Pace Analytical®
www.pacelabs.com

May 07, 2020

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

RE: Project: 1,4-Dx-522 (Weekly)
        Pace Project No.:   35547067

Dear Glenn PO Box:

Enclosed are the analytical results for sample(s) received by the laboratory on May 01, 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

NELAP ACCREDITED
TNI
LABORATORY

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CERTIFICATIONS

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

Pace Project No.: 35547067

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
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

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 1,4-Dx-522 (Weekly)
Pace Project No.:   35547067

Lab ID	Sample ID	Matrix	Date Collected	Date Received
35547067001	**43020 S01**	Drinking Water	04/30/20 08:00	05/01/20 11:20
35547067002	**43020 E01**	Drinking Water	04/30/20 08:00	05/01/20 11:20

REPORT OF LABORATORY ANALYSIS

SAMPLE ANALYTE COUNT

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

Pace Project No.:   35547067

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
35547067001	**43020 S01**	EPA 522	CB1	2	PASI-O
35547067002	**43020 E01**	EPA 522	CB1	2	PASI-O

PASI-O = Pace Analytical Services - Ormond Beach

REPORT OF LABORATORY ANALYSIS

ANALYTICAL RESULTS

Project: 1,4-Dx-522 (Weekly)
Pace Project No.: 35547067

Sample: 43020 S01   **Lab ID: 35547067001**   Collected: 04/30/20 08:00   Received: 05/01/20 11:20   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)	**0.69**	ug/L	0.20	0.12	1	05/06/20 09:59	05/07/20 09:40	123-91-1	
Surrogates									
1,4-Dioxane-d8 (S)	72	%	70-130		1	05/06/20 09:59	05/07/20 09:40		

Sample: 43020 E01   **Lab ID: 35547067002**   Collected: 04/30/20 08:00   Received: 05/01/20 11:20   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)	**0.78**	ug/L	0.20	0.12	1	05/06/20 09:59	05/07/20 00:06	123-91-1	
Surrogates									
1,4-Dioxane-d8 (S)	79	%	70-130		1	05/06/20 09:59	05/07/20 00:06		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1,4-Dx-522 (Weekly)
Pace Project No.: 35547067

QC Batch:	630670	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: 35547067001, 35547067002

METHOD BLANK: 3428240   Matrix: Water
Associated Lab Samples: 35547067001, 35547067002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.12 U	0.20	0.12	05/06/20 17:38	
1,4-Dioxane-d8 (S)	%	93	70-130		05/06/20 17:38	

LABORATORY CONTROL SAMPLE: 3428241

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	20	16.9	85	70-130	
1,4-Dioxane-d8 (S)	%			93	70-130	

LABORATORY CONTROL SAMPLE: 3428243

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	0.2	0.17 I	86	50-150	
1,4-Dioxane-d8 (S)	%			91	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3428352   3428353

Parameter	Units	60335381005 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	42.8	19.7	19.5	72.6	70.6	151	142	70-130	3	20	J(M1)
1,4-Dioxane-d8 (S)	%						98	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.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

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

Pace Project No.:   35547067

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.

REPORT OF LABORATORY ANALYSIS

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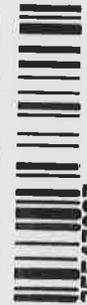## QUALITY CONTROL DATA CROSS REFERENCE TABLE

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

Pace Project No.:   35547067

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
35547067001	43020 S01	EPA 522	630670	EPA 522	630903
35547067002	43020 E01	EPA 522	630670	EPA 522	630903

REPORT OF LABORATORY ANALYSIS

Date: 05/07/2020 12:06 PM

WO#: 35547067

35547067

DY / Analytical Request Document
GAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 Of 1

Section A

Required Client Information:

Company:	Brunswick County Water System
Address:	3954 Clearwell Dr. NE
	Leland, NC 28451
Email:	glenn.walker@brunswickcountync.gov
Phone:	910-371-3490
Fax:	
Requested Due Date:	

Required Project Information:

Report To:	Glenn - Bottles
Copy To:	
Purchase Order #:	
Project Name:	1,4-Dx-522 (Weekly)
Project #:	

Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	lisa.harvey@pacelabs.com,
Pace Profile #:	9551-1

Regulatory Agency

State / Location: NC

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

SAMPLE ID
One Character per box.
(A-Z, 0-9 / , .)
Sample Ids must be unique

# ITEM	SAMPLE ID	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	START DATE	START TIME	END DATE	END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	1,4-dioxane, method 522
1	43020 501	DW	G	43020	0700	43020	0700			✓
2	43020 E01	DW	G	43020	0720	43020	0720			✓
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										

Requested Analysis Filtered (Y/N)

Residual Chlorine (Y/N)

Preservatives: Unpreserved, H2SO4, HNO3, HCl, NaOH, Na2S2O3, Methanol, Other

ADDITIONAL COMMENTS: Empty Bottles

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
RP. Bottle Prep	4/14/20	1146			
Phillip McCulloh	4-30-20	1300	GER / Pace	5/1/20	1120

SAMPLE CONDITIONS

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

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Phillip McCulloch
SIGNATURE of SAMPLER: _(signature)_
DATE Signed: 4-30-20

WO#: 35547067 (SCUR)

Project #

PM: LMH   Due Date: 05/13/20

Project Manager: CLIENT: BRUNCOWS

Client:

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

Thermometer Used: T338   Date: 5/1/20   Time: 1125   Initials: GER

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

Cooler #1 Temp.°C 4.4 (Visual) $-0.1 (Correction Factor) 4.3 (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 # 3924 0075 0151

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	☑ Yes ☐ No ☐ N/A	
Chain of Custody Filled Out	☑ Yes ☐ No ☐ N/A	
Relinquished Signature & Sampler Name COC	☐ Yes ☐ No ☐ N/A	
Samples Arrived within Hold Time	☑ Yes ☐ No ☐ N/A	
Rush TAT requested on COC	☐ Yes ☑ No ☐ N/A	
Sufficient Volume	☑ Yes ☐ No ☐ N/A	
Correct Containers Used	☑ Yes ☐ No ☐ N/A	
Containers Intact	☑ Yes ☐ No ☐ N/A	
Sample Labels match COC (sample IDs & date/time of collection)	☑ Yes ☐ No ☐ N/A	
All containers needing acid/base preservation have been checked.	☑ Yes ☐ No ☐ N/A	Preservation Information: Preservative:_____
All Containers needing preservation are found to be in compliance with EPA recommendation:	☑ Yes ☐ No ☐ N/A	Lot #/Trace #:_____ Date:_____ Time:_____
Exceptions: VOA, Coliform, TOC, O&G, Carbamates		Initials:_____
Headspace in VOA Vials? (>6mm):	☐ Yes ☐ No ☑ N/A	
Trip Blank Present:	☐ Yes ☐ No ☑ N/A	

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

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

Project Manager Review: _____   Date: _____