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

August 21, 2024

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

RE: Project: 1,4-Dx-522 (Weekly)
Pace Project No.: 35898900

Dear Glenn Walker:

Enclosed are the analytical results for sample(s) received by the laboratory on August 15, 2024. 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,

Todd Baumgartner
todd.baumgartner@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.: 35898900

Pace Analytical Services Ormond Beach
8 East Tower Circle, Ormond Beach, FL 32174
Alaska DEC- CS/UST/LUST
Alabama Certification #: 41320
California Certification# 3096
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
Nevada Certification: FL NELAC Reciprocity
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
Utah FL NELAC Reciprocity
Utah
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.: 35898900

Lab ID	Sample ID	Matrix	Date Collected	Date Received
35898900001	**081424S01**	Water	08/14/24 07:35	08/15/24 11:50
35898900002	**081424E01**	Drinking Water	08/14/24 07:35	08/15/24 11:50

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.: 35898900

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
35898900001	**081424S01**	EPA 522	TLC	2	PASI-O
35898900002	**081424E01**	EPA 522	TLC	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.: 35898900

Sample: 081424S01 **Lab ID: 35898900001** Collected: 08/14/24 07:35 Received: 08/15/24 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)	**0.18 I**	ug/L	0.20	0.12	1	08/19/24 19:42	08/20/24 09:48	123-91-1	
Surrogates									
1,4-Dioxane-d8 (S)	102	%	70-130		1	08/19/24 19:42	08/20/24 09:48		

Sample: 081424E01 **Lab ID: 35898900002** Collected: 08/14/24 07:35 Received: 08/15/24 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)	**0.14 I**	ug/L	0.20	0.12	1	08/19/24 19:42	08/20/24 10:05	123-91-1	
Surrogates									
1,4-Dioxane-d8 (S)	113	%	70-130		1	08/19/24 19:42	08/20/24 10:05		

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.: 35898900

QC Batch: 1034996
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: 35898900001, 35898900002

METHOD BLANK: 5688133 Matrix: Water
Associated Lab Samples: 35898900001, 35898900002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.12 U	0.20	0.12	08/20/24 08:56	
1,4-Dioxane-d8 (S)	%	106	70-130		08/20/24 08:56	

LABORATORY CONTROL SAMPLE: 5688134

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	20.1	24.4	121	70-130	
1,4-Dioxane-d8 (S)	%			111	70-130	

LABORATORY CONTROL SAMPLE: 5688135

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.2	0.22	110	50-150	
1,4-Dioxane-d8 (S)	%			114	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 5688136 5688137

Parameter	Units	60458732001 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	25.0	20.2	19.6	39.5	46.2	72	108	70-130	16	20	L
1,4-Dioxane-d8 (S)	%						91	111	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.: 35898900

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.
L	Off-scale high. Actual value is known to be greater than value given.

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.: 35898900

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
35898900001	**081424S01**	EPA 522	1034996	EPA 522	1035121
35898900002	**081424E01**	EPA 522	1034996	EPA 522	1035121

WO#: 35898900

35898900

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:	Required Project Information:	Section C Invoice Information:
Company: Brunswick County Water Systems	Report To: Glenn Walker	Attention: Accounts Payable
Address: PO Box 249	Copy To:	Company Name: See Section A
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 Project Manager: Lisa Harvey
Requested Due Date: W007	Project #:	Pace Profile #: 9551-1 (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 (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	081424S01	WT	G	08/14/24	0730	08/14/24	0735		1								1		1			line 1
2	081424E01	DW	G	08/14/24	0730	08/14/24	0735		1								1			1		line 2
3																						
4																						
5																						
6																						

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			
	Phil Mcculloch	08/14/2024	1300	STL/Pace	8-16-24	1150	3.5	Y		

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Phillip Mcculloch

SIGNATURE of SAMPLER: [signature] DATE Signed: 08/14/2024

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

SO1 is Raw Water (WT)

EO1 is Potable DWTR (DW)

Pace Container Order #1143312

Addresses

Order By :		Ship To :		Return To:	
Company	Brunswick County Water System	Company	Brunswick County Water System	Company	Pace Analytical Ormond Beach
Contact	- Bottles, Glenn	Contact	- Bottles, Glenn	Contact	,
Email	glenn.walker@brunswickcountync.gov	Email	glenn.walker@brunswickcountync.gov	Email	shelby.sharpe@pacelabs.com
Address	3954 Clearwell Dr. NE	Address	3954 Clearwell Dr. NE	Address	8 East Tower Circle
Address 2		Address 2		Address 2	
City	Leland	City	Leland	City	Ormond Beach
State	NC Zip 28451	State	NC Zip 28451	State	FL Zip 32174
Phone	910-371-3490	Phone	910-371-3490	Phone	(386)672-5668

Info

Project Name	1,4-Dx-522 (Weekly)	**Due Date**	06/28/2024	**Profile**	9551-1	**Quote**	
Project Manager	Baumgartner, Todd	**Return Date**		**Carrier**	FedEx Ground	**Location**	NC

Trip Blanks

- [ ] Include Trip Blanks

Bottle Labels

- [ ] Blank
- [X] Pre-Printed No Sample IDs
- [ ] Pre-Printed With Sample IDs

Bottles

- [ ] Boxed Cases
- [X] Individually Wrapped
- [ ] Grouped By Sample ID/Matrix

Return Shipping Labels

- [ ] No Shipper
- [ ] With Shipper

COC Options

- [ ] Number of Blanks
- [X] Pre-Printed special

Misc

- [ ] Sampling Instructions
- [X] Custody Seal
- [X] Temp. Blanks
- [X] Coolers 1
- [ ] Syringes
- [ ] Extra Bubble Wrap
- [ ] Short Hold/Rush Stickers
- [ ] DI Water Liter(s)
- [ ] USDA Regulated Soils

# of Samples	Matrix	Test	Container	Total	# of QC	Lot #	Notes
2	WT	1,4-dioxane, method 522	1-1L Amber Glass, Sodium sulfite & Na bisulfate	2	0	022624-1CEO	

Hazard Shipping Placard In Place : NO

*Sample receiving hours are Mon-Fri 8:00am-6:00pm and Sat 10:00am-6:00pm unless special arrangements are made with your project manager.

*Pace Analytical reserves the right to return hazardous, toxic, or radioactive samples to you.

*Pace Analytical reserves the right to charge for unused bottles, as well as cost associated with sample storage/disposal.

*Payment term are net 30 days.

*Please include the proposal number on the chain of custody to ensure proper billing.

Sample Notes :

weekly sampling; 2-locations per week; ; Special COC attached; ;

LAB USE:

Ship Date :	06/28/2024
Prepared By:	KAM1.
Verified By:	
Tracking Num:	

CLIENT USE (Optional):

Date Rec'd:	
Received By:	
Verified By:	

Pace

WO#: 35898900

PM: TAB **Due Date: 08/27/24**

CLIENT: BRUNCOWS

Project #

Project Manager:

Client:

Date and initials of person:
Examining contents: EASI
Verifying pH: 1

Thermometer Used: T-426 Date: 8/15/24 Time: 1222 Initials: SB4

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

Cooler #1 Temp.°C	3.5 (Visual)	0.0 (Correction Factor)	3.5 (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 # 2782 9229 1238

Custody Seal Present: ☑Yes ☐No Seal properly placed and intact: ☑Yes ☐No

Packing Material: ☐Bubble Wrap ☑Bubble Bags ☐None ☐Other Ice: ☑Wet ☐Blue ☐Dry ☐None ☐Melted

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 | 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: W007
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: container collection time is start time on COC
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: Date: Lot / Trace: Time: Amount added (mL): Initials:
Headspace in Volatile Vials? (>6mm):	☐Yes	☐No	☑N/A	
Trip Blank Present:	☐Yes	☐No	☑N/A	

Comments / Resolutions (use back for additional comments):

Labeled by: EASI Reviewed by: AVS Delivered by: AVS