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

September 28, 2023

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

RE: Project: 1,4-Dx-522 (Weekly)
Pace Project No.: 35828417

Dear Glenn Walker:

Enclosed are the analytical results for sample(s) received by the laboratory on September 19, 2023. 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,

Shelby Sharpe
shelby.sharpe@pacelabs.com
(386)672-5668
Project Manager

Enclosures

cc: Billy Benton, BRUNSWICK COUNTY PUBLIC UTILITIES

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CERTIFICATIONS

Project: 1,4-Dx-522 (Weekly)
Pace Project No.: 35828417

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
DoD-ANAB #:ADE-3199
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
Massachusetts Certification #: M-FL1264
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.: 35828417

Lab ID	Sample ID	Matrix	Date Collected	Date Received
35828417001	**091823S01**	Water	09/18/23 07:40	09/19/23 11:50
35828417002	**091823E01**	Drinking Water	09/18/23 07:40	09/19/23 11:50

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SAMPLE ANALYTE COUNT

Project: 1,4-Dx-522 (Weekly)
Pace Project No.: 35828417

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
35828417001	**091823S01**	EPA 522	KRM	2	PASI-O
35828417002	**091823E01**	EPA 522	KRM	2	PASI-O

PASI-O = Pace Analytical Services - Ormond Beach

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ANALYTICAL RESULTS

Project: 1,4-Dx-522 (Weekly)
Pace Project No.: 35828417

Sample: 091823S01 **Lab ID: 35828417001** Collected: 09/18/23 07:40 Received: 09/19/23 11:50 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)	**0.90**	ug/L	0.20	0.12	1	09/21/23 17:22	09/26/23 12:45	123-91-1	V
Surrogates									
1,4-Dioxane-d8 (S)	80	%	70-130		1	09/21/23 17:22	09/26/23 12:45		

Sample: 091823E01 **Lab ID: 35828417002** Collected: 09/18/23 07:40 Received: 09/19/23 11:50 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)	**0.85**	ug/L	0.20	0.12	1	09/21/23 17:22	09/26/23 13:03	123-91-1	V
Surrogates									
1,4-Dioxane-d8 (S)	86	%	70-130		1	09/21/23 17:22	09/26/23 13:03		

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QUALITY CONTROL DATA

Project: 1,4-Dx-522 (Weekly)
Pace Project No.: 35828417

QC Batch: 951819
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: 35828417001, 35828417002

METHOD BLANK: 5233141 Matrix: Water
Associated Lab Samples: 35828417001, 35828417002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.12 I	0.20	0.12	09/26/23 11:34	
1,4-Dioxane-d8 (S)	%	87	70-130		09/26/23 11:34	

LABORATORY CONTROL SAMPLE: 5233142

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	2	1.8	91	70-130	
1,4-Dioxane-d8 (S)	%			87	70-130	

LABORATORY CONTROL SAMPLE: 5233143

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.2	0.22	111	50-150	
1,4-Dioxane-d8 (S)	%			89	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 5233185 5233186

Parameter	Units	35828926004 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	0.33	2	2	2.2	2.0	95	86	70-130	9	20	J(IR)
1,4-Dioxane-d8 (S)	%						98	87	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.: 35828417

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.
J(IR)	Estimated Value. The internal standard recovery associated with this result exceeds the upper control limit. The reported result should be considered an estimated value.
V	Indicates that the analyte was detected in both the sample and the associated method blank.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 1,4-Dx-522 (Weekly)
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Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
35828417001	**091823S01**	EPA 522	951819	EPA 522	952248
35828417002	**091823E01**	EPA 522	951819	EPA 522	952248

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Do

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant f elds must

WO# : 35828417

35828417

Section A
Required Client Information:

Company:	Brunswick County Water Systems
Address:	PO Box 249
	Bolivia, NC 28422
Email To:	Glenn Walker
Phone:	910-371-3490 Fax:
Requested Due Date:	W007

Section B
Required Project Information:

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

Section C
Invoice Information:

Attention:	Accounts Payable
Company Name:	See Section A
Address:	
Pace Quote	
Pace Project Manager:	Lisa Harvey
Pace Profile #:	9551-1 (SO1) , -2 (EO1)

Regulatory Agency	
NC	
State / Location	
NC	

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

ITEM #	SAMPLE ID	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	091823S01	WT	G	09/18/23	0740	09/18/23	0740		1								1		1			line 1
2	091823E01	DW	G	09/18/23	0740	09/18/23	0740		1								1			1		line 2
3																						
4																						
5																						
6																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Phil Mcculloch	09/18/2023	1300	NY Pace	9-19-23	11:50	

SO1 is Raw Water (WT)

EO1 is Potable DWTR (DW)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Phillip Mcculloch

SIGNATURE of SAMPLER: Phillip McCulloch DATE Signed: 08/01/2023

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

Pace

Sample Condition Upon Receipt Form (SCUR)

Project # **WO# : 35828417**

Project Manager: **PM: SS1** **Due Date: 09/29/23**

Client: **CLIENT: BRUNCOWS**

Date and Initials of person:

Examining contents: NY

Label:

Deliver:

pH:

Thermometer Used: T-409 Date: 9-19-23 Time: 11:11 Initials: NY

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

Cooler #1 Temp.°C	3.5 **(Visual)**	+0.1 **(Correction Factor)**	3.6 **(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.
Recheck for OOT °C	_____ **(Visual)**	_____ **(Correction Factor)**	_____ **(Actual)**	☐Samples on ice, cooling process has begun.

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☐Commercial ☐Pace ☐Other: **Time:** _____ **Initials:** _____

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

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

Tracking # 7839 0573 4227

Custody Seal Present: ☐Yes ☐No **Seal properly placed and intact:** ☐Yes ☐No **Ice:** ☐Wet ☐Blue ☐Dry ☐None ☐Melted

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

Samples shorted to lab: ☐Yes ☐No (If yes, complete the following)

Shorted Date: _____ **Shorted Time:** _____

Bottle Quantity / Type:

Chain of Custody:	**Present:** ☑Yes ☐No | **Filled Out:** ☑Yes ☐No ☐N/A | **Relinquished From Pace:** ☐Yes ☑No ☐N/A | **Sampler Name:** ☑Yes ☐No ☐N/A			
	Relinquished To Pace: ☑Yes ☐No ☐N/A | **Sampling Date(s):** ☑Yes ☐No ☐N/A | **Sampling Time(s):** ☑Yes ☐No ☐N/A			
Samples Arrived within Hold Time.	☑Yes	☐No	☐N/A	Comments:
Rush Turnaround Requested on COC.	☐Yes	☐No	☑N/A	Comments:
Sufficient Volume.	☑Yes	☐No	☐N/A	Comments:
Correct Containers Used.	☑Yes	☐No	☐N/A	Comments:
Containers Intact.	☑Yes	☐No	☐N/A	Comments:
Sample Labels Match COC (Sample ID, Date/Time of Collection).	☑Yes	☐No	☐N/A	Comments:
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: Vials, Microbiology, O&G, PFAS	☑Yes	☐No	☐N/A	**Preservative:** _____ **Lot / Trace:** _____ **Amount added (mL):** _____ **Date:** _____ **Time:** _____ **Initials:** _____
Headspace in Volatile Vials? (>6mm):	☐Yes	☐No	☑N/A	
Trip Blank Present:	☐Yes	☐No	☑N/A	

Comments / Resolutions (use back for additional comments):