

NEW YORK CITY DRINKING WATER SUPPLY AND QUALITY REPORT 2021



Environmental
Protection

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NEW YORK CITY'S WATER SUPPLY SYSTEM



NYC Environmental Protection

- Catskill/Delaware Watershed Area
- Croton Watershed Area
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Robotic monitoring buoy at Kensico Reservoir

EXECUTIVE SUMMARY

Through all the challenges we faced in 2021, the Department of Environmental Protection (DEP) has remained focused and disciplined in our commitment to being a world-class water utility, and building a sustainable future for all New Yorkers. Each day we continued to deliver one billion gallons of the best tap water in the world to more than 9.8 million New Yorkers.

DEP continuously monitors the water in the distribution system, upstate reservoirs, feeder streams, and wells that are potential sources for New York City's drinking water supply. We have made substantial investments to upgrade and rehabilitate our water supply infrastructure and protect the quality of our drinking water, with multi-billion-dollar projects currently taking place at the Catskill and Delaware aqueducts, among others. More than \$1 billion has also been committed to administering a number of watershed protection and pollution prevention programs to maintain the high quality of our drinking water at the source.

This report illustrates that New York City's drinking water continued to be of excellent quality in 2021. DEP scientists collected 32,900 samples throughout our reservoir system and from nearly 1,000 street-side sampling stations in every neighborhood across the city and analyzed those samples 392,000 times at our four water quality laboratories. Robotic monitoring stations on our reservoirs provided another 2.9 million tests to ensure DEP was sending the best-quality water to New York City at all times.

NEW YORK CITY'S WATER SUPPLY SYSTEM

New York City's water supply system provides more than one billion gallons of safe drinking water every day to more than 8.8 million residents of New York City and one million people living in the counties of Westchester, Putnam, Orange, and Ulster. In 2021, we delivered 100 million gallons per day to 70 communities and institutions outside NYC. In all, this system provides nearly half the population of New York State with high-quality drinking water.

New York City gets its drinking water from 19 reservoirs and three controlled lakes spread across a nearly 2,000-square-mile watershed. The watershed is located upstate in portions of the Hudson Valley and Catskill Mountains that are as far as 125 miles north of the city. New York City's water supply system is composed of two primary surface water supplies called the Catskill/Delaware and Croton. The City also has a permit to operate a groundwater supply in Southeast Queens, although water from that system has not been delivered to customers in many years.

In 2021, New York City received a blend of drinking water from the Catskill/Delaware and Croton supplies. The Catskill/Delaware provided approximately 88 percent of the water, and approximately 12 percent was supplied by Croton. An estimated 5 percent of the water supply was lost, used for firefighting, at hydrants, from leaks, main breaks and unauthorized uses.



Cross River Reservoir Dam

New York City's water supply system provides more than one billion gallons of safe drinking water every day.



TREATING OUR DRINKING WATER

CATSKILL/DELAWARE SUPPLY

Due to the very high quality of our Catskill/Delaware supply, New York City is one of only five large cities in the country with a surface drinking water supply that does not utilize filtration as a form of treatment. The Catskill/Delaware supply operates under a filtration waiver, referred to as the “Filtration Avoidance Determination” (FAD), and the water from this supply is treated using two forms of disinfection to reduce microbial risk.

Water is disinfected with chlorine, a common disinfectant added to kill germs and stop bacteria from growing on pipes, and then with ultraviolet (UV) light at the Catskill/Delaware UV Disinfection Facility. The facility, located in Westchester County, is the largest of its kind in the world and is designed to disinfect more than two billion gallons of water per day. At this facility, exposure to UV light inactivates potentially harmful microorganisms without changing the water.

DEP also adds food grade phosphoric acid, sodium hydroxide, and fluoride to the water before sending it into distribution. Phosphoric acid is added because it creates a protective film on pipes that reduces the release of metals, such as lead, from service lines and household plumbing. Sodium hydroxide is added to raise the pH, which reduces corrosion of household plumbing. Fluoride is added to improve dental protection, and is effective in preventing cavities, at a federally approved level of 0.7 mg/L. During 2021 only 0.89 percent of the water produced by Catskill/Delaware supply was not fluoridated.

CROTON SUPPLY

The Croton supply is filtered at the Croton Water Filtration Plant, located underground in the Bronx. The plant can treat up to 290 million gallons of drinking water each day, which helps to ensure a large enough supply of water for the city to withstand droughts, periodically shut down other parts of the water supply, and respond to the potential effects of climate change. The Croton Water Filtration Plant first began operating in May 2015.

Once water arrives at the filtration plant it undergoes treatment to remove impurities. The treatment processes include coagulation, dissolved air flotation, filtration, and disinfection. During coagulation, chemicals are added to untreated water, causing any particulates to bunch together and become a mass of particles called floc. Then injected air bubbles float the floc to the top where it is skimmed off using a process called dissolved air flotation. Finally, the water flows through a filter bed removing any remaining particles. Just like the Catskill/Delaware supply, Croton water is disinfected with chlorine and UV light to protect against potentially harmful microorganisms, and is treated with food grade phosphoric acid, sodium hydroxide, and fluoride. In 2021, only 0.17 percent of the water produced by the plant was not fluoridated.



DEP Scientists performed over 392,000 analyses on 32,900 samples from the distribution system in 2021

TESTING FOR QUALITY

DRINKING WATER SAMPLING AND MONITORING

DEP monitors the water in the distribution system, upstate reservoirs and feeder streams, and wells that are potential sources for New York City's drinking water supply. We continuously sample and conduct analyses for numerous water quality parameters, including microbiological, chemical, and physical measures, throughout the watershed as the water enters the distribution system, and at nearly 1,000 water quality sampling stations throughout New York City. In 2021, DEP performed over 392,000 analyses on 32,900 samples from the distribution system, meeting all state and federal monitoring requirements. These data are summarized in tables starting on page 11. Additionally, DEP performed over 164,000 analyses on 11,400 samples from the upstate reservoir watersheds and took more than 2.9 million robotic monitoring measurements to support FAD watershed protection programs and to optimize water quality.

REGULATION OF DRINKING WATER

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 activities. Contaminants that may be present in source water include microbial contaminants, inorganic contaminants, pesticides and herbicides, organic chemical contaminants, and radioactive contaminants.

To ensure that tap water is safe to drink, the New York State Department of Health (NYSDOH) and the United States Environmental Protection Agency (EPA) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The NYSDOH and the federal Food and Drug Administration's (FDA) regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. The presence of contaminants does not necessarily indicate that water poses a health risk. These regulations also establish the minimum amount of testing and monitoring that each system must undertake to ensure that the tap water is safe to drink.

Visit [epa.gov/safewater](https://www.epa.gov/safewater) or [health.ny.gov](https://www.health.ny.gov) for more information about drinking water.

PROTECTING OUR WATER AT THE SOURCE

10-YEAR FILTRATION AVOIDANCE DETERMINATION (FAD)

DEP funds and administers several watershed protection and pollution prevention programs to maintain the high quality of our drinking water. These science-based strategies are designed to protect New York City's drinking water at its source by keeping pollution out of our reservoirs and the streams, creeks, and rivers that feed them.

NYSDOH issued the current FAD in 2017 that allows DEP to continue operating the Catskill/ Delaware supply without filtration through at least 2027. DEP has committed an estimated \$1 billion to comply with the FAD, which goes towards our watershed programs that conserve watershed lands, upgrade wastewater infrastructure, implement clean water strategies on watershed farms, and manage streams, forests, and other natural resources that affect water quality.

SOURCE WATER ASSESSMENT PROGRAMS

Federal regulations require states to develop and implement source water assessment programs to identify the areas that supply public tap water, inventory contaminants, assess water system susceptibility to contamination, and inform the public of the results. The states are given a great deal of flexibility on how to implement source water assessment programs. These assessments are created using available information to help estimate the potential for source water contamination.

Because of DEP's extensive watershed protection and pollution prevention programs, NYSDOH does not find it necessary to perform a source water assessment on the New York City water supply.



DEP
field scientist
collects water
samples from
a watershed
stream



The Delaware Aqueduct Bypass Tunnel is the largest repair project in the 180-year history of New York City's water supply system

CAPITAL UPGRADES

DEP has continued to make substantial investments to upgrade and rehabilitate our water supply infrastructure, and to protect the quality of our drinking water at its source. Our long-term plans to maintain and protect the water supply included many milestones in 2021.

Skilled workers made significant progress on two projects to rehabilitate the large aqueducts that carry our drinking water from the Catskills to New York City. In December 2021, we completed a multi-year project to clean, repair and upgrade the Catskill Aqueduct, which has delivered water from Ashokan Reservoir to New York City since 1915. Workers cleaned 58 miles of the aqueduct's interior, replaced 35 valves connected to the aqueduct, and made structural repairs at more than three dozen locations. This extensive rehabilitation will allow the Catskill Aqueduct to reliably deliver our water for the century ahead.

In February 2021, laborers also completed the final concrete lining for the Delaware Aqueduct Bypass Tunnel, marking another milestone in our effort to repair the longest tunnel in the world. The bypass tunnel will convey water around a leak in the Delaware Aqueduct, which carries about 50 percent of New York City's drinking water. With the new tunnel completed, skilled workers are now focusing on connecting the new tunnel to structurally sound portions of the existing aqueduct. The Delaware Aqueduct Bypass Tunnel is the largest repair in the 180-year history of New York City's water supply.

DEP also continues to invest in its watershed protection programs, which are considered a worldwide model for protecting the quality of our water at its source. Our work this year included an award-winning project that transformed an old bowling alley and its parking lot into more than three acres of protected streams and wetlands near Kensico Reservoir in Westchester County. By removing the impervious surfaces and restoring the natural areas around Bear Gutter Creek, DEP has increased the protection of our water quality and enhanced the habitat for native flora and fauna.

CONSERVING OUR SUPPLY

Although New York City has grown by more than 1.8 million people since 1980, demand for water has dropped by approximately 35 percent—making it one of the most water-efficient large cities in the country.

The average single-family household in New York City uses approximately 70,000 gallons of water each year at a cost of \$4.10 per 100 cubic feet of water (748 gallons), or about \$384 a year. Since nearly all customers also receive wastewater collection and treatment services, which cost about \$610, the combined annual water and sewer charge for the typical New York City household using 70,000 gallons per year is \$994, calculated at fiscal year 2022 rates, effective July 1, 2021.

Advances in technology have played a key role in the drop of water consumption, from the replacement of thousands of inefficient toilets through DEP's toilet replacement program, to an automated leak detection program, which helps our customers save both money and water by alerting homeowners to unusual spikes in water consumption. DEP has also partnered with other city agencies, colleges, and businesses to help conserve water by installing more than 400 spray shower timers in NYC Parks playgrounds, 34,000 efficient bathroom fixtures in 402 New York City public schools, more than 1,600 efficient bathroom fixtures in City-owned buildings including a hospital, and a water reuse station at the Fire Department of the City of New York's (FDNY) Fire Training Academy on Randall's Island, which includes a 40,000-gallon underground water storage tank used for calibrating equipment on pumper apparatus.

These, and other recent investments, have reduced overall demand for water by more than 16.4 million gallons per day. We plan to achieve a total savings of 20 million gallons per day through new and ongoing initiatives, including a water recirculation project in Central Park, a valve replacement project in Prospect Park, additional New York City public school fixture retrofits, and more.

DOS & DON'TS OF WATER CONSERVATION

In or out of a drought, every New Yorker can save hundreds of gallons of water each week by following these simple water-saving tips.

BATHROOM

- ✓ Do take short showers and save 5 to 7 gallons a minute.
- ✓ Do fill the tub halfway and save 10 to 15 gallons.
- ✓ Do install water-saving toilets, shower heads and faucet aerators. Place a plastic bottle filled with water in your toilet tank if you can't switch to a low flow toilet.
- ✗ Don't run the water while shaving, washing your hands or brushing your teeth. Faucets use 2 to 3 gallons a minute.
- ✗ Don't use the toilet as a wastebasket, and don't flush it unnecessarily.

OUTDOORS

- ✓ Do use a self-closing nozzle on your hose.
- ✗ Don't water your sidewalk or driveway—sweep them clean.
- ✗ Don't over water your lawn or plants. Water before 9 a.m. or after 7 p.m.

KITCHEN & LAUNDRY

- ✓ Do run the dishwasher and washing machine only when full. Save even more by using the short cycle.
- ✓ Do install faucet aerators.
- ✗ Don't let the water run while washing dishes. Kitchen faucets use 2 to 3 gallons a minute. Filling a basin only takes 10 gallons to wash and rinse.
- ✗ Don't run water to make it cold. Have it chilled in the refrigerator, ready to drink.

EVERYWHERE

- ✓ Do repair leaky faucets and turn taps off tightly. A slow drip wastes 15 to 20 gallons each day.
- ✗ Don't open fire hydrants.

TO LEARN MORE, CALL 311.

CRYPTOSPORIDIUM AND GIARDIA

DEP maintains a comprehensive program to monitor its source waters and watersheds for the presence of *Cryptosporidium* and *Giardia*, microscopic organisms that can cause disease. Disease and syndromic surveillance continue to indicate that there have been no outbreaks of the diseases they cause, cryptosporidiosis and giardiasis, attributed to consuming tap water in New York City. *Cryptosporidium* and *Giardia* data are presented on page 14 of this report.

Federal and state law requires all water suppliers to notify their customers about the potential risks from *Cryptosporidium* and *Giardia*. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Some people may be more vulnerable to disease causing microorganisms, or pathogens 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 individuals, and infants, can be particularly at risk from infections. These people should seek advice from their health care providers about their drinking water. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium*, *Giardia*, and other microbial contaminants are available from EPA's Safe Drinking Water Hotline at 1-800-426-4791.

HILLVIEW RESERVOIR CONSENT JUDGEMENT

The Hillview Reservoir is the final stop for drinking water from the Catskill/Delaware System before it enters the city's distribution system. The City and DEP entered into a Consent Decree and Judgement with the United States and New York State, effective May 15, 2019, which sets forth a schedule of compliance for the City to cover the Hillview Reservoir as required by the Long Term 2 Enhanced Surface Water Treatment Rule (40 C.F.R §141.714). DEP and the City complied with all 2021 commitments due under the Decree.

HAA5 NOTICE OF VIOLATION

On December 3, 2021, DEP received a Notice of Violation (NOV) for the exceedance of the MCL for haloacetic acids (HAA5), which is based on the average of the four most recent quarterly samples at a particular monitoring location, called the Locational Running Annual Average (LRAA). EPA also issued an Administrative Order. Each calendar quarter, drinking water samples are collected at locations throughout the city for HAA5 that are used to determine

compliance with the standard of 60 micrograms/liter ($\mu\text{g/L}$). Three out of 20 sites sampled on November 3, 2021, had LRAA that exceeded the standard. (see table on page 13, footnote (16, 17) on page 16)

The likely cause of the elevated level of HAA5 was the intense rainfalls during Tropical Storms Henri and Ida, which washed organic material into the upstate reservoirs. Haloacetic acids are formed when organic material in the water combines with chlorine, which is the most commonly used disinfectant in New York State. Chlorine is used as a disinfectant to kill bacteria and viruses that could cause illnesses; and is therefore beneficial to public health. The amount of HAA5 in drinking water can vary, depending on the amount of natural organic material in the source water, the amount of chlorine added, the temperature and a variety of other factors.

DEP has taken a multi-step approach to correct this exceedance, including adjustments to the operation of our reservoir system, a reduction in the amount of chlorine used, and adjustments to our in-city distribution system. As a result, only one site (50250, Grymes Hill, 10301) still exceeded the MCL following the next quarterly sampling on February 1, 2022. The following paragraph provides a general summary of the health effects of haloacetic acids, which may occur at much higher exposure levels than what could result through normal use of the water.

Some studies suggest that people who drank chlorinated drinking water containing disinfection by-products (including haloacetic acids) for long periods of time (e.g., 20 to 30 years) may have an increased risk for cancer. However, how long and how frequently people actually drank the water, and how much haloacetic acids the water contained is not known for certain. Therefore, the evidence from these studies is not strong enough to conclude that the observed increased risk for cancer is due to haloacetic acids, other disinfection by-products, or some other factor. Studies of laboratory animals show that the two haloacetic acids, dichloroacetic acid and trichloroacetic acid, can cause cancer following exposure to high levels over their lifetimes. Dichloroacetic acid and trichloroacetic acid are also known to cause other effects in laboratory animals after high levels of exposure, primarily on the liver, kidney, and nervous system and on their ability to bear healthy offspring. The risks for adverse health effects from haloacetic acids in drinking water are small compared to the risk for illness from drinking inadequately disinfected water.

LEAD IN DRINKING WATER: FREQUENTLY ASKED QUESTIONS

IS THERE LEAD IN MY DRINKING WATER?

New York City's award-winning tap water is delivered virtually lead-free through 7,000 miles of lead-free aqueducts, tunnels, and water mains in the city's water supply system. However, homes built prior to 1961 may have lead service lines (which connect your house to the city's water main in the street), and some homes, regardless of the year they were built, could have household plumbing and internal fixtures that contain lead. Although New York City takes extensive steps to protect water in homes that may have lead in their plumbing, lead from plumbing may still be released into a home's drinking water. Lead levels at your home may be higher than at other homes in the community because of materials used in your home's plumbing. DEP is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components.

HOW CAN I FIND OUT IF I HAVE A LEAD SERVICE LINE?

Visit nyc.gov/leadfree to view an interactive map. This map offers historical information largely based on third-party plumbing records, supplemented, in some cases by information gathered during inspections.

HOW CAN I TEST THE WATER IN MY HOME?

DEP offers free lead test kits to all New York City residents. Call 311 or visit nyc.gov/apps/311 to request a free lead test kit. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline (1-800-426-4791) or at epa.gov/safewater/lead.

WHAT ARE THE HEALTH EFFECTS OF LEAD?

Exposure to lead can cause serious health problems, especially for pregnant women, infants, and young children. For more information, visit nyc.gov/lead.

HOW CAN I LIMIT MY LEAD EXPOSURE?



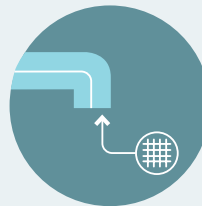
RUN YOUR TAP

for 30 seconds to 2 minutes before using water for drinking or cooking, when your water has been sitting for several hours.



Use Cold Water

for cooking, drinking, or preparing infant formula. Hot tap water is more likely to contain lead and other metals.



Remove & Clean

the faucet screen monthly (also called an aerator), where small particles can get trapped.



Hire

a licensed plumber to identify and replace plumbing fixtures and/or service line that contain lead.



DEP Scientists continuously sample and conduct analyses for hundreds of water quality parameters

HOW TO READ THE NEW YORK CITY 2021 DRINKING WATER QUALITY TESTING RESULTS

The following section of this report compares the quality of your tap water to federal and state standards for each parameter (if applicable). The monitoring results show that New York City's drinking continues to be of excellent quality.

The following tables reflect the compliance monitoring results for all regulated and non-regulated parameters, the number of samples collected, the range of values detected, the average of the values detected, and the possible sources of the parameters, unless otherwise footnoted. The monitoring frequency of each parameter varies and is parameter specific. Data presented are for the Catskill/Delaware and Croton supplies, which were the only sources of water in 2021.

The table on page 15 represents those parameters monitored for, but not detected in any sample. Most of our data are representative of 2021 testing; concentrations of parameters or contaminants do not change frequently.

THE NEW YORK CITY 2021 DRINKING WATER QUALITY TESTING RESULTS

Detected Conventional Physical and Chemical Parameters

PARAMETER	NYSDOH MCL (Highest Level Allowed)	EPA MCLG (Ideal Goal)	# SAMPLES	RANGE	AVERAGE	MCL VIOLATION	LIKELY SOURCES IN DRINKING WATER
Alkalinity (mg/L CaCO ₃)	-		308	13 - 68	26	No	Erosion of natural deposits
Aluminum (µg/L)	50 - 200 ⁽¹⁾		308	7 - 61	20	No	Erosion of natural deposits
Barium (mg/L)	2	2	308	0.01 - 0.04	0.02	No	Erosion of natural deposits
Bromide (µg/L)	- ⁽²⁾		8	8 - 35	20	No	Naturally occurring
Calcium (mg/L)	-		308	5 - 27	9	No	Erosion of natural deposits
Chloride (mg/L)	250		308	11 - 86	25	No	Naturally occurring; road salt
Chlorine Residual, Free (mg/L)	4 ⁽³⁾		15,617	0.0 - 1.3	0.6	No	Water additive for disinfection
Chromium (µg/L)	100		308	ND - 3.1	ND	No	Erosion of natural deposits
Color - distribution system (color units - apparent)	-		13,924	3 - 34	6	No	Presence of iron, manganese, and organics in water
Color - entry points (color units - apparent)	15		1,693	3 - 13	6	No	Presence of iron, manganese, and organics in water
Copper (mg/L)	1.3 ⁽⁴⁾	1.3	308	ND - 0.032	0.007	No	Corrosion of household plumbing; erosion of natural deposits
Corrosivity (Langelier Index)	- ⁽⁵⁾		107	-2.84 to -1.18	-2.02	No	
Fluoride (mg/L)	2.2	4	2,081	ND - 0.9	0.7	No	Water additive which promotes strong teeth; erosion of natural deposits
Hardness (mg/L CaCO ₃)	-		308	17 - 105	35	No	Erosion of natural deposits
Hardness (grains/gallon[US]CaCO ₃) ⁽⁷⁾	-		308	1 - 6	2	No	Erosion of natural deposits
Iron (µg/L)	300 ⁽⁷⁾		308	ND - 98	29	No	Naturally occurring
Lithium (µg/L)	-		308	ND - 2	ND	No	Erosion of natural deposits
Magnesium (mg/L)	-		308	1.1 - 9.2	2.7	No	Erosion of natural deposits

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Detected Conventional Physical and Chemical Parameters (continued)

PARAMETER	NYSDOH MCL (Highest Level Allowed)	EPA MCLG (Ideal Goal)	# SAMPLES	RANGE	AVERAGE	MCL VIOLATION	LIKELY SOURCES IN DRINKING WATER
Manganese ($\mu\text{g/L}$)	300 ⁽⁷⁾		308	ND - 93	17	No	Naturally occurring
Nickel ($\mu\text{g/L}$)	-		308	ND - 4.4 ⁽⁸⁾	ND	No	Erosion of natural deposits
Nitrate (mg/L nitrogen)	10	10	308	0.09 - 0.5	0.17	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
pH (pH units)	6.8 - 8.2 ⁽⁹⁾		15,617	6.8 - 10.0	7.3	No	
Phosphate, Ortho- (mg/L)	1 - 4 ⁽⁹⁾		15,617	1 - 4	2	No	Water additive for corrosion control
Potassium (mg/L)	-		308	0.5 - 2.6	1.0	No	Erosion of natural deposits
Silica [silicon oxide] (mg/L)	-		308	1.9 - 6.7	3.0	No	Erosion of natural deposits
Sodium (mg/L)	NDL ⁽¹⁰⁾		308	9 - 54	17	No	Naturally occurring; road salt; water softeners; animal waste
Specific Conductance ($\mu\text{S/cm}$)	-		15,617	82 - 515	141	No	
Strontium ($\mu\text{g/L}$)	-		308	18 - 82	31	No	Erosion of natural deposits
Sulfate (mg/L)	250		308	3 - 25	7	No	Naturally occurring
Temperature ($^{\circ}\text{F}$)	-		15,617	34 - 82	55	No	
Total Dissolved Solids (mg/L)	500 ⁽¹¹⁾		108	46 - 260	101	No	Metals and salts naturally occurring in the soil; organic matter
Total Organic Carbon (mg/L)	-		426	1.4 - 2.3	1.7	No	Organic matter naturally present in the environment
Total Organic Carbon - source water (mg/L)	- ⁽²⁾		8	2.1 - 4.2	3.1	No	Organic matter naturally present in the environment
Turbidity ⁽¹¹⁾ - distribution system (NTU)	5 ⁽¹²⁾		13,924	ND - 5.7	0.8	No	Soil runoff
Turbidity ⁽¹¹⁾ - source water (NTU)	5 ⁽¹³⁾		-	-	1.5 ⁽¹³⁾	No	Soil runoff
Turbidity ⁽¹¹⁾ - filtered water (NTU)	0.3 ⁽¹⁴⁾		-	-	0.09 ⁽¹⁴⁾	No	Soil runoff
UV 254 (absorbance/cm)	-		340	0.017-0.048	0.032	No	Organic matter naturally present in the environment
Zinc (mg/L)	5		308	ND - 0.013	ND	No	Naturally occurring

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Detected Organic Parameters

PARAMETER	NYSDOH MCL (Highest Level Allowed)	EPA MCLG (Ideal Goal)	# SAMPLES	RANGE	AVERAGE	MCL VIOLATION	LIKELY SOURCES IN DRINKING WATER
Bromochloroacetic Acid (µg/L)	50		310	ND - 3.3	1.41	No	By-product of drinking water chlorination
Bromodichloroacetic Acid (µg/L)	50 ⁽²⁾		80	1 - 5	3	No	By-product of drinking water chlorination
Chlorodibromoacetic Acid (µg/L)	50 ⁽²⁾		80	ND - 0.6	ND	No	By-product of drinking water chlorination
Dalapon (µg/L)	50		314	ND - 1.3	ND	No	By-product of drinking water chlorination
Diethylphthalate (µg/L)	50		92	ND - 1.3 ⁽⁸⁾	ND	No	Plasticizer used in toothbrushes, toys, cosmetics, food packaging and aspirin
Haloacetic Acid 5 (HAA5) (µg/L)	60 ⁽¹⁵⁾		310	6 - 93	65 ^{(15) (16)}	Yes	By-product of drinking water chlorination
Haloacetic Acid Brominated (HAA6Br) (µg/L)	- ⁽²⁾		80	2 - 9	4	No	By-product of drinking water chlorination
Haloacetic Acid 9 (HAA9) (µg/L)	- ⁽²⁾		80	31 - 82	53	No	By-product of drinking water chlorination
Hexachlorocyclopentadiene (µg/L)	5		29	ND - 0.195	ND	No	Discharge from chemical factories
Perfluorohexanoic acid (PFHxA) (ng/L)	-		12	ND - 2 ⁽⁸⁾	ND	No	Used in commercial and industrial applications.
Perfluorooctanoic acid (PFOA) (ng/L)	10		12	ND - 2	ND	No	Used in commercial and industrial applications.
Total Trihalomethanes (TTHM) (µg/L)	80 ⁽¹⁵⁾		314	4 - 93	56 ⁽¹⁵⁾	No	By-product of drinking water chlorination

Detected Microbial Parameters

PARAMETER	NYSDOH MCL (Highest Level Allowed)	EPA MCLG (Ideal Goal)	# SAMPLES	RANGE	# SAMPLES POSITIVE	AVERAGE	HIGHEST MONTH % POSITIVE	MCL VIOLATION	LIKELY SOURCES IN DRINKING WATER
Total Coliform Bacteria (% of samples positive/month)	5%	0	9,868	-	44	-	1.7%	No	Naturally present in the environment
<i>E. coli</i> (MPN/100mL)	- ⁽¹⁷⁾	0	9,868	-	0	-	0.0%	No	Animal fecal waste
Heterotrophic Plate Count (CFU/mL)	TT	-	12,170	ND - 291	188	ND	-	No	Naturally present in the environment

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Lead and Copper Rule Sampling at Residential Water Taps

PARAMETER	NYSDOH AL	EPA MCLG (Ideal Goal)	90% OF YOUR LEVELS WERE LESS THAN	RANGE	# SAMPLES EXCEEDING AL	Exceedance	LIKELY SOURCES IN DRINKING WATER
Copper (mg/L)	1.3	1.3	0.209	0.003 - 0.509	0 out of 375	No	Corrosion of household plumbing
Lead (µg/L)	15	0	12	ND - 152	24 out of 375	No	Corrosion of household plumbing

Cryptosporidium and Giardia Sampling from Source Water and Reservoir Outflows⁽¹⁸⁾

PARAMETER	RESERVOIR	# SAMPLES	# SAMPLES POSITIVE	RANGE	LIKELY SOURCES IN DRINKING WATER
<i>Cryptosporidium</i> (oocysts/50L)	Kensico	52	4	0 - 1	Animal fecal waste
	Hillview	52	4	0 - 1	
	Croton	5	0	0	
<i>Giardia</i> (cysts/50L)	Kensico	52	35	0 - 7	Animal fecal waste
	Hillview	52	15	0 - 3	
	Croton	5	1	0 - 3	

UNITS AND ABBREVIATIONS

CaCO₃ = calcium carbonate

CFU/mL = colony forming units per milliliter

/cm = per centimeter

°F = degrees Fahrenheit

µg/L = micrograms per liter (10⁻⁶ grams per liter)

µS/cm = microsiemens per centimeter

mg/L = milligrams per liter (10⁻³ grams per liter)

MPN/100mL = most probable number per 100 mills

ND = parameter is not detected

NDL = no designated limits

NTU = nephelometric turbidity units

/50L = per 50 liters

DEFINITIONS

Action Level (AL):

The concentration of a contaminant, which, if exceeded, triggers treatment or other requirements that 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 Disinfectant Level (MRDL):

The highest level of a disinfectant allowed in drinking water. The addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant 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 contamination.

Treatment Technique (TT):

A required process intended to reduce the level of a contaminant in drinking water.

90th Percentile Value:

The values reported for lead and copper represent the 90th percentile. A percentile is a value on a scale of 100 that indicates the percent of a distribution that is equal to or below the value. The 90th percentile is equal to or greater than 90 percent of the lead and copper values detected at your water system.

The following parameters were monitored for, but not detected in any sample in 2021

CONVENTIONAL PHYSICAL AND CHEMICAL PARAMETERS:

Antimony, Arsenic, Asbestos, Beryllium, Cadmium, Cyanide, Gross alpha, Lead, Mercury, Nitrite, Selenium, Silver, Thallium, Uranium

PRINCIPAL ORGANIC CONTAMINANTS:

Benzene, Bromobenzene, Bromochloromethane, Bromomethane, n-Butylbenzene, sec-Butylbenzene, tert-Butylbenzene, Carbon tetrachloride, Chlorobenzene, Chloroethane, Chloromethane, 2-Chlorotoluene, 4-Chlorotoluene, Dibromomethane, 1,3-Dichlorobenzene, 1,2-Dichlorobenzene, 1,4-Dichlorobenzene, Dichlorodifluoromethane, 1,1-Dichloroethane, 1,2-Dichloroethane, 1,1-Dichloroethene, cis-1,2-Dichloroethylene, trans-1,2-Dichloroethylene, 1,2-Dichloropropane, 1,3-Dichloropropane, 2,2-Dichloropropane, 1,1-Dichloropropene, cis-1,3-Dichloropropene, trans-1,3-Dichloropropene, total 1,3-Dichloropropene, Ethylbenzene, Hexachlorobutadiene, Isopropylbenzene, p-Isopropyltoluene, Methylene chloride, n-Propylbenzene, Styrene, 1,1,1,2-Tetrachloroethane, 1,1,2,2-Tetrachloroethane, Tetrachloroethylene, Toluene, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 1,1,1-Trichloroethane, 1,1,2-Trichloroethane, Trichloroethene, Trichlorofluoromethane, 1,2,3-Trichloropropane, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, m,p-Xylene, o-Xylene, total Xylene

SPECIFIED ORGANIC CONTAMINANTS:

Alachlor, Aldicarb (Temik), Aldicarb sulfone, Aldicarb sulfoxide, Aldrin, Atrazine, Benzo(a)pyrene, Di(2-ethylhexyl)phthalate, Butachlor, Carbaryl, Carbofuran (Furadan), Chlordane, 2,4-D, 1,2-Dibromo-3-chloropropane, Di(2-ethylhexyl)adipate, Dicamba, Dieldrin, Dinoseb, 1,4-Dioxane, Diquat, Endothall, Endrin, Ethylene dibromide (EDB), Glyphosate, Heptachlor epoxide, Heptachlor, Hexachlorobenzene, 3-Hydroxycarbofuran, Lindane, Methomyl, Methoxychlor, Methyl-tertiary-butyl-ether (MTBE), Metolachlor, Metribuzin, Oxamyl (Vydate), Pentachlorophenol, Perfluorooctanesulfonic acid (PFOS), Picloram, Polychlorinated biphenyls (PCBs), PCB 1016 Aroclor, PCB 1221 Aroclor, PCB 1232 Aroclor, PCB 1242 Aroclor, PCB 1248 Aroclor, PCB 1254 Aroclor, PCB 1260 Aroclor, Propachlor, Simazine, 2,3,7,8-TCDD (Dioxin), Toxaphene, 2,4,5-TP (Silvex), Vinyl chloride

UNSPECIFIED ORGANIC CONTAMINANTS:

Acenaphthene, Acenaphthylene, Acetochlor, Acetone, Acifluorfen, Allyl chloride, Ametryn, t-Amyl ethyl ether, tert-Amyl methyl ether, Anthracene, Atraton, Propoxur (Baygon), Bentazon, Benzo[a]anthracene, Benzo[b]fluoranthene, Benzo[g,h,i]perylene, Benzo[k]fluoranthene, Butylbenzylphthalate, alpha-HCH, beta-HCH, delta-HCH, Bromacil, Bromoacetic acid, Bromoethane, 1,3-Butadiene, 2-Butanone (MEK), tert-Butyl alcohol, tert-Butyl ethyl ether, Butylate, Butylated hydroxytoluene (BHT), Caffeine, Carbon Disulfide, gamma-Chlordane, alpha-Chlordane, trans-Chlordane, Chlorfenvinphos, Chlorobenzilate, 4-Chlorobiphenyl, 2-Chlorobiphenyl, 1-Chlorobutane, Chlorodifluoromethane, Chloroneb, Chlorothalonil (Draconil, Bravo), Chlorpropham, Chlorpyrifos (Dursban), Chrysene, Cyanazine, Cycloate, 2,4-DB, DCPA (Dacthal), 2,4-DDD, 4,4'-DDD, 2,4-DDE, 4,4'-DDE, 2,4-DDT, 4,4'-DDT, DEET, Diazinon, Dibenz[a,h]anthracene, Dibromoacetic acid, 3,5-Dichlorobenzoic acid, 2,4'-Dichlorobiphenyl, Dichlorprop, Dichlorvos (DDVP), Diethyl ether, Diisopropyl methylphosphonate, Dimethipin, Dimethoate, Dimethylphthalate, Di-n-Butylphthalate, 2,4-Dinitrotoluene, 2,6-Dinitrotoluene, Di-N-octylphthalate, Diphenamid, Disulfoton, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin aldehyde, Endrin Ketone, EPTC, Ethion, Ethoprop, Ethyl methacrylate, N-ethyl Perfluorooctanesulfonamidoacetic acid, Etridiazole, Fenarimol, Fluoranthene, Fluorene, Fluridone, 2,2',3,4,4',5,5'-Heptachlorobiphenyl, 2,2',3,4',5',6'-Hexachlorobiphenyl, 2,2',4,4',5,5'-Hexachlorobiphenyl, 2,2',3,4,4',5'-Hexachlorobiphenyl, Hexachloroethane, Hexazinone, Indeno[1,2,3-cd]pyrene, Isophorone, Diisopropyl ether, Malathion, Methiocarb, Methyl acetate, Methyl iodide, Methyl parathion, N-methyl Perfluorooctanesulfonamidoacetic acid, 4-Methyl-2-pentanone (MIBK), Mevinphos, MGK264 - isomer a & b, Molinate, Naphthalene, Napropamide, Nitrofen, cis-Nonachlor, trans-Nonachlor, Norflurzon, Oxyfluorfen, Paraquat, Parathion, Pebulate, Pendimethalin, 2,3',4,4',5-Pentachlorobiphenyl, 2,3,3',4',6-Pentachlorobiphenyl, Pentachloroethane, Perfluorobutanesulfonic acid, Perfluorodecanoic acid, Perfluorododecanoic acid, Perfluoroheptanoic acid, Perfluorohexanesulfonic acid, Perfluorononanoic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid, Perfluoroundecanoic acid, cis-Permethrin & trans-Permethrin, Permethrin (mixed isomers), Phenanthrene, Phorate, Phosphamidon, Profenofos, Prometon, Prometryn, Pronamide, Propazine, Pyrene, Simetryn, 2,4,5-T, Tebuconazole, Tebuthiuron, Terbacil, Terbutylazine, Terbutryn, 2,2',3,5'-Tetrachlorobiphenyl, 2,3',4',5'-Tetrachlorobiphenyl, 2,2',5,5'-Tetrachlorobiphenyl, Tetrachlorovinphos, Tetrahydrofuran, Thiobencarb, Triademefon, Tribufos, 2,4,4'-trichlorobiphenyl, 2,2',5-Trichlorobiphenyl, Trichlorotrifluoroethane (Freon 113), Trifluralin, Vernolate, Vinclozolin

2021 MONITORING DATA FOOTNOTES

- (1) EPA Secondary MCL: NYSDOH has not set an MCL for this parameter.
- (2) Monitored for under the Fourth Unregulated Contaminant Monitoring Rule (UCMR4) in 2018 and 2019. UCMR4 included source water monitoring for bromide and total organic carbon; no MCL has been established for these parameters.
- (3) Value represents MRDL, which is a level of disinfectant added for water treatment that may not be exceeded at the consumer's tap without an unacceptable possibility of adverse health effects. The MRDL is enforceable in the same manner as an MCL and is the calculated running annual average. Data presented are the range of individual sampling results and the highest of the four quarterly running annual averages.
- (4) Action Level (not an MCL) measured at-the-tap. The data presented in this table were collected from sampling stations at the street curb. For at-the-tap monitoring, see the Lead and Copper Rule Sampling at Residential Water Taps table.
- (5) A Langelier Index of less than zero indicates corrosive tendencies.
- (6) Hardness of up to 3 grains per gallon is considered soft water; between 3 and 9 is moderately hard water.
- (7) If iron and manganese are present, the total concentration of both should not exceed 500 µg/L.
- (8) Only detected in one sample: nickel was detected on 6/1/21 at site 31450 (Little Italy, 10013), diethylphthalate was detected on 2/4/21 and PFHxA was detected on 8/5/21 at site 1SCL1 (Van Cortlandt Village, 10463).
- (9) NYSDOH established Optimal Water Quality Parameters (OWQP) under the Lead and Copper Rule which includes a range for pH and ortho-phosphate which are presented here. The reported average value for pH is the median value.
- (10) Water containing more than 20 mg/L of sodium should not be used for drinking by people on severely restricted sodium diets. Water containing more than 270 mg/L of sodium should not be used for drinking by people on moderately restricted sodium diets.
- (11) Turbidity is a measure of cloudiness of the water. Turbidity is monitored because it is a good indicator of water quality, because high turbidity can hinder the effectiveness of disinfection, and because it is a good indicator of the effectiveness of our filtration system.
- (12) This MCL for turbidity is the monthly average rounded off to the nearest whole number. Data presented are the range of individual sampling results and the highest monthly average from distribution sites.
- (13) This MCL for turbidity is on individual readings taken every four hours at the unfiltered Catskill/Delaware source water entry point. Value presented is the highest individual sampling result.
- (14) This is a TT performance standard for the Croton Filtration Plant. The value presented is the highest single combined filter effluent turbidity measurement which occurred on 5/22/21. In 2021, 100% of turbidity results were <0.3 NTU.
- (15) The MCLs for HAA5 and TTHMs are the calculated locational running annual average (LRAA). The data in the Range column are the minimum and maximum values of all sample sites monitored in the distribution system whether for compliance purposes or not. The values in the Average column are the highest LRAA.
- (16) The HAA5 LRAA MCL was exceeded in the 4th quarter of 2021 at the following three (3) locations sampled on 11/3/2021: site 24340 (Brighton Beach, 11235) at 62 µg/L, site 50250 (Silver Lake, 10301) at 65 µg/L and site 52050 (Port Richmond, 10302) at 64 µg/L.
- (17) If a sample and its repeat sample are both positive for coliform bacteria and one of the two samples is positive for *E. coli*, then an MCL violation has occurred.
- (18) DEP collected samples of water leaving New Croton Reservoir and Kensico Reservoir, prior to chlorination and UV disinfection, and leaving Hillview Reservoir, prior to secondary disinfection with chlorine using EPA Method 1623.1.

CONTACT INFORMATION

Public Water System Identification Number (PWSID) NY7003493

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION

Vincent Sapienza, P.E., Chief Operating Officer // 718-595-3000 // nyc.gov/dep
59-17 Junction Blvd, Flushing, NY 11373

NEW YORK CITY WATER BOARD

Visit nyc.gov/waterboard for a list of upcoming meetings and information about opportunities to participate in decisions that affect water quality.

CONTAMINANTS QUESTIONS

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 EPA's Safe Drinking Water Hotline at 1-800-426-4791.

CRYPTOSPORIDIUM AND GIARDIA QUESTIONS

DOHMH Bureau of Communicable Diseases // 347-396-2600

CUSTOMER BILLING QUESTIONS

DEP Customer Service // 718-595-7000 // nyc.gov/dep

LEAD IN DRINKING WATER QUESTIONS

DEP Lead Unit // 718-595-5364 // nyc.gov/dep/leadindrinkingwater

HEALTH QUESTIONS (WATER SUPPLY-RELATED)

DOHMH // Call 311 or 212-NEW YORK (639-9675) // nyc.gov/apps/311
NYSDOH Bureau of Water Supply Protection // 518-402-7650 // health.ny.gov

REPORT UNUSUAL COLOR, TASTE OR ODOR OF DRINKING WATER

Call 311 or 212-NEW YORK (639-9675) // nyc.gov/apps/311

REPORT POLLUTION, CRIME, OR TERRORISM IN THE WATERSHED

DEP Police and Security // 888-H2O-SHED (426-7433) // nyc.gov/dep

REQUEST ADDITIONAL COPIES OF THIS REPORT OR VIEW REPORT ONLINE

Call 311 or 212-NEW YORK (639-9675) // nyc.gov/waterqualityreport

TTY SERVICES

Call 212-504-4115

TEXT 311

311-692

This report contains important information about your drinking water.

Translate it, or speak with someone who understands it.

Este reporte contiene información muy importante sobre el agua que usted toma. Haga que se la traduzcan o hable con alguien que la entienda.

Ce rapport contient des informations importantes sur votre eau potable. Traduisez-le ou parlez en avec quelqu'un qui le comprend bien.

Rapò sa a gen enfòmasyon ki enpòtan anpil sou dlo w'ap bwè a. Fè tradwi-l pou ou, oswa pale ak yon moun ki konprann sa ki ekri ladan-l.

Ten raport zawiera bardzo istotną informację o twojej wodzie pitnej. Przetłumacz go albo porozmawiaj z kimś kto go rozumie.

В этом материале содержится важная информация относительно вашей питьевой воды. Переведите его или поговорите с кем-нибудь из тех, кто понимает его содержание.

這個報告中包含有關你的飲用水的重要信息。請將此報告翻譯成你的語言或者詢問懂得這份報告的人。

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