



CITY OF
ELIZABETH CITY
HARBOR OF HOSPITALITY *North Carolina*

2018 Annual Drinking Water Quality Report

City of Elizabeth City

Water System Number: 04-70-010

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 **Travis Tucker, Water Treatment Superintendent at (252) 335-2196**. We want our valued customers to be informed about their water utility. If you want to learn more, please watch the City's Cable TV access channel 11 for water related information and to review the City's Council agenda for upcoming items related to water supply or visit the City's website at www.cityofec.com. Regular council meetings are held on the second and fourth Monday of each month at 7 pm in the Gardner Building located at 306 East Colonial Avenue.

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. [Name of Utility] 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 stormwater 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 stormwater 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 stormwater 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 amount 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 City of Elizabeth City uses groundwater from 14 wells located in the central portion of Pasquotank County. Water from these wells comes from the Upper Yorktown aquifer. The depth of these wells range from 94 to 140 feet and the production capacity range is 50 to 485 gallons per minute.

Source Water Assessment Program (SWAP) Results

The North Carolina Department of Environmental Quality (DEQ), 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 Elizabeth City wells 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 | Inherent Vulnerability Rating | Contaminant Rating | Susceptibility Rating | SWAP Report Date |
|-------------|-------------------------------|--------------------|-----------------------|------------------|
| Well 1 | Higher | Lower | Moderate | 5/24/17 |
| Well 2 | Moderate | Lower | Moderate | 5/24/17 |
| Well 3 | Higher | Lower | Moderate | 5/24/17 |
| Well 4 | Higher | Lower | Moderate | 5/24/17 |
| Well 5A | Higher | Lower | Moderate | 5/24/17 |
| Well 7 | Higher | Lower | Moderate | 5/24/17 |
| Well 8 | Higher | Lower | Moderate | 5/24/17 |
| Well 9 | Higher | Lower | Moderate | 5/24/17 |
| Well 10 | Higher | Lower | Moderate | 5/24/17 |
| Well 11 | Higher | Lower | Moderate | 5/24/17 |
| Well13 | Lower | Lower | Lower | 5/24/17 |
| Well 14 | Moderate | Lower | Moderator | 5/24/17 |
| Well 15 | Lower | Lower | Lower | 5/24/17 |
| Well 16 | Moderate | Lower | Moderate | 5/24/17 |

The complete SWAP Assessment report for City of Elizabeth City can be viewed on the Web at:

<https://www.ncwater.org/?page=600> 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. You can help protect your community’s drinking water source(s) in several ways, including 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.

Violations that Your Water System Received for the Report Year

During 2018, or during any compliance period that ended in 2018, we did not receive any violations that covered the time period of January 1 through December 31, 2018.

Water Quality Data Tables of Detected Contaminants

The City of Elizabeth City 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, 2018.** 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.

2018 Water Characteristics

The City of Elizabeth City monitors for over 150 contaminants in your drinking water according to Federal and State laws. Microbiological quality, disinfectant residuals, and lead & copper levels in the water is also monitored once it has been introduced into the Annex system. The following tables list all the drinking water contaminants that were detected in the last round of sampling for the 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, 2016. 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.

Microbiological Quality

Physical processes and disinfection chemicals remove bacterial and other harmful organisms. The federal MCL for total coliform is the presence in 5% of the monthly samples. In 2018 bacteriological sampling in the City of Elizabeth City did detect the presence of total coliform bacteria in monthly compliance samples. Due to this, the city was required to complete one Level 1 Assessment, and this was submitted to the state. The reasons for this assessment were to evaluate treatment processes. The corrective action was to cover our raw water reservoir. The Water Treatment Plant switched to a second covered raw water reservoir while the uncovered raw water reservoir is in the process of being covered.

| Contaminant | MCL Violation Y/N | Your Water (Original of 20/month) | Your Water (Repeat1) | Your Water (Repeat2) | MCLG | MCL | Likely Source of Contamination |
|---|-------------------|-----------------------------------|----------------------|----------------------|------|---|--------------------------------------|
| Total Coliform Bacteria (presence or absence) | N | 2 Present | 1 Present | 2 Present | 0 | 1 positive sample/month (20 samples/month required) | Naturally Present in the environment |
| E. Coli (presence or absence) | N | 0 | 0 | 0 | 0 | | Human and animal fecal waste |

Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments.

During the past year we were required to conduct one Level 1 assessment. One Level 1 assessment was completed. In addition, we were required to take 1 corrective action and we completed 1 action. The reasons for this assessment were to evaluate treatment processes. The corrective actions were to cover our raw water reservoir. The Water Treatment Plant switched to a second covered raw reservoir while the uncovered raw reservoir is in the process of being covered.

Disinfectant Residuals Summary

| Contaminant | Year Sampled | MRDL Violation Y / N | Your Water mg/L (highest RAA) | Range mg/L | | MRDL | Likely Source of Contamination |
|-----------------|--------------|----------------------|-------------------------------|------------|------|------|---|
| | | | | Low | High | | |
| Chlorine (mg/L) | 2018 | N | 2.23 | 0.12 | 3.80 | 4.0 | Water additive used to control microbes |

Radiological Quality

Radiological quality was tested during the first quarters in 2016. Test results were below detection limits or below allowable limits. The next round of sampling will be in 2025.

Lead & Copper

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. Pasquotank County Reverse Osmosis WTP 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 thirty seconds to two 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 Federal Lead & Copper Rule mandates a household testing program in accordance with the 1994 Lead & Copper Rule. According to the rule, 90% of the samples from high risk homes in the E. C. Annex cannot exceed 0.015 mg/l lead and 1.3 mg/l copper. **In 2016 samples taken from high risk homes in Elizabeth City, the 90th percentile results were 0.0055 mg/l of lead and 0.480 mg/l copper.** The next round of sampling for Lead and Copper is scheduled for 2019.

Organic Compounds

There are many organic compounds that are of concern in drinking water. This group includes volatile organic compounds that vaporize easily called VOC's, synthetic organic compounds including pesticides and herbicides called SOC's and compounds that occur as a by-product when water is disinfected

SOC's were tested during the first and third quarters in 2017. Testing included 26 regulated compounds. Test results showed all compounds tested were below the detection limit. SOC's are due to be tested again in 2020.

VOC's were tested in January 2018. There was a total of 21 regulated compounds tested. Test results for all compounds were below detection limits.

Inorganic Compounds / Nitrate & Nitrite

Nitrite was tested in January 2017 and below detection limits. Nitrate and 17 compounds were tested in January 2018. All test results were below the detection limit with exception of the following:

| Contaminant | Your Water | MCL |
|-------------|------------|---------------|
| Fluoride | 0.54 mg/l | 4.00 mg/l |
| Sodium | 45.3 mg/l | Not Regulated |
| Sulfate | 167 mg/l | 250 mg/l |
| pH | 7.3 su | 6.5 to 8.5 su |

THM's (Trihalomethanes) & HAA5 (Haloacetic Acids)

Under the new Stage II DBP (Disinfect By-Product) Rule, which became effective in October 2013, we are required to collect and analyze two target distribution samples once a year. Results for samples collected in July 2018 were as follows: The next round of sampling for Stage II DBPs is 2019.

Stage 2 Disinfection Byproduct Compliance –

| Disinfection Byproducts | Year Sampled | MCL Violation Y/N | Your Water (Highest LRAA) | Range | | MCLG | MCL | Likely Source of Contamination |
|-------------------------|--------------|-------------------|---------------------------|-------|-------|------|-----|--|
| | | | | Low | High | | | |
| TTHM (ppb) | 2018 | N | 70.0 | 34.0 | 100.0 | N/A | 80 | Byproduct of drinking water disinfection |
| Location – B01 | 2018 | N | 65.8 | 49.0 | 93.0 | N/A | 80 | Byproduct of drinking water disinfection |
| Location – B02 | 2018 | N | 65.5 | 49.0 | 100.0 | N/A | 80 | Byproduct of drinking water disinfection |
| Location – B03 | 2018 | N | 70.0 | 52.0 | 89.0 | N/A | 80 | Byproduct of drinking water disinfection |
| Location – B04 | 2018 | N | 65.8 | 34.0 | 100.0 | N/A | 80 | Byproduct of drinking water disinfection |
| HAA5 (ppb) | 2018 | N | 30.5 | 3.5 | 40.0 | N/A | 60 | Byproduct of drinking water disinfection |
| Location – B01 | 2018 | N | 30.0 | 26.0 | 35.0 | N/A | 60 | Byproduct of drinking water disinfection |
| Location – B02 | 2018 | N | 30.5 | 24.0 | 33.0 | N/A | 60 | Byproduct of drinking water disinfection |
| Location – B03 | 2018 | N | 36.8 | 30.0 | 40.0 | N/A | 60 | Byproduct of drinking water disinfection |
| Location – B04 | 2018 | N | 16.9 | 3.5 | 31.0 | N/A | 60 | Byproduct of drinking water disinfection |

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.

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Terms and Definitions

In this report you may find terms and abbreviations that may not be familiar to you. To help you better understand these terms we have provided the following definitions

Parts per million (ppm) or Milligrams per liter (mg/L) - One part per million corresponds to one minute in two years or a single penny in \$10,000.

Parts per billion (ppb) or Micrograms per liter (ug/L) - One part per billion corresponds to one minute in 2,000 years, or a single penny in \$10,000,000.

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

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.

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.

Total Coliform Bacteria (TC) – includes testing for Total Coliform bacteria and Fecal/E.coli bacteria. Testing for Fecal/E.coli bacteria is required if total coliform is present in the sample.

Haloacetic Acids (HAA5) - include Monochloroacetic Acid, Dichloroacetic Acid, Trichloroacetic Acid, Monobromoacetic Acid, Dibromoacetic Acid.

Total Trihalomethanes (TTHM) - include Chloroform, Bromoform, Bromodichloromethane, and Dibromochloromethane.

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.