

“2017” Annual Drinking Water Quality Report

“City of Northwest”

Water System Number **70-10-045”**

We are pleased to present to you this year's Annual Drinking Water Quality Report. This report is a snapshot of last year's water quality. Included are details about your source(s) of water, what it contains, and how it compares to standards set by regulatory agencies. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. We are committed to ensuring the quality of your water and to providing you with this information because informed customers are our best allies. **If you have any questions about this report or concerning your water, please contact Adrienne McCrary at 910-655-3110. We want our valued customers to be informed about their water utility. If you want to learn more, please attend any of our regularly scheduled meetings. They are held City Hall third Tuesday of each month at 7:00 PM.**

What EPA Wants You to Know

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791).

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. City of Northwest Water is responsible for providing high quality drinking water but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife; inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming; pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses; organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems; and radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the number of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

When You Turn on Your Tap, Consider the Source

The water that is used by this system is purchase water from Brunswick County.

Source Water Assessment Program (SWAP) Results

The North Carolina Department of Environment and Natural Resources (DENR), Public Water Supply (PWS) Section, Source Water Assessment Program (SWAP) conducted assessments for all drinking water sources across North Carolina. The purpose of

the assessments was to determine the susceptibility of each drinking water source (well or surface water intake) to Potential Contaminant Sources (PCSs). The results of the assessment are available in SWAP Assessment Reports that include maps, background information and a relative susceptibility rating of Higher, Moderate or Lower.

The relative susceptibility rating of each source for City of Northwest Water was determined by combining the contaminant rating (number and location of PCSs within the assessment area) and the inherent vulnerability rating (i.e., characteristics or existing conditions of the well or watershed and its delineated assessment area). The assessment findings are summarized in the table below:

Susceptibility of Sources to Potential Contaminant Sources (PCSs)

Source Name	Susceptibility Rating	SWAP Report Date
11,12,12A,3,5,8, 6A, Cape Fear Wells	Moderate	2017
1,15,16,17,18,19 2Wells	Lower	2017

The complete SWAP Assessment report for City of Northwest Water may be viewed on the Web at: www.ncwater.org/pws/swap. Note that because SWAP results and reports are periodically updated by the PWS Section, the results available on this web site may differ from the results that were available at the time this CCR was prepared. If you are unable to access your SWAP report on the web, you may mail a written request for a printed copy to: Source Water Assessment Program – Report Request, 1634 Mail Service Center, Raleigh, NC 27699-1634, or email requests to swap@ncdenr.gov. Please indicate your system name, number, and provide your name, mailing address and phone number. If you have any questions about the SWAP report please contact the Source Water Assessment staff by phone at 919-707-9098.

It is important to understand that a susceptibility rating of “higher” does not imply poor water quality, only the system’s potential to become contaminated by PCSs in the assessment area.

Help Protect Your Source Water

Protection of drinking water is everyone’s responsibility. We have implemented the following source water protection actions: You can help protect your community’s drinking water source(s) in several ways: (examples: dispose of chemicals properly; take used motor oil to a recycling center, volunteer in your community to participate in group efforts to protect your source, etc.).

Water Quality Data Tables of Detected Contaminants

We routinely monitor for over 150 contaminants in your drinking water according to Federal and State laws. The tables below list all the drinking water contaminants that we detected in the last round of sampling for each particular contaminant group. The presence of contaminants does not necessarily indicate that water poses a health risk. **Unless otherwise noted, the data presented in this table is from testing done January 1 through December 31, 2017.** The EPA and the State allow us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. Some of the data, though representative of the water quality, is more than one year old.

Unregulated contaminants are those for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulations are warranted.

Important Drinking Water Definitions:

Action Level (AL) - The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Treatment Technique (TT) - A required process intended to reduce the level of a contaminant in drinking water.

Maximum Residual Disinfection Level (MRDL) – The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfection Level Goal (MRDLG) – The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Locational Running Annual Average (LRAA) – The average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters under the Stage 2 Disinfectants and Disinfection Byproducts Rule.

Level 1 Assessment - A Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.

Level 2 Assessment - A Level 2 assessment is a very detailed study of the water system to identify potential problems and determine (if possible) why an E. coli MCL violation has occurred and/or why total coliform bacteria have been found in our water system on multiple occasions.

Maximum Contaminant Level (MCL) - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal (MCLG) - The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Tables of Detected Contaminants

Lead and Copper Contaminants

Contaminant (units)	Sample Date	Your Water	Number of sites found above the AL	MCLG	AL	Likely Source of Contamination
Copper (ppm) (90 th percentile)	9/17/17	0.085	0	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits
Lead (ppb) (90 th percentile)	9/17/17	0.004	0	0	AL=15	Corrosion of household plumbing systems; erosion of natural deposits

Disinfectant Residuals Summary

	Year Sampled	MRDL Violation	Your Water (highest RAA)	Range		MRDLG	MRDL	Likely Source of Contamination
				Low	High			
Chlorine (ppm)	2017	N	0.5	0.0	1.47	4	4.0	Water additive used to control microbes
Chloramines	2017	N	1.26	0.08	2.5			

Stage 2 Disinfection Byproduct Compliance - Based upon Locational Running Annual Average (LRAA)

Disinfection Byproduct	Year Sampled	MCL Violation Y/N	Your Water (highest LRAA)	Range		MCLG	MCL	Likely Source of Contamination
				Low	High			
TTHM (ppb)						N/A	80	Byproduct of drinking water disinfection
Location B01	2017	N	25.0	13.0	33.0			
Location B02	2017	N	27.0	17.0	36.0			
HAA5 (ppb)						N/A	60	Byproduct of drinking water disinfection
Location B01	2017	N	9.0	0.0	18.0			
Location B02	2017	N	15.75	5.0	23.0			

For TTHM: *Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.*

For HAA5: *Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.*

Water Quality Results For 2017

Listed below are the results of water quality sampling performed from January 1, 2017, to December 31, 2017.

Questions and Comments: Contact Glenn Walker, Water Resources Manager, 910-371-3490 or glenn.walker@brunswickcountync.gov

Northwest Water Treatment Plant Analysis

REGULATED ORGANIC CHEMICALS	EPA's MCL	EPA's MCLG	Brunswick County Amount Detected	Range Low High	Violation Y/N	Source of Contaminant
Turbidity	Treatment Technique Limit of 1.0 ntu	N/A	Average 0.039 ntu	% of samples ≤ 0.3 ntu 100.0%	N	Soil Runoff
			Maximum 0.267 ntu			
Raw Water TOC	Treatment Technique ≥ 45% Removal Efficiency	N/A	Average 6.482 ppm	2.9 8.1	N	Naturally Present in the Environment
Finish Water TOC		N/A	Average 2.718 ppm	2.0 3.1		
Total Organic Carbon (TOC)		N/A	Removal Efficiency Average 55.1%	3% - 65%		
pH	6.8 - 8.5	N/A	7.03	6.9 - 7.1	N	By-Product of Caustic Addition
REGULATED INORGANIC CHEMICALS				Range Low High		
Chlorite	1.0 ppm	0.8 ppm	0.59 ppm	0.40 0.80	N	By-Product of Disinfection
Chlorine Dioxide	0.8 ppm	0.8 ppm	0.13 ppm	0.05 0.28	N	Water Additive Used to Control Microbes
Fluoride	4 ppm	4 ppm	0.77 ppm	0.0 0.93	N	Water Additive which Promotes Strong Teeth
Orthophosphate	17 ppm	N/A	1.73 ppm	1.62 1.99	N	Water Additive Used to Control Corrosion
Total Chlorine	4 ppm	4 ppm	Average Minimum 2.59 ppm	1.1 3.0	N	Water Additive Used to Control Microbes
Monochloramine Disinfectant Residual	4 ppm	4 ppm	2.57 ppm	1.02 2.86	N	Water Additive Used to Control Microbes
UNREGULATED SUBSTANCES				Range Low High		
1, 4 Dioxane	Non Regulated	N/A	2.4 ppb	<0.028 2.4	N	By-Product of Chemical Manufacturer
Hardness	Non Regulated	N/A	29.7 ppm	27 32	N	Part of the Treatment Process, Erosion of Natural Deposits
Iron	Non Regulated	N/A	0.048 ppm	0.02 0.10	N	Part of the Treatment Process, Erosion of Natural Deposits
Manganese	Non Regulated	N/A	0.04 ppm	0.01 0.13	N	Part of the Treatment Process, Erosion of Natural Deposits
Free Ammonia	Non Regulated	N/A	0.063 ppm	0.02 0.08	N	Water Additive Used to Control Microbes
Sodium	Non Regulated	N/A	26 ppm	N/A	N	Part of the Treatment Process, Erosion of Natural Deposits
CRYPTOSPORIDIUM - Cape Fear River 2017		N/A	0.0 oocyst	0.0 0.0	N	Naturally Present in the Environment
UNREGULATED PFAS SUBSTANCES				Range Low High		
Perfluorohexanoic acid (PFHxA)	Non Regulated	N/A	23.245 ppt	8 39	N	By-Product of Chemical Manufacturer
Perfluoro-2-propoxypropanoic acid (GenX)	Non Regulated	N/A	76.71 ppt	13 910	N	By-Product of Chemical Manufacturer
Perfluoroheptanoic acid (PFHpA)	Non Regulated	N/A	18.681 ppt	6 33	N	By-Product of Chemical Manufacturer
Perfluorohexanesulfonic acid (PFHxS)	Non Regulated	N/A	3.777 ppt	0 6	N	By-Product of Chemical Manufacturer
Perfluorooctanoic acid (PFOA)	Non Regulated	N/A	8.952 ppt	4 17	N	By-Product of Chemical Manufacturer
Perfluorononanoic acid (PFNA)	Non Regulated	N/A	1.479 ppt	0 4	N	By-Product of Chemical Manufacturer
Perfluorooctanesulfonic acid (PFOS)	Non Regulated	N/A	6.459 ppt	2 11	N	By-Product of Chemical Manufacturer
Perfluorodecanoic acid (PFDA)	Non Regulated	N/A	0.989 ppt	0 2	N	By-Product of Chemical Manufacturer
ppt is equal to parts per trillion						

HWY 211 Groundwater Treatment Plant Analysis

Questions and Comments: Contact Jeremy Sexton, Water Resources Superintendent, 910-454-0512 or jeremy.sexton@brunswickcountync.gov

REGULATED ORGANIC CHEMICALS	EPA's MCL	EPA's MCLG	Brunswick County Amount Detected	Range Low High	Violation Y/N	Source of Contaminant
UNREGULATED SUBSTANCES						
Turbidity	Non Regulated	N/A	Average 0.90 ntu	0.04 2.9	N	Part of the Treatment Process, Erosion of Natural Deposits
pH	Non Regulated	N/A	-----	6.5 8.4	N	Part of the Treatment Process
CO2	Non Regulated	N/A	7.4 ppm	4 14	N	Part of the Treatment Process
Alkalinity	Non Regulated	N/A	35 ppm	16 195	N	Part of the Treatment Process, Erosion of Natural Deposits
Hardness	Non Regulated	N/A	121 ppm	71 236	N	Part of the Treatment Process, Erosion of Natural Deposits
Iron	Non Regulated	N/A	0.09 ppm	0 0.8	N	Part of the Treatment Process, Erosion of Natural Deposits
Chloride	Non Regulated	N/A	21 ppm	2 24	N	Part of the Treatment Process, Erosion of Natural Deposits
Free Ammonia	Non Regulated	N/A	0 ppm	0 0.14	N	Water Additive Used to Control Microbes
1, 4 Dioxane	Non Regulated	N/A	1.3	<0.028 1.3	N	By-Product of Chemical Manufacturer

REGULATED INORGANIC CHEMICALS			Brunswick County Amount Detected	Range Low High		Violation Y/N	Source of Contaminant
Fluoride	4 ppm	4 ppm	0.68 ppm	0.1	1.0	N	Water Additive Used to Promote Strong Teeth
Orthophosphate	17 ppm	N/A	1.4 ppm	0.1	2.9	N	Water Additive Used to Control Corrosion
Total Chlorine	4 ppm	4 ppm	2.54 ppm	1.2	3.8	N	Water Additive Used to Control Microbes
Monochloramine Disinfectant Residual	4 ppm	4 ppm	2.49 ppm	1.0	3.7	N	Water Additive Used to Control Microbes

Northwest WTP monitored for Cryptosporidium monthly and did not detect any oocysts in 12 samples from our raw water supply. Cryptosporidium is a microbial parasite which is found in surface water throughout the U.S. Although Cryptosporidium can be removed by filtration, the most commonly used filtration methods cannot guarantee 100 percent removal. Our monitoring of the source water indicates the presence of these organisms. Current test methods do not enable us to determine if the organisms are dead or if they are capable of causing disease. The Northwest WTP takes precautions to kill and remove Cryptosporidium oocyst by using Chlorine Dioxide as a pre-oxidant disinfectant in our raw water supply line and then again applying Chlorine Dioxide just prior to filtration. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals are able to overcome the disease within a few weeks. However, immunocompromised people have more difficulty and are at greater risk of developing severe, life-threatening illness. Immunocompromised individuals are encouraged to consult their doctor regarding appropriate precautions to take to prevent infection. Cryptosporidium must be ingested for it to cause disease, and it may be spread through means other than drinking water.

NOTICER TO THE PUBLIC-TIER

We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not our drinking water meets health standards. In August 2017, we did not complete all monitoring for TOC (Total Organic Carbon) and therefore cannot be for sure of the quality of our drinking water during that time.

We are required to submit monthly samples for Total Organic Carbon (TOC) to a certified laboratory Total Organic Carbon was being monitored, however, a sample was not submitted to a certified laboratory as required for the month of August. All samples are now being analyzed by a certified laboratory approved by the NC Department of Environment Quality. There is nothing that you need to do at this time. All samples results before and after the missed sample were reported to be in compliance with state treatment technique standards.

The water system returned to compliance on September 1, 2017, and we have no reason to believe the water quality was ever out of compliance. New staff and calendar reviews should help reduce sampling irregularities.

***(TOC)-Total Organic Carbon** – includes testing for Alkalinity, Dissolved Organic Carbon (DOC) Total Organic Carbon (TOC), and Ultraviolet Absorption 254 (UV254) Source water sample must be tested for both TOC and Alkalinity. Treated water samples must be treated for TOC. Source water samples and treated water samples must be collected on the same day.*

For more information on this PN please contact Glenn Walker, Water Resources Manager, at glenn.walker@Brunswickcountync.gov, 010-371-3490 or P.O. Box 249 Bolivia, NC 28422

For a complete view of Brunswick County's Water Quality Report and Public Notice Please visit their website at <http://www.brunswickcountync.gov/public-utilities/reports/>