

June 20, 2023

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

RE: Project: 1,2-Dx-522 (Weekly)  
Pace Project No.: 35805269

Dear Glenn Walker:

Enclosed are the analytical results for sample(s) received by the laboratory on June 09, 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



## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## CERTIFICATIONS

Project: 1,2-Dx-522 (Weekly)

Pace Project No.: 35805269

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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

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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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 1,2-Dx-522 (Weekly)

Pace Project No.: 35805269

Lab ID	Sample ID	Matrix	Date Collected	Date Received
35805269001	060823S01	Water	06/08/23 08:40	06/09/23 10:18
35805269002	060823E01	Drinking Water	06/08/23 00:00	06/09/23 10:18

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### SAMPLE ANALYTE COUNT

Project: 1,2-Dx-522 (Weekly)  
Pace Project No.: 35805269

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
35805269001	060823S01	EPA 522	BMH	2	PASI-O
35805269002	060823E01	EPA 522	BMH	2	PASI-O

PASI-O = Pace Analytical Services - Ormond Beach

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## ANALYTICAL RESULTS

Project: 1,2-Dx-522 (Weekly)

Pace Project No.: 35805269

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>Sample: 060823S01</b> <b>Lab ID: 35805269001</b> Collected: 06/08/23 08:40      Received: 06/09/23 10:18      Matrix: Water									
<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)	1.7	ug/L	0.20	0.12	1	06/15/23 16:18	06/16/23 10:18	123-91-1	
<b>Surrogates</b>									
1,4-Dioxane-d8 (S)	88	%	70-130		1	06/15/23 16:18	06/16/23 10:18		

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>Sample: 060823E01</b> <b>Lab ID: 35805269002</b> Collected: 06/08/23 00:00      Received: 06/09/23 10:18      Matrix: Drinking Water									
<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)	1.8	ug/L	0.20	0.12	1	06/15/23 16:18	06/16/23 10:36	123-91-1	
<b>Surrogates</b>									
1,4-Dioxane-d8 (S)	94	%	70-130		1	06/15/23 16:18	06/16/23 10:36		

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### QUALITY CONTROL DATA

Project: 1,2-Dx-522 (Weekly)  
Pace Project No.: 35805269

QC Batch: 926391	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: 35805269001, 35805269002

METHOD BLANK: 5091744 Matrix: Water  
Associated Lab Samples: 35805269001, 35805269002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.12 U	0.20	0.12	06/16/23 08:12	
1,4-Dioxane-d8 (S)	%	82	70-130		06/16/23 08:12	

LABORATORY CONTROL SAMPLE: 5091745

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	2	1.6	80	70-130	
1,4-Dioxane-d8 (S)	%			80	70-130	

LABORATORY CONTROL SAMPLE: 5091746

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.2	0.14 I	71	50-150	
1,4-Dioxane-d8 (S)	%			79	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 5091747 5091748

Parameter	Units	5091747		5091748		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result							
1,4-Dioxane (p-Dioxane)	ug/L	0.20	2	2	1.9	1.9	87	84	70-130	4	20	
1,4-Dioxane-d8 (S)	%						87	83	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.

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## QUALIFIERS

Project: 1,2-Dx-522 (Weekly)

Pace Project No.: 35805269

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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

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.

## REPORT OF LABORATORY ANALYSIS

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**QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project: 1,2-Dx-522 (Weekly)  
Pace Project No.: 35805269

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
35805269001	060823S01	EPA 522	926391	EPA 522	926531
35805269002	060823E01	EPA 522	926391	EPA 522	926531

**REPORT OF LABORATORY ANALYSIS**

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WO#: 35805269



35805269

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

**Section D**

**Requested Analysis Filtered (Y/N)**

Regulatory Agency: NC  
 State / Location: NC

ITEM #	MATRIX CODE Drinking Water: DW Water: WT Waste Water: WW Product: P Soil/Solid: SL Oil: OL Wipe: WP Air: AT Other: OT Tissue: TS	COLLECTED		RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
		START	END							
1	WT G	06/08/23 0840	01/12/23 0730	Phil Mcculloch	06/08/2023	1300	Phil Mcculloch	06/08/2023	1300	Received on line 1
2	DW G	06/08/23 0840	01/12/23 0730	Phil Mcculloch	06/08/2023	1300	Phil Mcculloch	06/08/2023	1300	Received on line 2
3										
4										
5										
6										

**ADDITIONAL COMMENTS**

SAMPLER NAME AND SIGNATURE: Phil Mcculloch  
 PRINT Name of SAMPLER: Phil Mcculloch  
 SIGNATURE of SAMPLER: *[Signature]*  
 DATE Signed: 06/08/2023

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

# Pace Container Order #705441

Addresses	Ship To :	Return To:
<b>Order By :</b>	<b>Ship To :</b>	<b>Return To:</b>
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 lisa.harvey@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			
<b>Project Name</b> 1,4-Dx-522 (Weekly)	<b>Due Date</b> 12/07/2022	<b>Profile</b> 9551-1	<b>Quote</b>
<b>Project Manager</b>	<b>Return Date</b>	<b>Carrier</b> FedEx Ground	<b>Location</b> NC

**Trip Blanks**

Include Trip Blanks

**Bottle Labels**

Blank

Pre-Printed No Sample IDs

Pre-Printed With Sample IDs

**Bottles**

Boxed Cases

Individually Wrapped

Grouped By Sample ID/Matrix

**Return Shipping Labels**

No Shipper

With Shipper

**Misc**

Sampling Instructions

Custody Seal

Temp. Blanks

Coolers 1

Syringes

Extra Bubble Wrap

Short Hold/Rush Stickers

DI Water

USDA Regulated Soils

**COC Options**

Number of Blanks

Pre-Printed

# of Samples	Matrix	Test	Container	Total	# of	Lot #	Notes
2	WT	1,4-dioxane, method 522	1-1L Amber Glass, Sodium sulfite & Na bisulfate	2	0	040422-1CEO	

**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 insure proper billing.

**LAB USE:**

**Ship Date :** 12/05/2022

**Prepared By:** SB

**Verified By:**

**Sample**

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

**CLIENT USE (Optional):**

**Date Rec'd:**

**Received By:**

**Verified By:**



### Sample Condition Upon Receipt Form (SCUR)

Project #  
Project Manager:  
Client:

**WO# : 35805269**  
PM: SS1 Due Date: 06/21/23  
CLIENT: BRUNCOWS

Date and Initials of person:  
Examining contents: JRS  
Label: \_\_\_\_\_  
Deliver: \_\_\_\_\_  
pH: \_\_\_\_\_  
Initials: (CE)

Thermometer Used: T414 Date: 6-9-23 Time: 10:45

State of Origin: \_\_\_\_\_  
 For WV projects, all containers verified to  $\leq 6$  °C  
Cooler #1 Temp. °C 2.8 (Visual) -0.1 (Correction Factor) 2.7 (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  
Tracking # 3993 8701 7477  
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: <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   Relinquished From Pace: <input type="checkbox"/> Yes <input checked="" 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   Comments: _____								
Rush Turnaround Requested on COC.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A   Comments: _____								
Sufficient Volume.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A   Comments: _____								
Correct Containers Used.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A   Comments: _____								
Containers Intact.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A   Comments: _____								
Sample Labels Match COC (Sample ID, Date/Time of Collection).	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A   Comments: _____								
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								
<table border="1"> <thead> <tr> <th colspan="2">Preservation Information</th> </tr> </thead> <tbody> <tr> <td>Preservative: _____</td> <td>Date: _____</td> </tr> <tr> <td>Lot / Trace: _____</td> <td>Time: _____</td> </tr> <tr> <td>Amount added (mL): _____</td> <td>Initials: _____</td> </tr> </tbody> </table>		Preservation Information		Preservative: _____	Date: _____	Lot / Trace: _____	Time: _____	Amount added (mL): _____	Initials: _____
Preservation Information									
Preservative: _____	Date: _____								
Lot / Trace: _____	Time: _____								
Amount added (mL): _____	Initials: _____								
Comments / Resolutions (use back for additional comments): _____ _____ _____									