

# *Annual Drinking Water Quality Report for 2004*

## *Binghamton Water Bureau*

*25 Broome St., Binghamton, New York 13903*

*Public Water Supply ID# NY0301651*

### **INTRODUCTION**

To comply with State and Federal regulations the BINGHAMTON WATER BUREAU will be annually issuing a report describing the quality of your drinking water. The purpose of this report is to raise your understanding of drinking water and awareness of the need to protect our drinking water sources. In 2004, we conducted tests for over 140 contaminants for each of our two sources, our primary source being the Susquehanna River and our back-up source being a well. Water produced from both sources was below maximum contaminant levels for all monitored constituents. All distribution system monitoring sample results 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 about this report or concerning your drinking water, please contact **Kevin E. Transue, Superintendent of Water/Sewer @ 607-772-7210 during normal business hours**. We want you to be informed about your drinking water. If you want to learn more, please feel free to contact the Water Bureau and we will be happy to discuss any drinking water issues with you 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 and the EPA prescribe regulations which limit the amount of certain contaminants in water provided by public water systems. The State Health Department's and the FDA's regulations establish limits for contaminants in bottled water which 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Our primary source of water is the Susquehanna River, from which water is withdrawn and treated at a modern, recently renovated water filtration facility.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 NYS DOH 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**

The 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 are no likely contamination threats associated with other discrete contaminant sources, even though some facilities were found in low densities. Finally, it should be noted that relatively high flow velocities 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 microbials, 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 microbials, 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 46,310 people thru 14,200 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 2004 was 2,777.8 million gallons (MG). The daily average for the year was 7.59 MG with our highest daily production being on Feb. 11 with 11.37 MG pumped. The amount of water delivered and billed to all customers was 1,846.8 MG, leaving an unbilled amount of 924.4 MG. We attribute the 924.4 MG to firefighting, municipal usage such as parks, pools and street flushing, a hydrant flushing/flow testing program, and water pipe breaks and leakage. In 2004, water customers within the City boundaries were charged approximately \$1.68 per 100 cubic feet. (748 gal.) of water. A typical annual residential water charge (using 275 gallons/day) for year 2004, including capital fees, was \$273.00. There was no water source restriction for either the plant or the Olmstead Well in 2004.

## 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 radiological activity. The contaminants detected in your drinking water are included in the **Table of Detected Contaminants**.

In addition to the required State testing, the State asked water systems to perform additional testing of *Unregulated Contaminants*. This testing was performed from July 2002 thru June 2003 on the Susquehanna River and twice for the Olmstead Well source. At each source, results were either *Non-Detectable or below approved detectable testing limits* for each of the twelve contaminants. The table below list the contaminants included in the unregulated group.

Perchlorate	EPTC
DCPA Di-Acid Degradate	Molinate
DCPA Mono-Acid Degradate	Terbacil
2,4-Dinitrotoluene	4,4-DDE
2,6-Dinitrotoluene	Methyl Tert-Butyl Ether
Acetochlor	Nitrobenzene

During 2004, the Binghamton Water Plant performed 837 microbiological tests for coliform in the distribution system. There were no microbiological standard violations. Over 140 other contaminants, including *Giardia* and *Cryptosporidium* were tested for during the year with the majority being *not detected*. A complete listing of contaminants we tested for during 2004 is available for inspection at the Filtration Plant during normal business hours. In the *Table of Detected Contaminants* is a listing of detected contaminants; all with 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. MCLs are set as close to the MCLGs 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. MCLGs 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. MRDLGs 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):** A measure of the clarity of water. 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.

**Running Annual Average (RAA)** The average result of four consecutive quarterly compliance chemical testing.

## Table of Detected Contaminants

<u>CONTAMINANT</u>	Violation Yes/No	Date of Sample	Level Detected	Unit	MCLG	Regulatory Limit MCL,TT, AL,MRDL	<u>LIKELY SOURCE OF CONTAMINATION</u>	
<i>Primary Inorganics</i>								
Barium	Well	No	Nov. '04	0.016	mg/l	2.0	2.0	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Fluoride	Plant	No	Nov. '04	0.8	mg/l	1	2.2	Erosion of natural deposits; Water additive that promotes strong teeth; Fertilizer and aluminum factories.
<i>Secondary Inorganics</i>								
Sulfate	Plant	No	Nov. '04	17	mg/l	N/A	250	Naturally occurring
Nitrate	Well	No	Quarterly	4.94 -5.18	mg/l	10	10	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
	Plant	No	Quarterly	.22 - 1.09	mg/l	10	10	
Sodium *2	Well	No	Nov. '04	160	mg/l	N/A	No Limit	Naturally occurring; Road salt; Water softeners; Animal waste
	Plant	No	Nov. '04	11	mg/l	N/A	No Limit	
<i>Volatile Organic Contaminants</i>								
Trichloroethene	Well	No	May 04	0.5	ug/l	0	5	Discharge from metal degreasing sites or industrial chemical factories
1,1-Dichlorethane	Well	No	May 04	0.5	ug/l	0	5	Released into the environment as fugitive emissions and in wastewater during production and use as a chemical intermediate solvent; used in vinyl chloride manufacturing; chlorinated solvent intermediate; coupling agent in anti-knock gasoline; degreasing agent
			Aug. 04	0.6				
<i>Disinfection Byproducts</i>								
Total Trihalomethanes Distribution	No	Quarterly	7.1 - 77.0 range	ug/l	N/A	80	Byproduct of drinking water chlorination needed to kill harmful organisms. TTHM's are formed when source water contains large amounts of organic matter.	
Haloacetic Acids Distribution	No	Quarterly	9.2 - 38 range	ug/l	N/A	60	Byproduct of chlorination for drinking water disinfection	
Chlorite	Plant RAA Daily High	No	Yearly Mar. 21	0.195 0.409	mg/l	N/A	1.0	Byproduct of in-plant generation of chlorine dioxide and of drinking water chlorination
Cl. Dioxide	Plant RAA Daily High	No	Yearly Mar. 4	0.0672 0.19	mg/l	N/A	0.8	Byproduct of pre-oxidation and pre-disinfection in water treatment plants using chlorine dioxide
Chlorine	Plant RAA Daily High	No	Yearly Aug. 17	1.34 1.76	mg/l	N/A	4.0	Disinfection treatment added at plant

### \* Notes:

1 - Turbidity is a measure of the cloudiness of the water. We test it because it is a good indicator of the effectiveness of our filtration system. State regulations in effect during 2004 required that, in order not to have a treatment technique violation, our composite filtered water turbidity must always be below 1 NTU, and 95% of the turbidity samples collected each month from our individual filters must have measurements below 0.3 NTU.

2 - 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.

## WHAT DOES THIS INFORMATION MEAN?

As you can see by the table, our system had no MCL violations in 2004.

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.

### 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 2002, 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. Sampling was actually done for 33 sites. The 90<sup>th</sup> percentile corresponding to 33 samples is the 30<sup>th</sup> sample in ascending order. In 2005, the City will again sample for lead and copper in the distribution system.

<i>2002 Lead/Copper Results</i>	<b>Violation Yes/No</b>	<b>Date of Sample</b>	<b>Range / 90<sup>th</sup> %tile Results</b>	<b>Unit</b>	<b>MCLG</b>	<b>Reg. Limit 90<sup>th</sup> %tile Action Level</b>
Lead	No	2002	< 1 - 18 / 7	ug/l	0	15
Copper	No	2002	< 0.2 - 1.05 / 0.69	mg/l	1.3	1.3

As a result of the optimization report, other parameters are monitored to insure that our water quality remained within the guidelines of the study. These parameters are known as Water Quality Parameters. During 2004, we collected 34 samples that pertained to the study, and the results are compiled below.

<b>Parameter</b>	<b>High Level (mg/l)</b>	<b>Low Level (mg/l)</b>	<b>Mean (mg/l)</b>
Alkalinity (as CaCO <sub>3</sub> )	87	18	45.8
Specific Conductance	518	130	199.7
Calcium Hardness (as CaCO <sub>3</sub> )	152	42	66.7
Orthophosphate (as PO <sub>4</sub> )	0.66	0.05	0.255
PH	7.27	6.55	6.92
Temperature	24.9C	3.2 C	14.16 C

## IS OUR WATER SYSTEM MEETING OTHER RULES THAT GOVERN OPERATIONS?

During 2004, 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 with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice 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, and
- ◆ 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 fire fighting needs are met.

You can play a role in conserving water by becoming conscious 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. So get a run for your money and load it to capacity.
- ◆ 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 the appliance 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, then check the meter after 15 minutes -- if it moved, you have a leak.

## **SYSTEM IMPROVEMENTS**

The Water Meter Dept. installed approx. 1004 residential and commercial meters during the year.

The Binghamton Water Bureau, in conjunction with Binghamton's street reconstruction program, installed approx. 10,230 feet of new and replacement water main and 128 various size valves in the distribution network. Additional improvements included replacement of 60 fire hydrants and 266 City water services.

The Water Bureau's Distribution Dept., in addition to the above system improvements, installed and replaced 550 feet of water main, 43 hydrants, 29 main/hydrant valves, and 74 water services. These improvements were completed along with daily activities that included 23 water main break repairs, and general operation and maintenance duties.

## **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 protect our water sources, which are the heart of our community and our way of life. Please feel free to call the Bureau's office for any questions concerning this report or additional information concerning your water.

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 Bureau @ 607-772-7221 or the City Police @ 723-5321.