

September 04, 2020

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

RE: Project: Weekly 1,4-Dioxane
Pace Project No.: 35574105

Dear Glenn PO Box:

Enclosed are the analytical results for sample(s) received by the laboratory on August 28, 2020. 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.: 35574105

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.: 35574105

Lab ID	Sample ID	Matrix	Date Collected	Date Received
35574105001	082720-S01	Drinking Water	08/27/20 07:45	08/28/20 11:50
35574105002	082720-E01	Drinking Water	08/27/20 07:45	08/28/20 11:50

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SAMPLE ANALYTE COUNT

Project: Weekly 1,4-Dioxane

Pace Project No.: 35574105

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
35574105001	082720-S01	EPA 522	CTB	2	PASI-O
35574105002	082720-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.: 35574105

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Sample: 082720-S01 Lab ID: 35574105001 Collected: 08/27/20 07:45 Received: 08/28/20 11:50 Matrix: Drinking Water									
522 MSS 1,4 Dioxane									
Analytical Method: EPA 522 Preparation Method: EPA 522 Pace Analytical Services - Ormond Beach									
1,4-Dioxane (p-Dioxane)	0.43	ug/L	0.21	0.12	1	09/01/20 08:40	09/02/20 12:55	123-91-1	
Surrogates									
1,4-Dioxane-d8 (S)	80	%	70-130		1	09/01/20 08:40	09/02/20 12:55		

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Sample: 082720-E01 Lab ID: 35574105002 Collected: 08/27/20 07:45 Received: 08/28/20 11:50 Matrix: Drinking Water									
522 MSS 1,4 Dioxane									
Analytical Method: EPA 522 Preparation Method: EPA 522 Pace Analytical Services - Ormond Beach									
1,4-Dioxane (p-Dioxane)	0.45	ug/L	0.20	0.12	1	09/01/20 08:40	09/02/20 13:10	123-91-1	
Surrogates									
1,4-Dioxane-d8 (S)	88	%	70-130		1	09/01/20 08:40	09/02/20 13:10		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Weekly 1,4-Dioxane
Pace Project No.: 35574105

QC Batch: 662034	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: 35574105001, 35574105002

METHOD BLANK: 3599812 Matrix: Water
Associated Lab Samples: 35574105001, 35574105002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.12 U	0.20	0.12	09/02/20 10:32	
1,4-Dioxane-d8 (S)	%	91	70-130		09/02/20 10:32	

LABORATORY CONTROL SAMPLE: 3599813

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	2	1.6	78	70-130	
1,4-Dioxane-d8 (S)	%			93	70-130	

LABORATORY CONTROL SAMPLE: 3599814

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.2	0.16 I	81	50-150	
1,4-Dioxane-d8 (S)	%			85	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3599815 3599816

Parameter	Units	60346876006		MS		MSD		% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	Conc.	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
1,4-Dioxane (p-Dioxane)	ug/L	147	2	2	2	148	141	12	-331	70-130	5	20	J(M1), L
1,4-Dioxane-d8 (S)	%							88	84	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.: 35574105

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.

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.

J(M1) Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Weekly 1,4-Dioxane
Pace Project No.: 35574105

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
35574105001	082720-S01	EPA 522	662034	EPA 522	662424
35574105002	082720-E01	EPA 522	662034	EPA 522	662424

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WO#: 35574105



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
 Copy To:
 Address: PO Box 249
 Bolivia, NC 28422
 Email To: Glenn Walker
 Phone: 910-371-3490 Fax:
 Requested Due Date: W007

Section C

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	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS	
			START	END												
1	082720 -S01	WT G	8/27/20	0745	8/27/20	0745										
2	082720 -E01	WT G	8/27/20	0745	8/27/20	0745										
3																
4																
5																
6																

ADDITIONAL COMMENTS: 8/27/20 16:00 CESpace

TEMP in C:

SAMPLER NAME AND SIGNATURE:
 PRINT Name of SAMPLER: Phil McCulloch
 SIGNATURE of SAMPLER: Phil McCulloch
 DATE Signed: 8-27-20

Received on: (Y/N)
Ice: (Y/N)
Custody Sealed Cooler: (Y/N)
Samples Intact: (Y/N)



Document Name:
Sample Condition Upon Receipt Form
Document No.:
F-FL-C-007 rev. 13

Document Revised:
May 30, 2018
Issuing Authority:
Pace Florida Quality Office

Sample Condition Upon Receipt Form (SCUR)

WO# : 35574105
PM: LMH **Due Date: 09/10/20**
CLIENT: BRUNCOWS

Project #
Project Manager:
Client:

Date and Initials of person:
Examining contents:
Label: CEJ
Deliver: _____
pH: _____

Thermometer Used: T337 Date: 8/28/20 Time: 1208 Initials: CSA

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

- | | |
|---|--|
| Cooler #1 Temp. °C <u>05</u> (Visual) <u>+0.2</u> (Correction Factor) <u>0.7</u> (Actual) | <input type="checkbox"/> Samples on ice, cooling process has begun |
| Cooler #2 Temp. °C _____ (Visual) _____ (Correction Factor) _____ (Actual) | <input type="checkbox"/> Samples on ice, cooling process has begun |
| Cooler #3 Temp. °C _____ (Visual) _____ (Correction Factor) _____ (Actual) | <input type="checkbox"/> Samples on ice, cooling process has begun |
| Cooler #4 Temp. °C _____ (Visual) _____ (Correction Factor) _____ (Actual) | <input type="checkbox"/> Samples on ice, cooling process has begun |
| Cooler #5 Temp. °C _____ (Visual) _____ (Correction Factor) _____ (Actual) | <input type="checkbox"/> Samples on ice, cooling process has begun |
| Cooler #6 Temp. °C _____ (Visual) _____ (Correction Factor) _____ (Actual) | <input type="checkbox"/> 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 # 39624438 2470

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	<p>Preservation Information:</p> Preservative: _____ Lot #/Trace #: _____ Date: _____ Time: _____ Initials: _____
Chain of Custody Filled Out	<input type="checkbox"/> Yes <input checked="" 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 type="checkbox"/> Yes <input checked="" 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:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Exceptions: VOA, Coliform, TOC, O&G, Carbamates		
Headspace in VOA Vials? (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____

Comments/ Resolution (use back for additional comments): _____

Project Manager Review: _____ Date: _____