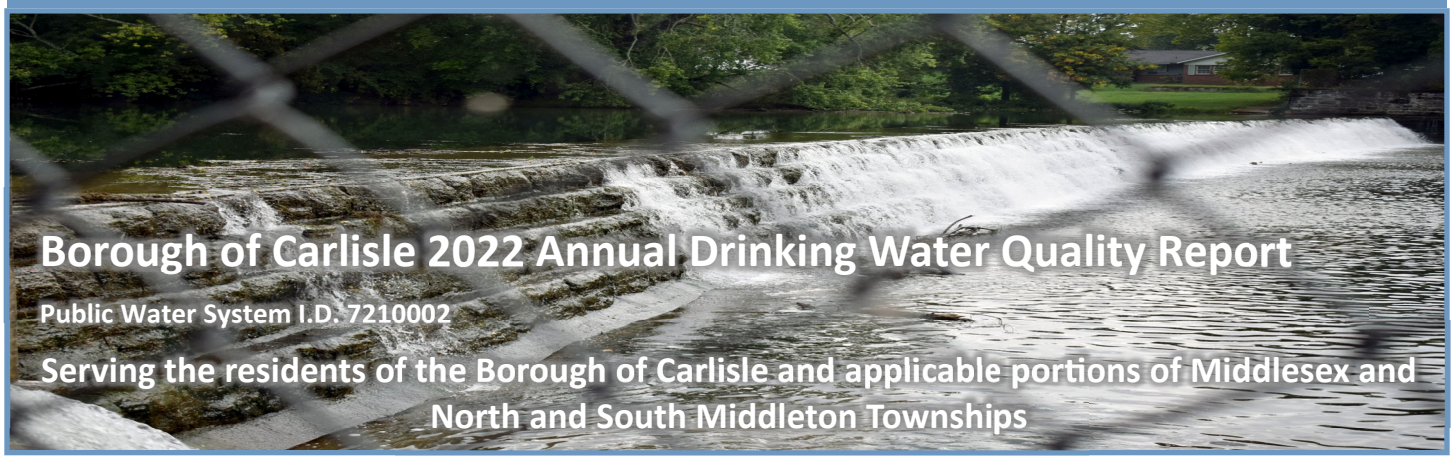


Borough of Carlisle 2022 Annual Drinking Water Quality Report

Public Water System I.D. 7210002

Serving the residents of the Borough of Carlisle and applicable portions of Middlesex and North and South Middleton Townships

Your Water Quality Report, also known as a Consumer Confidence Report (CCR), is to inform you about the water quality produced and delivered by the Borough of Carlisle Water Treatment Plant. Safe water is vital to our community and we want you to understand the information on the source of your water, what's in it, and the health risks associated with any contaminants that may be found.

Most drinking water in the United States comes from a river, a lake, or from an underground well. The water we provide to you originally comes from the Conodoguinet Creek. We monitor the land around the source of your drinking water and we watch this area closely to assure nothing is happening nearby that could impact its quality. We withdraw around 3 million gallons of water from the creek daily. The population served by the treatment plant is between 20,000 - 25,000 people depending on the time of year.

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 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 before treatment include:

- Microbial contaminants, such as viruses and bacteria
- Inorganic contaminants, such as salts and metals
- Pesticides and herbicides
- Organic chemical contaminants, including synthetic and volatile organic chemicals
- Radioactive contaminants

Before we treat the water, it can contain coliform bacteria, toxic chemicals, trash, minerals and metals. After we clean it, the water is still not pure. While it does not have harmful bacteria in it, it may still contain small amounts of minerals or metals. Don't let this worry you. You can actually drink water that has tiny amounts of some metals and minerals without getting sick. In fact, some small amounts of minerals and metals are what gives water its taste. United States Environmental Protection Agency (EPA) scientists continuously evaluate potential pollutants to determine what amounts are safe.

In order to ensure that tap water is safe to drink, the EPA sets limits on the amount of certain contaminants allowed in water provided by public water systems. The Food and Drug Administration (FDA), not EPA, establishes limits for pollutants in bottled water, and those limits must make bottled water as safe as tap water.

The Borough of Carlisle is proud that the water we provide to you meets all federal and state requirements and is safe to use.

Items that were detected during our testing process are detailed on the following pages. If you have questions about the Water Quality Report, contact Sara Crawshaw, Borough of Carlisle Laboratory Supervisor (717-240-6991), or Borough offices (717-249-4422).

You can call EPA's Safe Drinking Water Hotline for more information about pollutants in water and how they may affect your health at 800-426-4791.

Este informe contiene información muy importante sobre su agua potable. Pídele a alguien que te lo traduzca o habla con alguien que lo entienda bien.

How we clean the water is similar to other water treatment plants in the U.S. and is required by law.

The Borough of Carlisle Water Treatment Plant follows these five steps:

STEP 1: Pre-Treatment
The water we collect is screened from the creek and brought into our treatment plant where chemicals are added in safe amounts to cause small particles of pollutants present to stick to one another, forming larger particles. This is called coagulation.



STEP 2 : Settling
Over time, the larger particles become heavy enough to fall (or settle) to the bottom of the tank where they are removed.



STEP 3: Filtering
The remaining water flows through filters made of layers of fine materials of sand, anthracite coal, garnet and types of media . These layers stop even smaller particles of pollutants from getting through, and only very clear water is left.



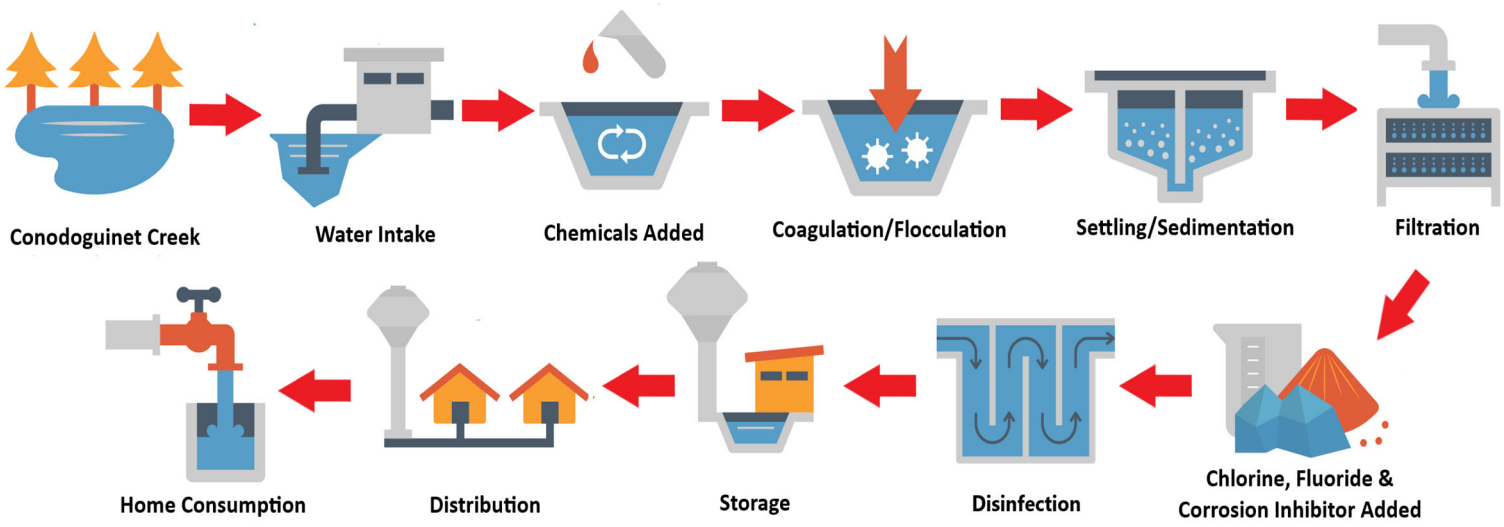
STEP 4: Disinfection
Bacteria or viruses may still be present in the water, so a chemical, chlorine, is added to remove them. An additional chemical is also added at a safe level to protect the pipes from corrosion as the water travels to your home.



STEP 5: Storage and Delivery
Once the disinfection process is complete, the treated water is stored until needed. Storage usually takes place in an underground storage tank called a “clear well”, and also in elevated storage tanks that are visible around town. The stored water is sent through underground pipelines all over town in what is called a “distribution system”.



Schematic of the Borough of Carlisle Water Treatment Plant



Frequently Asked Questions about Water Treatment

Why is there chlorine in my water?

Chlorine is used to destroy disease-causing organisms in water, an essential step in delivering safe drinking water and protecting public health. According to the EPA and other health agencies, chlorine is currently one of the most effective disinfectants to kill harmful microorganisms. Chlorination is the most widely used method for disinfecting water supplies in the United States. Chlorine is first applied at the water treatment facility and a continual residual is maintained to keep the water safe as it travels from the source, through the distribution system, and finally to your water tap. Disinfection of all public water supplies is required by Federal and State laws and regulations, including the Safe Drinking Water Act and the Surface Water Treatment Rule.



Does Carlisle add fluoride to my water?

Carlisle does add fluoride to the water. Fluoride is a naturally occurring mineral that protects teeth from tooth decay. Almost all water contains some naturally occurring fluoride, but usually not enough to prevent tooth decay. Many communities adjust the amount of fluoride in the water supply to a level known to reduce tooth decay and promote good oral health. Water fluoridation is safe, effective and healthy. Seventy years of research, thousands of studies and the experience of more than 210 million Americans tell us that water fluoridation is effective in preventing cavities and is safe for children and adults. Almost 75 percent of the U.S. population is served by fluoridated community water systems.

Is my water hard or soft?

Hardness describes the level of dissolved natural minerals (calcium and magnesium) in drinking water. These minerals are an important part of a healthy diet. Hard water contains more of these minerals. A gradual build-up of calcium and magnesium from hard water can form harmless, filmy white deposits on faucets, bathtubs and teakettles. Hard water also requires more soap to lather fully.

Carlisle's water is considered hard due to the amount of dissolved calcium and magnesium in our water source. The water hardness in Carlisle averages 168 ppm or mg/L, or expressed another way, 9.8 grains per gallon. The water will be harder during dry or drought periods than it will be during wet weather. Water hardness ranged from 85 – 237 ppm or 5.0 – 13.8 grains per gallon throughout the year.



How EPA Sets Limits

The EPA studies pollutants and determines what levels are safe to drink. This process can take several years. The safe limit is called a Maximum Contaminant Level (MCL), and your water utility has to, by law, make sure the water it produces does not go over this limit.

The Maximum Contaminant Level Goal (MCLG) is the level at which there are no known negative effects on someone's health and it allows for an adequate margin of safety. The MCL is set as close as possible to the goal. While the goal is not enforceable by law, the MCL is. Sometimes, the MCL is actually higher than the goal. This is possible because either (1) the technology needed to measure such small quantities of the MCLG is not available; (2) the technology needed to remove the pollutant or reduce it to the MCLG is not available yet; or (3) the cost of treating the pollutant to the MCLG is much greater than the benefit of having a lower amount of the pollutant. The human body is able to safely handle some tiny levels of pollutants so EPA allows some to be present so that water rates stay affordable for most people.

Not All Pollutants Have Limits

EPA doesn't have a legal limit for all the pollutants that may exist in water supplies, but every year, it studies new pollutants to see whether new limits should be established. EPA does this with help from water utilities all over the country. PFAS and PFOA, for example, are "forever" chemicals found in many types of consumer products. There is currently no federal limit for it in water but it is one of the groups of chemicals EPA is looking at closely. We are helping EPA by testing for PFAS and PFOA in our water to help them learn more about where it occurs and whether it needs to be regulated.

In this report, many terms and abbreviations may not be familiar to you. To help you better understand these terms we've provided definitions below.

AL	Action Level: When there is more than this amount of pollutant, the water utility must take more action to clean the water and remove it.
MRDL	Maximum Residual Disinfectant Level: 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.
MRDLG	Maximum Residual Disinfectant Level Goal: This is the lowest amount of disinfectant chemical drinking water should have, because it is the lowest amount needed to make sure bacteria and viruses can't live.
MCL	Maximum Contaminant Level: This is the highest level allowed of a pollutant in drinking water. MCLs are set as close as possible to the goal using the best available technology.
MCLG	Maximum Contaminant Level Goal: The goal level of a pollutant in drinking water. Below this amount, there is no known or expected health effect.
NTU	Nephelometric Turbidity Units, measure of very small particulate matter in water.
ppm	parts per million, or milligrams per liter (mg/l), the equivalent of 1 cent in 10 thousand dollars or 1 drop of water in a hot tub.
ppb	parts per billion, or micrograms per liter (ug/l), the equivalent of 1 cent in 10 million dollars or 1 drop of water in an Olympic sized swimming pool.
ppt	parts per trillion, or nanograms per liter (nanogram/l), the equivalent of 1 cent in 100 million dollars or 1 drop of water in a 6-acre lake.
TT	Treatment Technique: A process that is required to reduce the amount of pollutant in drinking water.

Your Water Data

Every year, we take samples of water from the water treatment plant and the pipes in our system and run numerous tests on these samples at our water quality lab. We look for bacteria, metals, and chemicals to make sure the water continues to be safe to drink. We test for bacteria on a monthly basis, as required by law, and there are 11 locations in the water system where we take samples for analysis. The limit for coliform bacteria is no bacteria can be present in 5% or more of monthly samples. Four times per year we look for by-products of the disinfection process. When chlorine, the disinfectant we use, starts to dissolve in the water, it can form new compounds. These compounds, trihalomethane (THM) and haloacetic acid (HAA5), have been known to cause cancer when high levels are present in the water. The legal limit for drinking water is 80 ppb and 60 ppb respectively. We test for these compounds at 4 different locations in the water system. We also take water samples from 30 different homes in our system every 3 years to test for lead and copper.

We have never gotten a result that did not meet requirements. If we did, we would act fast to protect you and your family. We would contact our customers immediately through various media outlets.

For your information, we have compiled a list in the tables below showing the testing of your drinking water during 2022. The PA DEP allows us to monitor for some pollutants less than once per year because the concentration of the pollutants does not change frequently. Some of our data, though representative, are more than one year old.

Each table includes the amount found, the goal, the highest level allowed, (the "MCL"), the highest we detected in samples, and the lowest amount found. You will see that for everything we tested for the amount we found in your water was safe, meaning it was less than the highest level allowed by the law.

Microbial (related to Assessments/Corrective Actions regarding TC positive results)						
Substance (with units)	Year Sampled	Compliance Achieved	MCLG	Treatment Technique	Assessments / Corrective Actions	Typical Source
Total Coliform Bacteria	2022	Yes	NA	Any system that has failed to complete all the required assessments or correct all identified sanitary defects, is in violation of the treatment technique requirements.	0 – None Needed	Naturally present in the environment

Microbial (related to E. coli)						
Substance (with units)	Year Sampled	Compliance Achieved	MCLG	Treatment Technique	Positive Samples	Typical Source
E. coli	2022	Yes	0	Any system that has failed to complete all the required assessments or correct all identified sanitary defects, is in violation of the treatment technique requirements.	0	Human and animal fecal waste

DISINFECTION BY-PRODUCTS PRECURSOR REMOVAL - Collected at the surface water treatment plant								
Substance (with units)	Year Sampled	Compliance Achieved	MCLG	MCL	Range of % Removal Required	Range of % Removal Achieved	Number of Quarters Out of Compliance	Typical Source
Total Organic Carbon (TOC)	2022	Yes	NA	TT	15% - 25%	38% - 50%	0	Naturally present in the environment.

DISINFECTANT RESIDUAL MONITORING - Collected at the treatment plant entry point and within the distribution system								
Substance (with units)	Year Sampled	Compliance Achieved	MRDLG	MRDL	Minimum Required Chlorine Residual	Compliance Result	Range Detected	Typical Source
Entry Point Chlorine Residual (ppm) 1	2022	Yes	4	4	0.20	1.5	1.5-2.1	Water additive used to control microbes.
Distribution System Chlorine Residual (ppm) 2	2022	Yes	4	4	0.2	1.6	1.0-1.6	Water additive used to control microbes.

1 – Data represents the lowest residual entering the distribution system from the surface water treatment plant.

2 – Data represents the highest monthly average of chlorine residuals measured throughout the distribution system.

DISINFECTION BY-PRODUCT MONITORING - Collected in the distribution system							
Substance (with units)	Year Sampled	Compliance Achieved	MCLG	MCL	Highest Compliance Result	Range Detected	Typical Source
Total Trihalomethanes (TTHMs) (ppb)	2022	Yes	NA	80	52	0 to 52	By-product of drinking water disinfection (chlorination)
Haloacetic Acids (HAAs) (ppb)	2022	Yes	NA	60	42	17 to 42	By-product of drinking water disinfection (chlorination)

NOTE: Compliance is based on the running annual average at each location. The Highest Compliance Result reflects the highest average at any location and the Range Detected reflects all samples from this year used to calculate the running annual average.

TURBIDITY – Continuous monitoring at the surface water treatment plant							
Substance (with units)	Year Sampled	Compliance Achieved	MCLG	MCL	Level Detected	Sample Date	Typical Source
Turbidity (NTU)	2022	Yes	0	TT: Single result =1 NTU	0.13 NTU highest level detected	8/26/2022	Soil erosion and runoff.
	2022	Yes	NA	TT: At least 95% of samples ≤0.3 NTU	100% of all monthly samples were less than 0.14 NTU	12 months	Soil erosion and runoff.

OTHER REGULATED SUBSTANCES - Collected at the water treatment facility							
Substance (with units)	Year Sampled	Compliance Achieved	MCLG	MCL	Highest Compliance Result	Range Detected	Typical Source
Barium (ppm)	2022	Yes	2	2	0.034	Single Sample	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits.
Fluoride (ppm)	2022	Yes	2	2	0.86	Single Sample	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer & aluminum factories
Nitrate (ppm)	2022	Yes	10	10	4.2	3.0 to 4.2	Runoff from fertilizer use; industrial or domestic wastewater discharges; erosion of natural deposits.

LEAD AND COPPER MONITORING - At least 30 tap water samples are collected at customers' taps every 3-years								
Substance (with units)	Year Sampled	Compliance Achieved	MCLG	Action Level (AL)	90th Percentile	No. of Homes Sampled	Homes Above Action Level	Typical Source
Lead (ppb)	2022	Yes	0	15 ppb	< 2.0	31	0	Corrosion of household plumbing systems.
Copper (ppm)	2022	Yes	1.3	1.3 ppm	0.1	31	0	Corrosion of household plumbing systems.

What You Need to Know About Lead

Some of the things that can change the water quality on your property include your plumbing and pipe material, how long you go without running the water, and how you connect outdoor hoses to your home's water supply. The main pollutants we worry about that your water may touch are lead and copper. If present, high levels of lead can cause serious health problems, especially for pregnant women and young children. Both lead and copper (which can be a source of lead) can get into the water if your plumbing fixtures or pipes, including the pipe that brings water into the home from the street, are made from lead or copper.

Lead is more commonly found in pipes and plumbing of homes built before 1951. Copper pipes could be connected with joint material made of lead, which was common before 1987. Lead joint material can be used anywhere in the house, from fixtures to pipes to the pipes in your yard. Brass faucets and faucet parts, such as fittings and valves, can also contain lead. Fixtures installed before 2014 are likely to contain some brass, even if they have a chrome finish.

What can I do?

Flush your taps. You can minimize your exposure by following the 6-3-3 rule. If your water has not been used for six hours, flush your tap for 3 minutes, about 3 gallons of water, before consuming. To conserve water, catch the running water and use it to water your plants.

Use cold water for drinking and cooking. Hot water has the potential to contain more lead than cold water. If hot water is needed for cooking, heat cold water on the stove or in the microwave.

Routinely remove and clean all faucet aerators.

2022 Violations

We are required to report the results of monitoring of your drinking water for specific contaminants on a regular basis to the Pennsylvania Department of Environmental Protection. Results of chlorine residual monitoring, alkalinity, and turbidity are an indicator of whether or not your drinking water meets health standards. We did not report results for these parameters in a timely manner. Although public health was not impacted, as our customers, you have a right to know what happened and what we did to correct the situation.

What should I do? There is nothing you need to do at this time since your water quality was not impacted.

What is being done? While we did not notify the state as quickly as we should have, we submitted the required data as soon as we were notified of the violation. We have provided the missing reports to the state and have revised our procedures to ensure we comply with reporting requirements in the future. We are no longer in violation.

Look Out for Special Populations

Your tap water is safe for everyone to drink. However, some people, such as those having cancer treatment, persons who are having or have had an organ transplant, people with HIV/AIDS or similar disorders, some older adults, and many infants, can be more sensitive to the very tiny levels of pollutants that stay in the water even after we clean it. If there is anyone in your household like this, you may want to ask their doctor if drinking tap water is okay for them.

Cryptosporidium

Cryptosporidium is a microbial pathogen found in surface waters throughout the U.S. Although filtration removes Cryptosporidium, the most commonly used filtration methods cannot guarantee 100% removal. The U.S. EPA issued a rule that requires public water systems of our size to monitor our source water for the presence of Cryptosporidium. Systems with higher levels of Cryptosporidium will have to provide additional treatment. Our monitoring in 2016 - 2018 indicated the presence of these organisms in our Conodoguinet Creek source water at a low level. 24 months of monitoring was completed in September 2018. At this time, no additional treatment is required due to the low level of Cryptosporidium detected in our source water. Ingestion of Cryptosporidium may cause cryptosporidiosis, an abdominal infection. Current test methods do not allow us to determine if the Cryptosporidium present are dead or if they are capable of causing disease. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals can overcome the disease within a few weeks. Cryptosporidium must be ingested to cause disease, and it may be spread through means other than drinking water.

Nitrates

Nitrate in drinking water at levels above 10 mg/L is a health risk for infants of less than six months of age. Such nitrate levels in drinking water can interfere with the capacity of the infant's blood to carry oxygen, resulting in serious illness. Symptoms include shortness of breath and blueness of the skin. Nitrate levels above 10 mg/L may also affect the ability of the blood to carry oxygen in other individuals, such as pregnant women and those with certain specific enzyme deficiencies. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant or are pregnant, you should ask for advice from your health care provider.

How You Can Get Involved

We encourage public interest and participation in our community's decisions affecting drinking water. Regular Municipal Water Authority meetings occur the third Wednesday of January, April, and July at 5:00 p.m. and at 4:00 p.m. the third Wednesday in October at the Carlisle Water Treatment Plant at 165 Longs Gap Road. The October meeting includes an annual facility tour open to the public.

Source Water Assessment

The Borough's Source Water Assessment Program (SWAP) has been completed. It identifies potential urban and agricultural sources of contamination and assigns low to moderate levels of risk. The report is available for review from the PA DEP website.

The Carlisle Borough Municipal Authority (Carlisle Water Treatment Plant) participated in the Partnership for Safe Water Program (an association of water utilities and government). Participants are committed to drinking water quality far better than required by federal regulations.

In 2010 Carlisle received the prestigious Phase IV Excellence in Water Treatment Award from the Partnership for Safe Water. This is the highest rank that can be achieved and recognition signifies optimized water filtration plant performance. We were the first water utility in Pennsylvania to reach this milestone. We continue to meet this high level of water quality.