Introduction

To comply with State regulations, Buffalo Water (managed by Veolia NA) 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.

Last year, your tap water met all State drinking water health standards.

This report is 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. We are pleased to provide you with this information because informed customers are our best customers.

If you have any questions about this report or concerning your drinking water, please contact Jan Robin Ford, Water Treatment Supervisor at (716) 847-1065 ext. 130. We want you to be informed about your drinking water. If you would like to learn more, please attend any of the regularly scheduled Water Board meetings, typically held the second Wednesday of each month at 8:00 AM, Room 502 – City Hall.
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 Federal Environmental Protection Agency (EPA) prescribe regulations which limit the amount of certain contaminants in water provided by public water systems. The State Health Department and the Federal Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Our water source is Lake Erie (a surface water source) which is the southernmost of the Great Lakes, bounded on the north by the Canadian province of Ontario, on the south by the U.S. states of Ohio, Pennsylvania, and New York, and on the west by the state of Michigan. Lake Erie is the shallowest of the Great Lakes, with an average depth of only 62-ft. It also has the shortest detention time of the Great Lakes. Water remains in the lake for only 2.6 years before it is replaced by fresh water (as compared with 191 years in Lake Superior or 22.6 years in Lake Huron). It is also the siltest of the Great Lakes. Its bottom consists of fine sand, easily upset during turbulent storms. The combination of its shallowness, short detention time and sandy unstable bottom is especially beneficial to our water quality. The lake is able to flush itself of harmful contaminants such as pesticides and other organic wastes. When Lake Erie becomes turbulent, fine particles of sand and silt become agitated and suspended throughout the lake. Organic contaminants have the propensity to cling to these particles and be flushed from the lake. Therefore, water treatment begins as a natural process due to the structure and makeup of Lake Erie. During 2016, our system did not experience any restriction of our water source.
**Customer cost**

The average 2016 annual water charge was approximately $415.00 per year. The total quarterly bill includes the cost of water used and the service charge. Eligible senior citizens receive a discount.

<table>
<thead>
<tr>
<th>Water Usage (gallons)</th>
<th>Price per 1000 gallons</th>
<th>Quarterly Service Charge as of July 1, 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly</td>
<td>Quarterly</td>
<td>Regular</td>
</tr>
<tr>
<td>Up to 29,795</td>
<td>Up to 74,799</td>
<td>$5.05</td>
</tr>
<tr>
<td>29,930 - 97,240</td>
<td>74,800 - 269,280</td>
<td>$2.86</td>
</tr>
<tr>
<td>over 97,240</td>
<td>over 269,280</td>
<td>$2.18</td>
</tr>
</tbody>
</table>

**Abbreviations and Definitions of Terms used in this report:**

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

**MCL (Maximum Contaminant Level):** The highest level of contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as possible.

**MRDL (Maximum Residual Disinfectant Level):** The highest level of a disinfectant (chlorine) 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):** The level of a drinking water disinfectant (chlorine) 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 contaminants.

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

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

**NTU (Nephelometric Turbidity Unit):** A measure of clarity (turbidity) of water, turbidity in excess of 5 NTU is just noticeable to the average person.

**Poly/Ortho – phosphate:** A chemical blend used as a treatment technique (TT) intended to minimize the potential for lead and copper contamination in drinking water. EPA’s Action Level (AL) for lead in water delivered to users of public drinking water systems is 15 µg/L. (parts per billion). Its goal for lead is zero.

**Floc:** Clumps or tufts formed when suspended particles combine with chemical substance or compound that promotes the combination, agglomeration, aggregation or coagulation of suspended particles in the water.

**Sedimentation:** The process of suspended solid particles settling out (going to the bottom of the vessel) in water.

**Coagulation:** Agglomeration of finely divided particles into larger particles, which can then be removed by settling and/or filtration.

**ppm:** Parts per million, or milligrams per liter (mg/L). Corresponds to one part of liquid in one million parts of liquid.

**ppb:** Parts per billion, or micrograms per liter (µg/L). Corresponds to one part of liquid in one billion parts of liquid.

**ND:** Not detected.

**N/A:** Not applicable.

**TTHM (Total Trihalomethane):** Organic compounds, which are disinfection by-products of the chlorination of drinking water. Some people who drink water with TTHMs in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system, and may have an increased risk of getting cancer.

**HAA (Halogenated Acetic Acids):** Organic compounds, which are disinfection by-products of the chlorination of drinking water, currently the EPA lists HAAs as a health advisory.

**TOC (Total Organic Carbon):** A measure of the organic content of the water. This is a precursor to disinfection by-product when combined with the chlorination of drinking water.

**90th % Value:** The values reported for lead & copper represent the 90th percentile for each of these contaminants. A percentile is a value on a scale of 100 that indicates a percent of a distribution that is equal to or below it. The 90th percentile is equal to or greater than 90% of the lead (or copper) values detected at your water system.

**RAA:** The value in the Running Annual Average (RAA) field is the average of the Monitoring Period Average (MPA) for a year. It is calculated by determining the monitoring periods that began within 365 for the current monitoring period and averaging them.

### Stage 2 Disinfection Byproducts (2016)

<table>
<thead>
<tr>
<th>Sample Site</th>
<th>THM Avg. (range), ppb</th>
<th>HAA Avg. (range), ppb</th>
</tr>
</thead>
<tbody>
<tr>
<td>1625 Bailey Ave</td>
<td>22.97 (13.2-29.47)</td>
<td>11.75 (10.2-13)</td>
</tr>
<tr>
<td>3043 Main St</td>
<td>22.77 (15.1-30.18)</td>
<td>13.68 (9.7-17.6)</td>
</tr>
<tr>
<td>1110 Abbott Rd</td>
<td>23.05 (18.5-32.2)</td>
<td>14.73 (12.6-19.9)</td>
</tr>
<tr>
<td>150 Reading St</td>
<td>24.38 (18.6-30.32)</td>
<td>12.23 (5.6-18.2)</td>
</tr>
<tr>
<td>396 Kenmore Ave</td>
<td>22.89 (16.4-29.8)</td>
<td>12.75 (11.8-13.3)</td>
</tr>
<tr>
<td>262 Grider St</td>
<td>22.17 (13.6-29.8)</td>
<td>11.78 (11.2-16)</td>
</tr>
<tr>
<td>398 Dingens St</td>
<td>24.22 (16.7-37.88)</td>
<td>13.1 (11.5-14.8)</td>
</tr>
<tr>
<td>3396 Bailey Ave</td>
<td>22.22 (16.4-30.19)</td>
<td>12.03 (9.4-13.2)</td>
</tr>
<tr>
<td>300 Dorrance Ave</td>
<td>22.58 (17.3-28.1)</td>
<td>14.45 (12.18-17.8)</td>
</tr>
<tr>
<td>24 Westminster Ave</td>
<td>22.94 (16.4-30.27)</td>
<td>12.83 (11.5-13.1)</td>
</tr>
<tr>
<td>2 Templeton Terr.</td>
<td>23.07 (18.9-28.57)</td>
<td>12.25 (9-13.8)</td>
</tr>
<tr>
<td>939 Abbott Rd</td>
<td>27.49 (17.6-48.74)</td>
<td>13.9 (12.18-14.4)</td>
</tr>
</tbody>
</table>
Source water assessment (SUMMARY)

A source water assessment was completed under the New York State Department of Health (NYSDOH) Source Water Assessment Program (SWAP). The following is the Executive Summary of this report: “The New York State Department of Health recently completed a draft Source Water Assessment of the raw water supply’s source under the state’s Source Water Assessment Program (SWAP). The purpose of this program is to compile, organize, and evaluate information regarding possible and actual threats to the quality of public water supply (PWS) sources. It is important to note that source water assessment reports estimate the potential for untreated drinking water sources to be impacted by contamination. These reports do not address the safety or quality of treated finished potable tap water.

The Great Lakes’ watershed is exceptionally large and too big for a detailed evaluation in the SWAP. General drinking water concerns for public water supplies which use these sources include: storm generated turbidity, wastewater, toxic sediments, shipping related spills, and problems associated with exotic species (e.g. zebra mussels – intake clogging and taste and odor problems). The SWAP is based on the analysis of the contaminant inventory compiled for the drainage area deemed most likely to impact drinking water quality at this public water supply raw water intake. This assessment found a moderate susceptibility to contamination for this source of drinking water. The amount of agricultural lands in the assessment area results in elevated potential for protozoa and disinfection byproduct precursor contamination. There is also a high density of sanitary wastewater discharges, which results in elevated susceptibility for nearly all contaminant categories.

There is also noteworthy contamination susceptibility associated with other discrete contaminant sources, and these facility types include: Toxics Release Inventory facilities, Chemical Bulk Storage facilities, inactive hazardous waste sites, landfills and Resource Conservation and Recovery Act facilities.”

If you have any questions about the state’s Source Water Assessment Program, please contact the Erie County Health Department at (716) 961-6800.

Water treatment process

Buffalo’s water intake is located in the northeastern region of Lake Erie, just upstream of the Niagara River. This region is known as the Emerald Channel, due to the sparkling clarity of its water. Water enters into the intake through 12 sluice gates and collects in a circular conduit and is conveyed by gravity down 60 feet into a 12-foot diameter, mile-long tunnel burrowed under the lakebed. Chlorine may initially be applied in this conduit to control zebra and quagga mussels, and provide some disinfection of the water. The water is conveyed by gravity to an onshore screen house at the Colonel Francis G. Ward Pumping Station where traveling screens remove large objects such as fish and other debris that could potentially damage equipment.

Water continues to flow by gravity through the raw water conduit where fluoride and chlorine may be fed. Fluoride is added to guard against tooth decay, and chlorine is added at this location if the need to the intake is suspended. Six low lift pumps control the amount of water withdrawn from Lake Erie depending on system demands. A poly-aluminum chloride (PACl) coagulant is fed and mixed immediately downstream of the low lift pumps. PACl is a coagulant designed to cause debris in the water to bind together forming floc. The treated water is conveyed into underground basins where flocculation and sedimentation processes occur. During flocculation, the water is slowly mixed by mechanical equipment to enhance floc formation. Following the flocculation process, water enters into the settling portion of the underground basins where the heavy floc is allowed to settle out by gravity. The treated water, still containing light floc, is conveyed to 40 rapid sand/anthracite filter beds where the filtration process occurs, removing the light floc. A filter aid (PACl) can be added when necessary to enhance filtration and additional chlorine can also be added if needed. Filtered water then enters a 28 million gallon clearwell, where it is stored until needed in the distribution system. The 40 filters need to be cleaned on a regular basis, which is accomplished by backwashing the filters with potable water. The backwash wastewater generated during the backwash process contains concentrated amounts of light floc removed by the filters. This wastewater is collected and pumped to gravity thickening clarifiers. Clarified backwash water is recycled to the raw water conduit, and the concentrated residuals generated during the thickening process are pumped to a storage lagoon and subsequently to a centrifuge for further processing.

Prior to potable water being pumped into the distribution system, a phosphate based corrosion inhibitor is added, which provides a protective layer inside service connections and plumbing systems, minimizing the potential for contaminants such as lead to leach into drinking water. High lift pumps located at the Colonel Ward and Massachusetts Pumping Stations deliver the treated water to the community. Our in-house laboratory tests the quality and safety of the water at every stage of the treatment process. Additional tests are conducted from samples taken throughout the City, including private homes, businesses and public facilities to ensure our water remains safe.

Facts and figures

Water is essential for all life. Besides drinking, bathing and recreation, water is used to fight fires, and has countless industrial applications. The City of Buffalo treated over 26.29 billion gallons last year averaging over 72 million gallons each day for a population of approximately 260,000 people, covering 46 square miles of piping network. On our highest single day, July 12, 2016, we treated over 81.65 million gallons of water for distribution.

The distribution system consists of approximately 845 miles of water main pipe (not including hydrant laterals and service connections), 23,600 valves, 80,000 service connections and 7,966 fire hydrants. The distribution system is maintained, day and night, throughout all seasons. In the past year Buffalo Water has replaced or renovated approximately 3.17 miles of water mains and replaced 225 hydrants.
Are there contaminants in our drinking water?

As the state regulations require, we routinely monitor your drinking water for various contaminants. To name a few, we test for:
- Fluoride
- Lead
- Copper
- Cyanides
- Barium
- Radon
- Vinyl chloride

We also test for many other contaminants, including those typically tested as part of our routine monitoring program. The following contaminants were found in your drinking water:
- Bacteria
- Volatile Organic Compounds (VOCs)
- Inorganic Chemicals

What does this information mean?

The quantities of contaminants found in your drinking water are generally well below the levels established by regulatory agencies. The contaminants found were detected in trace amounts and are not expected to pose any health risk. This is consistent with previous monitoring results, indicating no significant change in the water quality.

IS YOUR WATER SYSTEM MEETING OTHER REGULATIONS?

If you have questions or concerns about your drinking water quality, please contact your local health department or the New York State Department of Health.

SYSTEM IMPROVEMENTS

The Buffalo Water & Sewer Authority, the entity responsible for providing water and sewer services to the residents of the City of Buffalo, is committed to improving the quality of its drinking water and ensuring compliance with all necessary regulations.

Water samples are regularly collected and tested to ensure the water quality meets or exceeds all regulatory requirements. The results of these tests are used to adjust the water treatment processes to maintain the highest possible water quality.

In 2016, the Authority spent $13 million on capital improvements, which included the installation of new water lines, storage tanks, and treatment plants. These improvements aim to reduce the occurrence of water quality issues and improve overall water safety.

Moving forward, the Authority is committed to investing in additional capital improvements to further enhance water quality and reliability.

Thank you for allowing us to continue to provide your family and community with high-quality drinking water.