

Annual Water Quality Report for 2016

Binghamton Water Department

25 Broome St., Binghamton, New York 13903

Public Water Supply ID# NY0301651

INTRODUCTION

In compliance with State and Federal regulations the BINGHAMTON WATER DEPARTMENT issues an annual report describing the quality of your drinking water. The purpose of this report is to raise your understanding of drinking water and of the need to protect our drinking water sources. In 2016, we conducted tests for over 140 contaminants for each of our two sources. Our primary source is the Susquehanna River and our back-up source is a well. Water produced from both sources was below maximum contaminant levels for all monitored constituents. Monitoring samples taken from the distribution system were in compliance with State standards. This report provides an overview of last year's water quality. Included are details about where your water comes from, what it contains, and how it compares to State standards.

If you have any questions concerning this report or your drinking water, please contact the **Water Department @ 607-772-7210 during normal business hours**. We want you to be informed about your drinking water and we would be happy to discuss any drinking water issues with you by phone or in person.

WHERE DOES OUR WATER COME FROM?

In general, 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. In order to ensure that tap water is safe to drink, the State of New York and the Environmental Protection Agency prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. State Health Department and Food and Drug Administration regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

Our primary source of water is the Susquehanna River, from which water is withdrawn and treated at a modern, recently renovated water filtration facility. We also have a back-up groundwater supply: a well of relatively small capacity compared to our normal water demand. The well is typically exercised 8 hours per week, and thus supplies less than one-half of one percent of our water. Water pumped from the well is chlorinated before entering the water distribution system.

The New York State Department of Health has completed a source water assessment for this system, based on available information. Possible and actual threats to this drinking water source were evaluated. The state source water assessment includes a susceptibility rating based on the risk posed by each potential source of contamination and how easily contaminants can impact the water at the intake. The susceptibility rating is an estimate of the potential for contamination of the source water. It does not mean that the water delivered to consumers is, or will become, contaminated. See section "Are there contaminants in our drinking water?" for a list of the contaminants that have been detected. While nitrate and other inorganic contaminants were detected in our surface and ground water source, it should be noted that all drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some contaminants from natural sources. The presence of contaminants does not necessarily indicate that the water poses a health risk.

SURFACE WATER ASSESSMENT (SUSQUEHANNA RIVER)

A surface water assessment found an elevated susceptibility to microbial contamination for this source of drinking water. The amount of pastureland in the assessment area results in a high potential for protozoa contamination. While there are some facilities present, permitted discharges do not likely represent an important threat to source water quality based on their density in the assessment area. In addition, it appears that the total amount of wastewater discharged to surface water in this assessment area is high enough to further raise the potential for contamination, particularly for protozoa. There is not any likely contamination threats associated with other discrete contaminant sources, even though discharge contaminants from some facilities were found in low densities. Finally, it should be noted that relatively high flow velocities (i.e.: spring floods) make river drinking water supplies highly sensitive to existing and new sources of microbial contamination.

GROUND WATER ASSESSMENT (OLMSTEAD WELL)

A ground water assessment has rated the Olmstead Well as having a high susceptibility to nitrate and microbial contamination, specifically enteric bacteria, enteric viruses and protozoa. These ratings are due primarily to the proximity of the well to permitted discharge facilities (industrial/commercial and municipal facilities that discharge wastewater into the environment and are regulated by the state and/or federal government) and private sewage disposal, septic systems and agricultural activities in the upstream area. The well is also rated highly susceptible to chemical contaminants because of several contaminant sources identified in the assessment area and a history of low-level chemical contamination, specifically organic compounds. These ratings are also warranted because the well is relatively shallow and draws from an unconfined productive aquifer that may not provide adequate protection from potential contamination. Please note that as stated above, the Olmstead Well contributes a very limited amount of water to the total amount used in the system. While the source water assessment rates our surface water and ground water sources as being moderately to highly susceptible to microbial contamination, please note that our water is disinfected to ensure that the finished water delivered into your home meets New York State's drinking water standards for microbial contamination.

County and state health departments will use this information to direct future source water protection activities. These may include water quality monitoring, resource management, planning, and education programs.

FACTS AND FIGURES

Our water system serves 44,564 people through 14,000 service connections in the City, and wholesales water to parts of the Towns of Binghamton, Dickinson, and Vestal. The total amount of water pumped out of our production facilities in 2016 was 1,774,989,400 Gallons. The daily average for the year was 4.86 million gallons per day with our highest daily production being on February 18th with 7,086,600 gallons pumped. The amount of water billed to all customers was 1,330,620,940. This number reflects sales provided to bulk tanker trucks and municipal agreements with NYSEG Stadium. We attribute the remaining 177,498,840 gallons of water used by the city for firefighting, parks, non-revenue miscellaneous usage, pools and street flushing, a biannual hydrant flushing/flow testing program, and water main breaks and leakage. In 2016, the combined minimum water / sewer bill was \$96.20. This provides 7480 gals of water. If a person used 125 gallons per day for a full year, the cost would be \$522.00. This would provide a total of 45,625 gallons of water for a combined water/sewer cost of 1.46 per day. For more information on current water / sewer rates, visit www.cityofbinghamton.com.

ARE THERE CONTAMINANTS IN OUR DRINKING WATER?

As the State regulations require, we routinely test your drinking water for numerous contaminants. The contaminants included are: total coliform bacteria (for microbiological quality), turbidity, inorganic group compounds, nitrate, nitrite, lead and copper, volatile organic compounds, total trihalomethanes, haloacetic acids, synthetic organic compounds, and miscellaneous chemical compounds. The contaminants detected in your drinking water are included in the [Table of Detected Contaminants](#).

During 2016, the Binghamton Water Plant performed 823 (600 required by regulations) microbiological tests for coliform in the distribution system. There were no microbiological standard violations. Over 140 other contaminants were tested for during the year with the majority *not being detected*. A complete listing of contaminants we tested for during 2016 is available for inspection at the Water Plant during normal business hours. In the [Table of Detected Contaminants](#) is a listing of detected contaminants. All have concentrations below the state regulated maximum contaminant level (MCL).

The State allows us to test for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of our data, though representative, could be more than one year old.

It should be noted that all drinking water, including bottled drinking water, might be reasonably 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 800-426-4791, or the Broome County Health Department at 607-778-2887. Also, the National Sanitation Foundation is a nongovernmental source of free information on water quality issues, with a toll-free consumer hotline at 877-8NSF-HELP.

DEFINITIONS OF TERMS USED IN TABLE

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the MCLG's as feasible.

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

Maximum Residual Disinfectant Level (MRDL): The highest level of a disinfectant residual that is allowed in drinking water.

Maximum Residual Disinfectant Level Goal (MRDLG): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLG's do not reflect the benefits of the use of disinfectants to control microbial contamination.

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

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

Non-Detectable (ND): Laboratory analysis indicates that the constituent is not present.

Nephelometric Turbidity Unit (NTU): Turbidity is a measure of the clarity of the water. We use this test as an indication of the effectiveness of the filtration system as a whole. State regulations in force during 2014 require that our effluent (water leaving the plant) is always below 1.0 NTU, and 95% of the turbidity samples collected from our individual filters must have measurements below 0.3 NTU. These samples from the filters are collected every fifteen minutes utilizing our SCADA system and turbidity monitors located at each filter. Turbidity in excess of 5 NTU is just noticeable to the average person.

Milligrams per liter (mg/l): Corresponds to one part of liquid in one million parts of liquid (parts per million - ppm).

Micrograms per liter (ug/l): Corresponds to one part of liquid in one billion parts of liquid (parts per billion - ppb).

Picocuries per liter (pCi/L): A measure of the radioactivity in water.

Locational Running Annual Average (LRAA): The average result of four consecutive quarterly compliance chemical testing series at any one location.

Table of Detected Contaminants

CONTAMINANT	VIOLATION	DATE	LEVEL DETECTED (Range)	UNIT	MCLG	Regulatory Limit MCL	LIKELY SOURCE OF CONTAMINANT	
Inorganics								
Barium	Plant Well	NO	3/22/16 6/18/14	0.014 0.0690	mg/L	2.0	2.0	Drilling Waste ,Discharge from metal Refineries, Erosion of natural deposits
Nickel	Well	NO	6/18/14	0.0007	mg/L	N/A	N/A	Erosion of Natural Deposits and manufacturing wastes
Chloride	Plant Well	NO	9/15/15 6/18/14	35.9 212	mg/l	N/A	250	Naturally occurring or indicative of road salt contamination
Sulfate	Plant Well	NO	9/15/15 6/18/14	9.3 20.7	mg/l	N/A	250	Naturally occurring
Fluoride	Plant Well	NO	Daily 6/18/14	(0.63-0.74) 0.210	mg/L	1.0	2.2	Additive for good dental health and Erosion of Natural Deposits
Nitrate	Plant Well	NO	12/14/16 12/14/16	0.55 4.4	mg/L	10	10	Runoff from fertilizer, runoff from septic tanks ,sewage, natural erosion
Sodium	Plant Well (*1)	NO	6/2/15 12/14/16	18.4 120	mg/L	N/A	None	Natural in soil, road salt, water softeners
Disinfection By Products								
Total Trihalomethane (*2)	Distribution system	NO	Quarterly	45.5 (15.7–87.1)	ug/L	N/A	80	Byproduct of disinfection. TTHM's form when chlorine meets organic matter.
Haloacetic Acid (*3)	Distribution system	NO	Quarterly	26.2 (5.6 – 51.0)	ug/L	N/A	60	By product of disinfection. HAA5's form when chlorine meets organic matter.
Chlorite	Plant Average Daily High	NO	Yearly	0.02	mg/L	N/A	1.0	By product of in plant generation of chlorine dioxide
Sodium Hypochlorite	Plant Average Daily High	NO	Daily	1.51 1.77	mg/L	N/A	4.0	Chemical used in the disinfection of drinking water (as Free Chlorine)
Radiological								
Uranium	Well	NO	6/15/16	0.214	pCi/L	0	15	Erosion of Natural Deposits
Gross Alpha	Plant Well	NO	12/11/12 6/15/16	4.2 0	pCi/L	0	15	Erosion of Natural Deposits
Gross Beta	Plant Well	NO	12/11/12 6/15/16	1.92 3.96	pCi/L	0	4	Decay of natural deposits and man-made emissions
Radium 226	Plant Well	NO	12/11/12 6/15/16	0.01 0.439	pCi/L	0	5	Erosion of Natural Deposits
Radium 228	Plant Well	NO	12/11/12 6/15/16	1.40 0.060	pCi/L	0	5	

*** Notes:**

1 – 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.

2 - This level represents the highest locational running annual average and the range of the following contaminants: Chloroform, Bromodichloromethane, Dibromochloromethane & Bromoform.

3- This level represents the highest locational running annual average and the range of the following contaminants: Monochloroacetic Acid, Monobromoacetic Acid, Dichloroacetic Acid, Trichloroacetic Acid & Dibromoacetic Acid.

UNREGULATED CONTAMINANT MONITORING

The 1996 amendments to the Safe Drinking Water Act (SDWA) require that once every five years, the U.S. Environmental Protection Agency (EPA) issue a new list of no more than 30 unregulated contaminants monitored by public water systems (PWSs). The Unregulated Contaminant Monitoring Rule (UCMR) provides EPA and other interested parties with scientifically valid data on the occurrence of contaminants in drinking water. Unregulated contaminants are those that don't yet have a drinking water standard set by US EPA. The purpose of monitoring for these contaminants is to help EPA decide whether the contaminants should have a standard. The following unregulated contaminants were detected in our water system during 2014 and 2015:

Contaminant	Level Detected	Unit Measurement	Likely Source of Contamination
Strontium	66.3-194	ug/l	Erosion of natural deposits.
Chromium	0.23-0.53	ug/l	Discharge from steel and pulp mills, pigments, leather tanning; Erosion of natural deposits.
Chromium-6	ND-0.28	ug/l	Discharge from steel and pulp mills, pigments, leather tanning; Erosion of natural deposits.
Cobalt	ND-1.5	ug/l	Erosion of natural deposits
Chlorate	21-339	ug/l	Disinfection byproduct; Used in the production of chlorine dioxide
1,4-dioxane	ND-0.077	ug/l	Primarily used as a stabilizer for trichloroethane. Also used in a variety of applications as a solvent such as in inks and adhesives.

LEAD AND COPPER

In 1994, the City of Binghamton conducted a corrosion optimization study to reduce lead and copper levels in your tap water. The report and study were approved by the New York State Department of Health and the City's corrosion control was deemed optimized. Follow up testing in 1996 and 1999 reaffirmed the study's findings. The City of Binghamton has optimized corrosion control treatment and has had monitoring reduced to once every three years by the New York State Department of Health.

In 2016, the City completed the lead and copper monitoring required under their reduced schedule of a minimum of 30 distribution system (residential) sampling sites every 3 years. The 90th percentile corresponding to 30 samples is the 27th sample in ascending order. In 2019, the City will again sample for lead and copper in the distribution system.

2016 Lead/Copper Results	Violation Yes/No	Date of Sample	Range Results	90 th %tile Results	Unit	MCLG	Reg. Limit 90 th %tile Action Level
Lead	No	2016	<0.0010-0.0160>	0.0077	mg/L	0	0.015
Copper	No	2016	<0.020 – 0.420>	0.190	mg/L	1.3	1.3

During the testing in 2016, the City found 2 residential homes that were at the action level or higher in the lead sampling results. At this time, we are still working with these homes to help them reduce their lead residual levels. In one case, we found the results were due to a very low rate of use or time spent out of town for extended durations. Each elevated lead levels found in area homes is an isolated incident. In each case, the results were indicative of an interior plumbing issue rather than a reflection of the source water. After extensive and costly repairs to both the City and the home owner we discovered the issue by digging up the street and finding a service tap close to an older leaded joint connecting two pieces of water main together. We removed the older leaded joint and the family has pristine drinking water once again.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women, infants, and young children. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. The City of Binghamton 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 (1-800-426-4791) or at <http://www.epa.gov/safewater/lead>.

As a result of the optimization report, other parameters are monitored to ensure that our water quality remained within the guidelines of the study. These parameters are known as Water Quality Parameters. During 2016 we collected samples that pertained to the study, and the results are compiled below.

Parameter	High Level (mg/l)	Low Level (mg/l)	Mean (mg/l)
Alkalinity (as CaCO ₃)	62	46	54
Specific Conductance	257	213	235
Calcium Hardness (as CaCO ₃)	76.2	51.9	64.6
Orthophosphate (as PO ₄)	0.1100	0.0500	0.0750
PH	7.68	6.89	7.34
Temperature	87 F	32 F	59.5 F

INFORMATION ON THE ADDITION OF FLUORIDE

Our system is one of many in New York State that provides drinking water with a controlled, low level of Fluoride for consumer dental health protection. Fluoride is added to your water by the Water Filtration Plant and is monitored no less than every four hours by water plant operators and laboratory personnel. According to the Center for Disease Control, Fluoride is very effective in preventing cavities when present in drinking water at an optimal range from 0.6 – 0.8 mg/L. During 2016 monitoring showed Fluoride levels in your water were in the optimal range 100 % of the time. At no time in 2016 did the Fluoride level exceed the MCL of 2.2 mg/L.

WHAT DOES THIS INFORMATION MEAN?

As you can see by the table, our system had no MCL violations in 2016. We also learned through our testing that some other contaminants have been detected; however, these contaminants were detected below the level allowed by the State, as indicated in the table.

IS OUR WATER SYSTEM MEETING OTHER RULES THAT GOVERN OPERATIONS?

During 2016, our system was in compliance with applicable State drinking water operating, monitoring and reporting requirements.

DO I NEED TO TAKE SPECIAL PRECAUTIONS?

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 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 from their health care provider about their drinking water. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium, Giardia and other microbial pathogens are available from the Safe Drinking Water Hotline (800-426-4791).

WHY SAVE WATER AND HOW TO AVOID WASTING IT?

Although our system has an adequate amount of water to meet present and future demands, there are a number of reasons why it is important to conserve water:

- ◆ Saving water saves energy and some of the costs associated with both of these necessities of life.
- ◆ Saving water reduces the cost of energy required to pump water and the need to construct costly new wells, pumping systems, and water towers.
- ◆ Saving water lessens the strain on the water system during a dry spell or drought, helping to avoid severe water use restrictions so that essential firefighting needs are met.

You can play a role in conserving water by becoming aware of the amount of water your household is using, and by looking for ways to use less whenever you can. It is not hard to conserve water. Conservation tips include:

- ◆ Automatic dishwashers use 15 gallons for every cycle, regardless of how many dishes are loaded. Partial loads waste money. Fill it to capacity prior to each run.
- ◆ Turn off the tap when brushing your teeth.
- ◆ Check every faucet in your home for leaks. Just a slow drip can waste 15 to 20 gallons a day. Repair these fixtures and you can save almost 6,000 gallons per year.
- ◆ Check your toilets for leaks by putting a few drops of food coloring in the tank, watch for a few minutes to see if the color shows up in the bowl. It is not uncommon to lose up to 100 gallons a day from one of these otherwise invisible toilet leaks. Fix it and you save more than 30,000 gallons a year.
- ◆ Use your water meter to detect hidden leaks. Simply turn off all taps and water using appliances, and then check the meter after 15 minutes. If it moved, you have a leak.

SYSTEM IMPROVEMENTS

The Water Filtration Plant is in full swing with the designing of the new sludge disposal system. We have selected GHD as our partner in this

endeavor they bring a full spectrum of experience and disciplines to the project. This project would ultimately pay for itself and benefit us in the long term. We would embark on a more self-sufficient course and lose dependency on the Sewage Treatment facility in Vestal. This project will impact both Water and Sewer Plants in a very positive way. We will begin construction by the late summer of 2017.

- ◆ The Water Meter Department responded to 6,248 service calls with 572 of them direct meter replacements in addition to meter reading and meter change outs. We currently have 340 large meters on radio read including most of our larger buildings and complexes. The department currently tracks and maintains records for 470 Back Flow Cross Connection devices located in the City of Binghamton and we have several employees certified for back flow testing which take care of our in house devices.
- ◆ The Water Distribution Department replaced 18 hydrants, repaired 25 main breaks replaced 19 water services and over 230 feet of new water main including 12 gate valves in addition to standard duties and street reconstruction projects. We also respond to numerous service calls and many late nights and after hour repairs.
- ◆ The City Engineering Department oversaw and contracted the replacement of over 3000 linear feet of water main, 62 isolation valves, installed 22 new fire hydrants and replaced over 89 water service lines.

CLOSING

Thank you for allowing us to continue to provide your family with quality drinking water this year. We ask that all our customers help us to protect our water sources, which are the heart of our community. Please feel free to call the Water Department office for any questions concerning this report or additional information concerning your water.

In conjunction with the City's Fire Department, the Water Department has implemented a color code system for all City fire hydrants. This code system will help the Fire Department during emergency conditions to identify maximum water flow for firefighting. We are also asking all city residents to please call 607-772-7210 if hydrants in their area need repair or painting.

We also ask for your help in maintaining security at any of our unmanned remote facilities. If you ever have any concerns with vandalism or suspicious behavior around any City of Binghamton Water facility, please call the Water Department at 607-772-7221 or the Binghamton Police Department at 723-5321.