356154

Parameter	Units	35691180003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,4-Dioxane (p-Dioxane)	ug/L	4.1	2	2	4.7	4.2	30	5	70-130	11	20	J(M1)
1,4-Dioxane-d8 (S)	%						94	85	70-130			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1,4-DX-522 (Weekly)
Pace Project No.: 35690216

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
U	Compound was analyzed for but not detected.
J(M1)	Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 1,4-DX-522 (Weekly)
Pace Project No.: 35690216

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
35690216001	**010622-S01**	EPA 522	793346	EPA 522	793802
35690216002	**010622-E01**	EPA 522	793346	EPA 522	793802

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

WO# : 35690216

35690216

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice In
Company:	Brunswick County Water Systems	Report To:	Glenn Walker	Attention:
Address:	PO Box 249	Copy To:		Company
	Bolivia, NC 28422			Address:
Email To:	Glenn Walker	Purchase Order #:		Pace Quote
Phone:	910-371-3490 Fax:	Project Name:	1,4-Dx-522 (Weekly)	Pace Projec
Requested Due Date:	W007	Project #:		Pace Profile -1 (SO1) , -2 (EO1)

Regulatory Agency
NC
State / Location
NC

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique MATRIX CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Sodium sulfite and sodium bisulfate	Requested Analysis Filtered (Y/N) Y/N	Analyses Test: 522 - 1,4 - Dioxane	522 - 1,4 - Dioxane	Residual Chlorine (Y/N)	
1	010622-S01	WT	G	1/6/2022	900	1/6/2022	900		1								1		1			line 1
2	010622-E01	DW	G	1/6/2022	900	1/6/2022	900		1								1			1		line 2
3																						
4																						
5																						
6																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Phillip Mcculloch	1/6/2022	1100	CMF/Pace	1/11/22	1057	14.6	N	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Phillip Mcculloch

SIGNATURE of SAMPLER: Phillip McCulloch DATE Signed: 1-6-22

SO1 is Raw Water (WT)

EO1 is Potable DWTR (DW)

Project #
Project Manager:
Client:

WO# : 35690216

PM: WBW Due Date: 01/21/22
CLIENT: BRUNCOWS

Date and Initials of person:
Examining contents: NJC
Label:
Deliver:
pH:

Thermometer Used: T-393 Date: 1/11/22 Time: 10:58 Initials: TPB

State of Origin:

☐ For WV projects, all containers verified to ≤6 °C

Cooler #1 Temp.°C 14.6 (Visual) +0.0 (Correction Factor) 14.6 (Actual) ☐ Samples on ice, cooling process has begu
Cooler #2 Temp.°C (Visual) (Correction Factor) (Actual) ☐ Samples on ice, cooling process has begu
Cooler #3 Temp.°C (Visual) (Correction Factor) (Actual) ☐ Samples on ice, cooling process has begu
Cooler #4 Temp.°C (Visual) (Correction Factor) (Actual) ☐ Samples on ice, cooling process has begu
Cooler #5 Temp.°C (Visual) (Correction Factor) (Actual) ☐ Samples on ice, cooling process has begu
Cooler #6 Temp.°C (Visual) (Correction Factor) (Actual) ☐ Samples on ice, cooling process has begu
Recheck for OOT °C 14.6 (Visual) +0.0 (Correction Factor) 14.6 (Actual) Time: 10:59 Initials: TPB

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other

Shipping Method: ☐ First Overnight ☐ Priority Overnight ☐ Standard Overnight ☐ Ground ☐ International Priority ☐ Other

Billing: ☐ Recipient ☐ Sender ☐ Third Party ☐ Credit Card ☐ Unknown

Tracking #

Custody Seal on Cooler/Box Present: ☐ Yes ☐ No Seals intact: ☐ Yes ☐ No Ice: Wet Blue Melted None

Packing Material: ☑ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other

Samples shorted to lab (If Yes, complete) Shorted Date: Shorted Time: Qty:

		Comments:
Chain of Custody Present	☑Yes ☐No ☐N/A	
Chain of Custody Filled Out	☑Yes ☐No ☐N/A	
Relinquished Signature & Sampler Name COC	☑Yes ☐No ☐N/A	
Samples Arrived within Hold Time	☑Yes ☐No ☐N/A	
Rush TAT requested on COC	☐Yes ☑No ☐N/A	
Sufficient Volume	☑Yes ☐No ☐N/A	
Correct Containers Used	☑Yes ☐No ☐N/A	
Containers Intact	☑Yes ☐No ☐N/A	
Sample Labels match COC (sample IDs & date/time of collection)	☑Yes ☐No ☐N/A	
All containers needing acid/base preservation have been checked.	☐Yes ☐No ☑N/A	Preservation Information:
All Containers needing preservation are found to be in compliance with EPA recommendation:	☐Yes ☐No ☑N/A	Preservative: Lot #/Trace #: Date: Time: Initials:
Exceptions: Vials, Microbiology, O&G, PFAS		
Headspace in VOA Vials? (>6mm):	☐Yes ☐No ☑N/A	
Trip Blank Present:	☐Yes ☑No ☐N/A	

Comments/ Resolution (use back for additional comments):