

April 13, 2021

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

RE: Project: Weekly 1,4-Dioxane
Pace Project No.: 35624876

Dear Glenn PO Box:

Enclosed are the analytical results for sample(s) received by the laboratory on April 09, 2021. 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



REPORT OF LABORATORY ANALYSIS

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

CERTIFICATIONS

Project: Weekly 1,4-Dioxane

Pace Project No.: 35624876

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

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SAMPLE SUMMARY

Project: Weekly 1,4-Dioxane

Pace Project No.: 35624876

Lab ID	Sample ID	Matrix	Date Collected	Date Received
35624876001	4-8-21-S01	Water	04/08/21 07:30	04/09/21 11:00
35624876002	4-8-21-E01	Water	04/08/21 07:30	04/09/21 11:00

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SAMPLE ANALYTE COUNT

Project: Weekly 1,4-Dioxane

Pace Project No.: 35624876

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
35624876001	4-8-21-S01	EPA 522	CTB	2	PASI-O
35624876002	4-8-21-E01	EPA 522	CTB	2	PASI-O

PASI-O = Pace Analytical Services - Ormond Beach

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ANALYTICAL RESULTS

Project: Weekly 1,4-Dioxane

Pace Project No.: 35624876

Sample: 4-8-21-S01									
Lab ID: 35624876001									
Collected: 04/08/21 07:30 Received: 04/09/21 11:00 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)	0.83	ug/L	0.20	0.12	1	04/10/21 15:01	04/12/21 12:39	123-91-1	
Surrogates									
1,4-Dioxane-d8 (S)	85	%	70-130		1	04/10/21 15:01	04/12/21 12:39		

Sample: 4-8-21-E01									
Lab ID: 35624876002									
Collected: 04/08/21 07:30 Received: 04/09/21 11:00 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)	0.59	ug/L	0.20	0.12	1	04/10/21 15:01	04/12/21 12:55	123-91-1	
Surrogates									
1,4-Dioxane-d8 (S)	88	%	70-130		1	04/10/21 15:01	04/12/21 12:55		

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QUALITY CONTROL DATA

Project: Weekly 1,4-Dioxane
Pace Project No.: 35624876

QC Batch: 719867	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: 35624876001, 35624876002

METHOD BLANK: 3923194 Matrix: Water
Associated Lab Samples: 35624876001, 35624876002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.12 U	0.20	0.12	04/12/21 10:31	
1,4-Dioxane-d8 (S)	%	90	70-130		04/12/21 10:31	

LABORATORY CONTROL SAMPLE & LCSD: 3923195 3923196

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	2	1.7	1.7	85	87	70-130	2	20	
1,4-Dioxane-d8 (S)	%				90	91	70-130			

LABORATORY CONTROL SAMPLE: 3923197

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.2	0.20 I	100	50-150	
1,4-Dioxane-d8 (S)	%			90	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: Weekly 1,4-Dioxane

Pace Project No.: 35624876

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.

BATCH QUALIFIERS

Batch: 720221

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Weekly 1,4-Dioxane
Pace Project No.: 35624876

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
35624876001	4-8-21-S01	EPA 522	719867	EPA 522	720221
35624876002	4-8-21-E01	EPA 522	719867	EPA 522	720221

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WO#: 35624876



CHAIN-OF-CUSTODY / Analytical Request Document

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

Section C

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

Invoice Information:
 Attention: Accounts Payable
 Company Name: See Section A
 Address:
 Pace Quote:
 Pace Project Manager: Lisa Harvey
 Pace Profile #: 9551-1

Regulatory Agency: NC
State / Location: NC

ITEM #	MATRIX CODE: (see valid codes to left)	SAMPLE TYPE: (G-GRAB C-COMP)	COLLECTED		DATE	TIME	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
			START	END								
1	COCE DW Drinking Water WT Water WV Waste Water P Product SL Soil/Sediment OL Oil VOC Vapor AR Air OT Other TS Tissue	WTG	4-8-21 0730	4-8-21 0730	4-8-21	0730	4-8-21	1300	SMK/PEACE	4-8-21	1300	Empty Bottles
2		WTG	4-8-21 0730	4-8-21 0730	4-8-21	0730	4-8-21	1300	SMK/PEACE	4-8-21	1300	Empty Bottles
3												
4												
5												
6												

Requested Analysis Filtered (Y/N)	Preservatives	Analyses Test	Y/N	DATE	TIME	TEMP in C	Received on	Ice (Y/N)	Custody Sealed (Y/N)	Samples Intact (Y/N)
	NaOH HCl HNO3 H2SO4 Unpreserved	Sodium sulfite and sodium bisulfite	1	4-8-21	1600					
	Methanol		1	4-8-21	1300					
		522 - 1,4 - Dioxane	1	4-8-21	1300					
		Residual Chlorine (Y/N)								

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Philip McWillough
 SIGNATURE of SAMPLER: *Philip McWillough*
 DATE Signed: 4-8-21



WO#: 35624876
PM: LMH **Due Date: 04/21/21**
CLIENT: BRUNCOWS

Project #
Project Manager:
Client:

SCUR)
Date and Initials of person:
Examining contents: DMK
Label: _____
Deliver: _____
pH: _____

Thermometer Used: T353 Date: 4/21 Time: 1105 Initials: IAI

State of Origin: _____ For WV projects, all containers verified to $\leq 6^\circ\text{C}$

Cooler #1 Temp. °C 5.1 (Visual) +0.1 (Correction Factor) 5.2 (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 # 78574704 0775

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	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody Filled Out	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Relinquished Signature & Sampler Name COC	<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 TAT requested on COC	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient Volume	<input checked="" type="checkbox"/> Yes <input 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 IDs & 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: Exceptions: VOA, Coliform, TOC, O&G, Carbamates	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Preservation Information: Preservative: _____ Lot #/Trace #: _____ Date: _____ Time: _____ Initials: _____
Headspace in VOA 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	

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

Comments/ Resolution (use back for additional comments):

Project Manager Review: _____ Date: _____

Pace Container Order #683482

PLEASE RETURN THIS COPY WITH COC

Order By : Company Brunswick County Water System
 Contact - Bottles, Glenn
 Email glenn.walker@brunswickcountync.gov
 Address 3954 Clearwell Dr. NE
 City Leland
 State NC Zip 28451
 Phone 910-371-3490

Ship To : Company Brunswick County Water System
 Contact - Bottles, Glenn
 Email glenn.walker@brunswickcountync.gov
 Address 3954 Clearwell Dr. NE
 City Leland
 State NC Zip 28451
 Phone 910-371-3490

Return To : Company Pace Analytical Ormond Beach
 Contact Harvey, Lisa
 Email lisa.harvey@pacelabs.com
 Address 8 East Tower Circle
 City Ormond Beach
 State FL Zip 32174
 Phone (386) 672-5668

Info

Project Name 14-DX-522 (Weekly) **Due Date** 09/21/2020 **Profile** 9551-1 **Quote**

Project Manager Harvey, Lisa **Return Date**

Carrier FedEx Ground **Location** 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

COC Options Number of Blanks Pre-Printed special

Misc Sampling Instructions Custody Seal Temp. Blanks Coolers Syringes

Extra Bubble Wrap Short Hold/Rush Stickers DI Water (Liter(s)) USDA Regulated Soils

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

Hazard Shipping Placard In Place : NO

LAB USE: Ship Date: 9/16/20 Prepared By: [Signature] Verified By: [Signature] Tracking Num: [Blank]

*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.

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

CLIENT USE (Optional): Date Rec'd: Received By: Verified By:

Internal