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

June 30, 2020

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

RE: Project: 1,4-Dx-522 (Weekly)
Pace Project No.: 35557772

Dear Glenn PO Box:

Enclosed are the analytical results for sample(s) received by the laboratory on June 19, 2020. 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,

Lisa Harvey
lisa.harvey@pacelabs.com
(386) 672-5668
Project Manager

Enclosures

cc: Billy Benton, BRUNSWICK COUNTY PUBLIC UTILITIES

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

CERTIFICATIONS

Project: 1,4-Dx-522 (Weekly)
Pace Project No.: 35557772

Pace Analytical Services Ormond Beach
8 East Tower Circle, Ormond Beach, FL 32174
Alaska DEC- CS/UST/LUST
Alabama Certification #: 41320
Arizona Certification# AZ0819
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
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

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

SAMPLE SUMMARY

Project: 1,4-Dx-522 (Weekly)
Pace Project No.: 35557772

Lab ID	Sample ID	Matrix	Date Collected	Date Received
35557772001	**061820-S01**	Drinking Water	06/18/20 09:05	06/19/20 10:20
35557772002	**061820-E01**	Drinking Water	06/18/20 09:05	06/19/20 10:20

REPORT OF LABORATORY ANALYSIS

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

SAMPLE ANALYTE COUNT

Project: 1,4-Dx-522 (Weekly)
Pace Project No.: 35557772

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
35557772001	**061820-S01**	EPA 522	CTB	2	PASI-O
35557772002	**061820-E01**	EPA 522	CTB	2	PASI-O

PASI-O = Pace Analytical Services - Ormond Beach

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

ANALYTICAL RESULTS

Project: 1,4-Dx-522 (Weekly)
Pace Project No.: 35557772

Sample: 061820-S01 **Lab ID: 35557772001** Collected: 06/18/20 09:05 Received: 06/19/20 10:20 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)	**0.23**	ug/L	0.19	0.12	1	06/26/20 13:04	06/30/20 00:19	123-91-1	
Surrogates									
1,4-Dioxane-d8 (S)	89	%	70-130		1	06/26/20 13:04	06/30/20 00:19		

Sample: 061820-E01 **Lab ID: 35557772002** Collected: 06/18/20 09:05 Received: 06/19/20 10:20 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)	**0.21**	ug/L	0.19	0.12	1	06/26/20 13:04	06/30/20 00:35	123-91-1	
Surrogates									
1,4-Dioxane-d8 (S)	96	%	70-130		1	06/26/20 13:04	06/30/20 00:35		

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: 1,4-Dx-522 (Weekly)
Pace Project No.: 35557772

QC Batch: 643804
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: 35557772001, 35557772002

METHOD BLANK: 3500798 Matrix: Water
Associated Lab Samples: 35557772001, 35557772002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.12 U	0.20	0.12	06/29/20 19:41	
1,4-Dioxane-d8 (S)	%	96	70-130		06/29/20 19:41	

LABORATORY CONTROL SAMPLE: 3500799

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	20	17.3	86	70-130	
1,4-Dioxane-d8 (S)	%			97	70-130	

LABORATORY CONTROL SAMPLE: 3500800

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.2	0.18 I	91	50-150	
1,4-Dioxane-d8 (S)	%			96	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3501193 3501194

Parameter	Units	60340167011 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	ND	19.3	19.3	16.7	16.7	86	86	70-130	0	20	
1,4-Dioxane-d8 (S)	%						99	98	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

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

QUALIFIERS

Project: 1,4-Dx-522 (Weekly)
Pace Project No.: 35557772

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.

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.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 1,4-Dx-522 (Weekly)
Pace Project No.: 35557772

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
35557772001	**061820-S01**	EPA 522	643804	EPA 522	644553
35557772002	**061820-E01**	EPA 522	643804	EPA 522	644553

WO# : 35557772

35557772

Pace Analytical
WWW.PACELABS.COM

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A
Required Client Information:

Company:	Brunswick County Water System
Address:	3954 Clearwell Dr. NE
	Leland, NC 28451
Email:	glenn.walker@brunswickcountync.gov
Phone:	910-371-3490 Fax:
Requested Due Date:	

Report To:	Glenn - Bottles
Copy To:	
Purchase Order #:	
Project Name:	1,4-Dx-522 (Weekly)
Project #:	

Section C
Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	lisa.harvey@pacelabs.com,
Pace Profile #:	9551-1

Regulatory Agency	
State / Location	NC

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique	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	Other	Requested Analysis Filtered (Y/N) Y/N	Analyses Test: 1,4-dioxane, method 522	Residual Chlorine (Y/N)
1	061820-SO1	WW	G	6/18/20	0905	6/18	0905		1										✓	
2	061820-EO1	DW	G	6/18	0905	6/18	0905		1										✓	
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				

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

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	KT KTS	6/22/20	1000	DNM/PACE	6/19/20	1020	5.3	Y	Y	Y
		6-18-20								

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Billy Benton

SIGNATURE of SAMPLER:

DATE Signed: 6-18-20

TEMP In C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Pace Analytical Florida Laboratory	Document Name: Sample Condition Upon Receipt Form	Document Revised: May 30, 2018
	Document No.: F-FL-C-007 rev. 13	Issuing Authority: Pace Florida Quality Office

(SCUR)

WO#: 35557772

PM: LMH **Due Date: 07/01/20**

CLIENT: BRUNCOWS

Project #

Project Manager:

Client:

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

Thermometer Used: T-338 Date: 6/19/20 Time: 1103 Initials: AS

State of Origin: ☐ For WV projects, all containers verified to ≤6 °C

Cooler #1 Temp.°C	5.4 (Visual)	-0.1 (Correction Factor)	5.3 (Actual)	☐ Samples on ice, cooling process has begun
Cooler #2 Temp.°C	_____ (Visual)	_____ (Correction Factor)	_____ (Actual)	☐ Samples on ice, cooling process has begun
Cooler #3 Temp.°C	_____ (Visual)	_____ (Correction Factor)	_____ (Actual)	☐ Samples on ice, cooling process has begun
Cooler #4 Temp.°C	_____ (Visual)	_____ (Correction Factor)	_____ (Actual)	☐ Samples on ice, cooling process has begun
Cooler #5 Temp.°C	_____ (Visual)	_____ (Correction Factor)	_____ (Actual)	☐ Samples on ice, cooling process has begun
Cooler #6 Temp.°C	_____ (Visual)	_____ (Correction Factor)	_____ (Actual)	☐ Samples on ice, cooling process has begun

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 # 5932 9849 4644

Custody Seal on Cooler/Box Present: ☑ Yes ☐ No **Seals intact:** ☑ Yes ☐ No **Ice:** (Wet) Blue Dry 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: Exceptions: VOA, Coliform, TOC, O&G, Carbamates	☑Yes ☐ No ☐N/A	Preservative:_____ Lot #/Trace #:_____ Date:_____ Time:_____ Initials:_____
Headspace in VOA Vials? (>6mm):	☐Yes ☐ No ☑N/A	
Trip Blank Present:	☐Yes ☐ No ☑N/A	

Client Notification/ Resolution:
Person Contacted:_____ Date/Time:_____

Comments/ Resolution (use back for additional comments):_____

Project Manager Review:_____ Date:_____