



November 26, 2024

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

RE: Project: 1,4-Dx-522 (Weekly)  
Pace Project No.: 35919350

Dear Glenn Walker:

Enclosed are the analytical results for sample(s) received by the laboratory on November 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



## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
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## CERTIFICATIONS

Project: 1,4-Dx-522 (Weekly)

Pace Project No.: 35919350

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### 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

Utah 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.: 35919350

Lab ID	Sample ID	Matrix	Date Collected	Date Received
35919350001	111424S01	Water	11/14/24 08:05	11/15/24 12:05
35919350002	111424E01	Drinking Water	11/14/24 08:05	11/15/24 12:05

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### SAMPLE ANALYTE COUNT

Project: 1,4-Dx-522 (Weekly)  
Pace Project No.: 35919350

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Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
35919350001	111424S01	EPA 522	TCF	2	PASI-O
35919350002	111424E01	EPA 522	TCF	2	PASI-O

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PASI-O = Pace Analytical Services - Ormond Beach

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### ANALYTICAL RESULTS

Project: 1,4-Dx-522 (Weekly)

Pace Project No.: 35919350

<b>Sample: 111424S01</b>									
<b>Lab ID: 35919350001</b>									
Collected: 11/14/24 08:05 Received: 11/15/24 12:05 Matrix: Water									
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>522 MSS 1,4 Dioxane</b>									
Analytical Method: EPA 522 Preparation Method: EPA 522									
Pace Analytical Services - Ormond Beach									
1,4-Dioxane (p-Dioxane)	<b>0.79</b>	ug/L	0.20	0.12	1	11/21/24 08:18	11/23/24 00:25	123-91-1	
<b>Surrogates</b>									
1,4-Dioxane-d8 (S)	105	%	70-130		1	11/21/24 08:18	11/23/24 00:25		

<b>Sample: 111424E01</b>									
<b>Lab ID: 35919350002</b>									
Collected: 11/14/24 08:05 Received: 11/15/24 12:05 Matrix: Drinking Water									
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>522 MSS 1,4 Dioxane</b>									
Analytical Method: EPA 522 Preparation Method: EPA 522									
Pace Analytical Services - Ormond Beach									
1,4-Dioxane (p-Dioxane)	<b>0.92</b>	ug/L	0.20	0.12	1	11/21/24 08:18	11/23/24 00:41	123-91-1	
<b>Surrogates</b>									
1,4-Dioxane-d8 (S)	107	%	70-130		1	11/21/24 08:18	11/23/24 00:41		

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**QUALITY CONTROL DATA**

Project: 1,4-Dx-522 (Weekly)

Pace Project No.: 35919350

QC Batch:	1058072	Analysis Method:	EPA 522
QC Batch Method:	EPA 522	Analysis Description:	522 MSS 1,4 Dioxane
		Laboratory:	Pace Analytical Services - Ormond Beach

Associated Lab Samples: 35919350001, 35919350002

METHOD BLANK: 5814581 Matrix: Water

Associated Lab Samples: 35919350001, 35919350002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.12 U	0.20	0.12	11/22/24 21:07	
1,4-Dioxane-d8 (S)	%	107	70-130		11/22/24 21:07	

LABORATORY CONTROL SAMPLE: 5814582

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	2	1.9	94	70-130	
1,4-Dioxane-d8 (S)	%			105	70-130	

LABORATORY CONTROL SAMPLE: 5814583

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.2	0.21	107	50-150	
1,4-Dioxane-d8 (S)	%			101	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 5814644 5814645

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		60464897005 Result	Spike Conc.	Spike Conc.	Result						
1,4-Dioxane (p-Dioxane)	ug/L	19.9	2.2	2.1	20.3	21.7	15	84	70-130	7	20 J(M1)
1,4-Dioxane-d8 (S)	%						97	105	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.: 35919350

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### 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

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.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 1,4-Dx-522 (Weekly)

Pace Project No.: 35919350

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Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
35919350001	111424S01	EPA 522	1058072	EPA 522	1058633
35919350002	111424E01	EPA 522	1058072	EPA 522	1058633

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WO#: 35919350



**CHAIN-OF-CUSTODY / Analytical Request Document**

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

<b>Section A</b>		<b>Section B</b>		<b>Section C</b>	
<b>Required Client Information:</b>		<b>Required Project Information:</b>		<b>Invoice Information:</b>	
Company: Brunswick County Water Systems	Report To: Glenn Walker	Company Name: See Section A	Attention: Accounts Payable	Page: 1	Of 1
Address: PO Box 249	Copy To:	Address:			
Bolivia, NC, 28422	Purchase Order #:	Pace Project Manager: Lisa Harvey	Pace Quote:		
Email To: Glenn Walker	Project Name: 1,4-Dx-522 (Weekly)	Pace Profile #: 9551-1 (SO1), -2 (EO1)			
Phone: 910-371-3490	Project #:				
Requested Due Date: W007					

ITEM #	MATRIX CODE	SAMPLE ID	SAMPLE TYPE (G-GRAB C-COMP)	COLLECTED		DATE	TIME	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS	Received on (Y/N)	Custody (Y/N)	Sealed Cooler (Y/N)	Samples In tact (Y/N)
				START	END													
1	WT G	111424S01	WT G	11/14/24 0800	11/14/24 0805	11/14/24 0805	1400	Phil Mcculloch	10/10/2024	1400	SPC/Kace	11-15-24/205	1:2	Y	Y	Y	Y	Y
2	DW G	111424E01	DW G	11/14/24 0800	11/14/24 0805	11/14/24 0805	1400	Phil Mcculloch	10/10/2024	1400	SPC/Kace	11-15-24/205	1:2	Y	Y	Y	Y	Y
3																		
4																		
5																		
6																		

<b>SAMPLER NAME AND SIGNATURE</b>	
PRINT Name of SAMPLER: Phillip Mcculloch	DATE Signed: 11/14/2024
SIGNATURE of SAMPLER: <i>Phillip Mcculloch</i>	

SO1 is Raw Water (WT)  
EO1 is Potable DWTR (DW)

# Pace Container Order #1185884

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

Info			
<b>Project Name</b> <u>1,4-Dx-522 (Weekly)</u>	<b>Due Date</b> <u>11/08/2024</u>	<b>Profile</b> <u>9551-1</u>	<b>Quote</b> _____
<b>Project Manager</b> <u>Baumgartner, Todd</u>	<b>Return Date</b> _____	<b>Carrier</b> <u>FedEx Standard Overnight</u>	<b>Location</b> <u>NC</u>

Trip Blanks
<input type="checkbox"/> Include Trip Blanks

Bottle Labels
<input type="checkbox"/> Blank
<input checked="" type="checkbox"/> Pre-Printed No Sample IDs
<input type="checkbox"/> Pre-Printed With Sample IDs

Bottles
<input type="checkbox"/> Boxed Cases
<input checked="" type="checkbox"/> Individually Wrapped
<input type="checkbox"/> Grouped By Sample ID/Matrix

Return Shipping Labels
<input type="checkbox"/> No Shipper
<input type="checkbox"/> With Shipper

Misc	
<input type="checkbox"/> Sampling Instructions	<input type="checkbox"/> Extra Bubble Wrap
<input checked="" type="checkbox"/> Custody Seal	<input type="checkbox"/> Short Hold/Rush Stickers
<input checked="" type="checkbox"/> Temp. Blanks	<input type="checkbox"/> DI Water <input type="text" value="Liter(s)"/>
<input checked="" type="checkbox"/> Coolers <input type="text" value="1"/>	<input type="checkbox"/> USDA Regulated Soils
<input type="checkbox"/> Syringes <input type="text"/>	

COC Options
<input type="checkbox"/> Number of Blanks <input type="text"/>
<input checked="" type="checkbox"/> Pre-Printed <input type="text" value="special"/>

# 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	081224-1EVP/012224-3DII	

### 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:

<b>Ship Date :</b>	<u>11/07/2024</u>
<b>Prepared By:</b>	<u>Ck</u>
<b>Verified By:</b>	_____
<b>Tracking Num:</b>	_____

#### CLIENT USE (Optional):

<b>Date Rec'd:</b>	_____
<b>Received By:</b>	_____
<b>Verified By:</b>	_____

Pace

WO#: 35919350  
PM: TAB Due Date: 11/27/24  
CLIENT: BRUNCOWS

Project #  
Project Manager:  
Client:

Date and Initials of person:  
Examining contents:  
Verifying pH:  
Initials:

Thermometer Used: T-427

Date: 11-15-24 Time: 1212

State of Origin: \_\_\_\_\_  
Cooler #1 Temp. °C 1.4 (Visual) -0.2 (Correction Factor) 1.2 (Actual)  
Cooler #2 Temp. °C \_\_\_\_\_ (Visual) \_\_\_\_\_ (Correction Factor) \_\_\_\_\_ (Actual)  
Cooler #3 Temp. °C \_\_\_\_\_ (Visual) \_\_\_\_\_ (Correction Factor) \_\_\_\_\_ (Actual)  
Cooler #4 Temp. °C \_\_\_\_\_ (Visual) \_\_\_\_\_ (Correction Factor) \_\_\_\_\_ (Actual)  
Cooler #5 Temp. °C \_\_\_\_\_ (Visual) \_\_\_\_\_ (Correction Factor) \_\_\_\_\_ (Actual)  
Cooler #6 Temp. °C \_\_\_\_\_ (Visual) \_\_\_\_\_ (Correction Factor) \_\_\_\_\_ (Actual)  
Recheck for OOT °C \_\_\_\_\_ (Visual) \_\_\_\_\_ (Correction Factor) \_\_\_\_\_ (Actual)

Samples on ice, cooling process has begun.  
 Samples on ice, cooling process has begun.  
Time: \_\_\_\_\_ Initials: \_\_\_\_\_

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace  Other:  
Shipping Method:  Standard Overnight  First Overnight  Priority Overnight  Ground  International Priority  Other:  
Billing:  Recipient  Sender  Third Party  Credit Card  Unknown  Other:

Tracking # 2818 1377 9287  
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 Data: \_\_\_\_\_  
Bottle Quantity / Type: \_\_\_\_\_

Shorted Time: \_\_\_\_\_

Chain of Custody:	Present: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No   Filled Out: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A   Sampler Name: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
	Relinquished To Pace: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A   Sampling Date(s): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A   Sampling Time(s): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Samples Arrived within Hold Time	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Rush Turnaround Requested on COC	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Sufficient Volume	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Correct Containers Used	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Containers Intact	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Sample Labels Match COC (Sample ID, Date/Time of Collection)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
All containers needing acid / base preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
All containers needing preservation are found to be in compliance with EPA recommendation:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Exceptions: Vials, Microbiology, O&G, PFAS	
Headspace in Volatile Vials? (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Comments / Resolutions (use back for additional comments):	

Preservation Information	
Preservative: _____	Date: _____
Lot / Trace: _____	Time: _____
Amount added (mL): _____	Initials: _____

labeled by: \_\_\_\_\_ Reviewed by: \_\_\_\_\_ Delivered by: \_\_\_\_\_