



Annual Water Quality Report

*City of Shelby
PWS ID # 01-23-010
Water Testing Performed in
2020*



The City of Shelby's goal is to deliver an adequate supply of safe drinking water to our customers. On an average day in Shelby, our water system delivers 5.943 million gallons of water to over 20,353 people. Our Mayor, City Council, City Manager, Director of Water Resources, Plant Superintendent, Plant Supervisor, Treatment Operators, Laboratory Operators, Distribution Operators, and Customer Service Representatives all work together to meet and exceed Environmental Protection Agency (EPA) and State standards to provide our customers with reliable and safe tap water.

Our drinking water once again meets and exceeds all state and federal drinking water standards.

Overview

The City of Shelby is proud of the high quality water it produces. This annual water quality report describes the source of our water, lists the results of our tests and contains important information about our water and your health. The City of Shelby will notify you immediately if there is any reason for concern about our water. We are happy to show you how we have surpassed water-quality standards! We are committed to providing you with a safe and dependable supply of water, while keeping you informed of our efforts.

Where Does My Water Come From?

Shelby's water comes from the surface water source of the First Broad River that flows along the west side of town. The City of Shelby is permitted to withdraw up to 18 million gallons per day (MGD) from the First Broad River. The City is capable of utilizing the Broad River for up to 9 MGD for secondary backup water supply.

How It Is Treated

Shelby has one water treatment plant located at 801 West Grover Street. Water is transferred from the river into a series of three on-site reservoirs at the water treatment plant. These reservoirs hold a three-day supply of raw water. The water treatment plant, built in 1953 and upgraded in 1994, has a production capacity of 12 MGD. Once at the plant, raw water is mixed with caustic soda to adjust the pH and aluminum sulfate (alum) to cause dirt particles to coagulate (clump) together. After mixing, the water flows into settling basins where heavy particles are removed through settling. The water then flows through filters, which traps and removes the remaining smaller particles. We add chlorine to prevent bacterial growth and fluoride is added to promote dental health. We then distribute water to our customers through a distribution system which consists of 227 miles of lines and five (5) above ground storage tanks. The staff at the water treatment plant is continually conducting tests at the plant and throughout the City's distribution system to assure high water quality.

The City's water treatment plant welcomes visitors. If you would like a tour of the plant or if you have any questions about this report or the quality of your water, please call the City of Shelby Water Treatment Plant at (704) 484-6885.

Visit us at www.cityofshelby.com/waterplant



**National Primary Drinking Water Regulation Compliance
ISO 14001 Certified**

The City of Shelby also operates electric, sewer, gas and stormwater systems and is a member of North Carolina 811.

Know what's below! For all requests for locating utilities, please call 8-1-1 BEFORE you dig.



Water Quality Table Information

The City routinely monitors for over 150 contaminants in your drinking water according to Federal and State laws. The table located below and on page 3 and 4 shows the contaminants which were detected during January—December 2020. Both regulated and unregulated contaminants are listed and the table below contains the name of each substance, the highest level allowed by regulation (MCLG and/or MCL), the ideal goals for public health, the amount detected, the likely sources of such contamination, footnotes explaining our findings, and a key to units of measurement. Unregulated contaminants are those for which the EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist the EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted.

The presence of contaminants does not necessarily indicate that water poses a health risk. The EPA nor the State requires 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 a year old.

For your information, the definitions of MCL and MCLG are listed below:

- Maximum Contaminant Level or MCL: The highest level of a contaminant that is allowed in drinking water.
- Maximum Contaminant Level Goal or MCLG: The level of a contaminant in drinking water below which there is no known or expected risk to health.

MCLs are set as close to the MCLGs as feasible by the EPA and the City of Shelby is using the best available treatment technology. MCLGs allow for a margin of safety.

Key to Table

- AL = Action Level
- LRAA = Locational Running Annual Average
- MCL = Maximum Contaminant Level
- MCLG = Maximum Contaminant Level Goal
- MFL = Million Fibers Per Liter
- mg/L = Milligrams per liter (mg/L)
- MRDL = Maximum Residual Disinfect Level
- MRDLG = Maximum Residual Disinfectant Level Goal
- N/A = Not Applicable
- NR = Not Regulated
- NTU = Nephelometric Turbidity Units
- ppb = parts per billions, or micrograms per liter
- ppq = parts per quadrillion, or picograms per liter (ug/L)
- ppm = parts per million, or milligrams per liter (mg/L)
- ppq = parts per quadrillion, or picograms per liter
- ppt = parts per trillion, or nanograms per liter
- SMCL = Secondary Maximum Contaminant Level
- SS = Secondary Standards (non-enforced guidelines)
- SU = Standard Units
- TT = Treatment Technique

Contaminants

Contaminants							
Microbiological Contaminants							
Contaminant (units)	MCL Violation Y/N	Your Water	MCLG	MCL	Likely Source of Contamination		
Total Coliform Bacteria (presence or absence)	N/A	N/A	N/A	TT*	Naturally present in the environment		
<i>E. coli</i> (presence or absence)	N	N	0	Routine and repeat samples are total coliform-positive and either is <i>E. coli</i> -positive or system fails to take repeat samples following <i>E. coli</i> -positive routine samples or system fails to ana-lyze total coliform-positive repeat sample for <i>E. coli</i> . <u>Note:</u> If either an original routine sample and/or its repeat samples are <i>E. coli</i> positive, a Tier 1 violation exists.	Human and animal fecal waste		
<i>*If a system collecting fewer than 40 samples per month has two or more positive samples in one month, an assessment is required.</i>							
<i>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. In the month of May, the city had two positive coliform samples triggering an assessment. Problems: 1, Operators not wearing gloves, 2 Sample tap not disinfected. Corrective actions: 1, sampling procedure revised to include wearing gloves, 2 change disinfectant to a bleach solution.</i>							
<i>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. In the month of August, the city had a second level 1 trigger in a 12 month period triggering a level 2 assessment. Problems: 1 flushing times not long enough, 2 disinfectant not adequate. Corrective actions: 1 incusted the flushing times in the sampling procedure 2 change the disinfectant to a 70% Alcohol solution.</i>							
CCR Health Effects Language for the RTCR: Level 1 or 2 Assessment Not Due to E. coli MCL Violation							
CCR Language					Citation		
<i>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.</i>					40 CFR 141.153(h)(7)(i)(A)		
<i>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 two corrective actions and we completed two of these actions.</i>					40 CFR 141.153(h)(7)(i)(B)		
<i>During the past year, one Level 2 assessment was required to be completed for our water system. One Level 2 assessment was completed. In addition, we were required to take two corrective actions and we completed two of these actions.</i>					40 CFR 141.153(h)(7)(i)©		
Nitrate/Nitrite Contaminants							
Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range Low—High	MCLG	MCL	Likely Source of Contamination
Nitrate (as Nitrogen) (ppm)	1/8/2020	N	0.55	N/A	10	10	Runoff from fertilizer use; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories

Contaminants (continued)							
Turbidity*							
Contaminant (units)	Treatment Technique (TT) Violation Y/N	Your Water	MCLG	Treatment Technique (TT) Violation If:	Likely Source of Contamination		
Turbidity (NTU)—Highest single turbidity measurement	N	0.27 NTU	N/A	Turbidity > 1 NTU	Soil run-off		
Turbidity (NTU) - Lowest monthly percentage (%) of samples meeting turbidity limits	N	100%	N/A	Less than 95% of monthly turbidity measurements are ≤ 0.3 NTU			
*Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system. The turbidity rule requires that 95% or more of the monthly samples must be less than or equal to 0.3 NTU.							
Inorganic Contaminants							
Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range Low—High	MCLG	MCL	Likely Source of Contamination
Fluoride (ppm)	2/4/2020	N	1.22	N/A	4	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Barium (ppm)	1/8/2020	N	0.015	N/A	2	2	Discharge of drilling waste discharge from metals, refineries; erosion of natural deposits
Volatile Organic Chemical (VOC) Contaminants							
Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range Low—High	MCLG	MCL	Likely Source of Contamination
Xylenes (Total) (ppm)	7/8/2020	N	1.3	0.0—1.3	10	10	Discharge from petroleum factories; discharge from chemical factories
Total Organic Carbon (TOC)							
Contaminant (units)	TT Violation Y/N	Your Water (RAA Removal Ratio)	Range Low—High	MCLG	TT	Likely Source of Contamination	Compliance Method (Step 1 or Alternative Compliance Criteria (ACC) #)
Total Organic Carbon (removal ratio) (TOC)-TREATED	N	0.42	0.0—0.46	N/A	TT	Naturally present in the environment	ACC2
Disinfectants Residuals Summary and Stage 2 Disinfection Byproduct Compliance							
Contaminant (units)	Year Sampled	MCL/MRDL Violation Y/N	Your Water (highest RAA / LRAA)	Range Low—High	MCLG / MCL	MRDLG / MRDL	Likely Source of Contamination
Chlorine (ppm)	2020	N	1.02 RAA	0.64—1.38		4 / 4.0	Water additive used to control microbes.
TTHM (ppb)							
B01—040	2020	N	47 LRAA	26—68	N/A / 80		By-product of drinking water disinfection.
B02—055		N	24 LRAA	11—32			
B03—200		N	26 LRAA	15—27			
B04—023		N	48 LRAA	23—79			
HAA5 (ppb)							
B01—040	2020	N	12 LRAA	9—17	N/A / 60		By-product of drinking water disinfection.
B02—055		N	14 LRAA	6—17			
B03—200		N	12 LRAA	7—17			
B04—023		N	17 LRAA	13—20			
Lead and Copper Contaminants							
Contaminant (units)	Sample Date	Your Water	Number of Sites Found Above the AL	MCLG	MCL	Likely Source of Contamination	
Copper (ppm) (90th percentile)	7/13/2019	0.082	0	1.3	AL = 1.3	Corrosion of household plumbing systems; erosion of natural deposits	
Lead (ppb) (90th percentile)	7/13/2019	<3	0	0	AL = 15		
UCMR4 Testing conducted in 2020. Results available upon request.							

Contaminants (continued)				
Other Miscellaneous Water Characteristics Contaminants				
Contaminant (units)	Sample Date	Your Water	Range Low—High	SMCL
Sodium (ppm)	1/8/2020	10.2	N/A	N/A
Sulfate (ppm)	1/8/2020	18.5	N/A	250 mg/L

Additional Lead Information

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. The City of Shelby is responsible for providing high quality drinking water, but cannot control the variety of materials used in home 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 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 (800) 426-4791 or at <https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water>.

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 the 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 at (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 microbiological contaminants are available from the Safe Drinking Water Hotline (800) 426-4791.

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 Containment 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 the City of Shelby was determined by combining the contaminant rating (number and location of PCSs within the assessment area) and the inherent vulnerable 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.

The complete SWAP Assessment Report for the City of Shelby may be viewed on the Web at <https://www.ncwater.org/?page=600> or email a request to swap@ncdenr.gov. Please indicate the system name, PWSID, and provide your name, email or 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) 707-9070. It is important to understand that a susceptibility rating of “Higher” does not imply poor water quality, only the systems’ potential to become contaminated by PCSs in the assessment area.

2020 Susceptibility of Sources to Potential Contaminant Sources (PCSS)	
<u>SOURCE NAME:</u>	<u>SUSCEPTIBILITY RATING:</u>
First Broad River	Moderate
Broad River	Higher

Required Additional Health Information

To insure that tap water is safe to drink, EPA prescribes limits on the manner of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water. 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 the 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 at (800) 426-4791.

The sources of drinking water (both tap water and bottled water) include rivers, streams, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and 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:

- (A) Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- (B) Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban runoff, industrial or domestic.
- (C) Pesticides and herbicides, which may come from a variety of sources such as agriculture, stormwater runoff, and residential uses.
- (D) Organic chemical contaminants, including synthetic and volatile organics, which are by-products of industrial processes and petroleum production, can also come from gas stations, urban runoff and septic systems.
- (E) Radioactive contaminants, which can be naturally occurring or be the result of certain gas production and mining activities.

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 a 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 are available from the Safe Drinking Water Hotline (800) 426-4791.