ANNUAL WATER QUALITY REPORT

Water Testing Performed in 2015

Presented By
Town of Amherst

PWS ID#: MA1008000
Meeting the Challenge

Once again we are proud to present our annual drinking water report, covering all drinking water testing performed between January 1 and December 31, 2015. Over the years, we have dedicated ourselves to producing drinking water that meets all state and federal standards. We continually strive to adopt new methods for delivering the best-quality drinking water to your homes and businesses. As new challenges to drinking water safety emerge, we remain vigilant in meeting the goals of source water protection, water conservation, and community education while continuing to serve the needs of all of our water users.

Please remember that we are always available to assist you, should you ever have any questions or concerns about your water.

The Benefits of Fluoridation

Fluoride is a naturally occurring element in many water supplies in trace amounts. In our system, the fluoride level is adjusted to an optimal level averaging one part per million (ppm) to improve oral health in children. At this level, it is safe, odorless, colorless, and tasteless. Our water system has been providing this treatment since 1987. There are over 3.9 million people in 140 Massachusetts water systems and 184 million people in the U.S. who receive the health and economic benefits of fluoridation.

Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as those with cancer undergoing chemotherapy, those who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791 or http://water.epa.gov/drink/hotline.

Substances That Could Be in Water

To ensure that tap water is safe to drink, the Department of Environmental Protection (MassDEP) and the U.S. Environmental Protection Agency (U.S. EPA) prescribe regulations limiting the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and Massachusetts Department of Public Health (DPH) regulations establish limits for contaminants in bottled water that must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk.

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 activity. Substances that may be present in source water include:

**Microbial Contaminants**, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, or wildlife;

**Inorganic Contaminants**, such as salts and metals, which can be naturally occurring or may result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming;

**Pesticides and Herbicides**, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses;

**Organic Chemical Contaminants**, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production and may also come from gas stations, urban stormwater runoff, and septic systems;

**Radioactive Contaminants**, which can be naturally occurring or may be the result of oil and gas production and mining activities.

More information about contaminants and potential health effects can be obtained by calling the U.S. EPA’s Safe Drinking Water Hotline at (800) 426-4791.
**Where Does My Water Come From?**

The Town currently has seven sources that contribute to meeting the water demand: Atkins Reservoir, the Pelham Reservoir System, the South Amherst Wells (#1 & #2), the Brown Well (#3), the Lawrence Swamp Well (#4), and the Bay Road Well (#5). Both surface water supplies, Atkins and Pelham, and Wells 1, 2, and 3 are used year-round to satisfy the required demands. These five sources supply approximately 90 percent of the total water produced. Wells 4 and 5 operate during high-demand periods and summer months when the reservoirs are low.

In 2002, a Source Water Assessment Program (SWAP) was completed on the Amherst water system by the Massachusetts Department of Environmental Protection (MassDEP). This SWAP program assesses the susceptibility of the Town’s drinking water sources to contaminants and outlines recommendations for drinking water protection. A copy is available at the Department of Public Works and online at http://www.mass.gov/eea/docs/dep/water/drinking/swap/wero/1008000.pdf.

For more information about this report, or for any questions relating to your drinking water, please call Guilford Mooring, Superintendent of Public Works, at (413)-259-3050.

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**Failure in Flint**

The national news coverage of water conditions in Flint, Michigan, has created a great deal of confusion and consternation over the past year. The water there has been described as being corrosive; images of corroded batteries and warning labels on bottles of acids come to mind. But is corrosive water necessarily bad?

Corrosive water can be defined as a condition of water quality that will dissolve metals (iron, lead, copper, etc.) from metallic plumbing at an excessive rate. There are a few contributing factors but, generally speaking, corrosive water has a pH of less than 7; the lower the pH, the more acidic, or corrosive, the water becomes. (By this definition, many natural waterways throughout the country can be described as corrosive.) While all plumbing will be somewhat affected over time by the water it carries, corrosive water will damage plumbing much more rapidly than water with low corrosivity.

By itself, corrosive water is not a health concern; your morning glass of orange juice is considerably more corrosive than the typical lake or river. What is of concern is that exposure in drinking water to elevated levels of the dissolved metals increases adverse health risks. And there lies the problem.

Public water systems are required to maintain their water at optimal conditions to prevent it from reaching corrosive levels. Rest assured that we routinely monitor our water to make sure that what happened in Flint never happens here. For more information on how corrosivity impacts water quality, download this informative pamphlet: http://goo.gl/KpTmXv.

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**Questions?**

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Water Conservation

You can play a role in conserving water and save yourself money in the process 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. Here are a few tips:

• 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. Fix it 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 an invisible toilet leak. 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.

What’s Your Water Footprint?

You may have some understanding about your carbon footprint, but how much do you know about your water footprint? The water footprint of an individual, community, or business is defined as the total volume of freshwater that is used to produce the goods and services that are consumed by the individual or community or produced by the business. For example, 11 gallons of water are needed to irrigate and wash the fruit in one half-gallon container of orange juice. Thirty-seven gallons of water are used to grow, produce, package, and ship the beans in that morning cup of coffee. Two hundred and sixty-four gallons of water are required to produce one quart of milk, and 4,200 gallons of water are required to produce two pounds of beef.

According to the U.S. EPA, the average American uses over 180 gallons of water daily. In fact, in the developed world, one flush of a toilet uses as much water as the average person in the developing world allocates for an entire day’s cooking, washing, cleaning, and drinking. The annual American per capita water footprint is about 8,000 cubic feet, twice the global per capita average. With water use increasing six-fold in the past century, our demands for freshwater are rapidly outstripping what the planet can replenish.

To check out your own water footprint, go to www.goo.gl/QMoIXT.

Drinking Water Violation

We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not our drinking water meets health standards. We violated a drinking water standard in December 2015. During December 2015, the Town failed to complete appropriate repeat sampling (within 24 hours) following a detection of total coliform bacteria in a distribution system sample collected on December 8 and, therefore, we cannot be sure of the quality of our drinking water during that time. At the time that the Massachusetts Department of Environmental Protection notified the Town of this violation, we had already completed our next routine round of monthly total coliform sampling on December 15, and all results were negative. Because no coliform bacteria were detected in the samples collected on December 15, we do not believe the missed repeat samples had any impact on public health and safety. We have already taken the steps to ensure that adequate monitoring and reporting will be performed in the future so that this oversight will not be repeated.

Lead in Home Plumbing

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. We are responsible for providing high-quality drinking water, but we 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 or at www.epa.gov/lead.
During the past year, we have taken hundreds of water samples in order to determine the presence of any radioactive, biological, inorganic, volatile organic, or synthetic organic contaminants. The tables below show only those contaminants that were detected in the water. The state requires us to monitor for certain substances less often than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year in which the sample was taken.

<table>
<thead>
<tr>
<th>REGULATED SUBSTANCES</th>
<th></th>
<th></th>
<th>Town of Amherst</th>
<th>Atkins Treatment Plant</th>
<th>Centennial Treatment Plant</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUBSTANCE (UNIT OF MEASURE)</td>
<td>YEAR SAMPLED</td>
<td>MCL [MRDL]</td>
<td>MCLG [MRDLG]</td>
<td>AMOUNT DETECTED</td>
<td>RANGE LOW-HIGH</td>
</tr>
<tr>
<td>Alpha Emitters (pCi/L)</td>
<td>2015</td>
<td>15</td>
<td>0</td>
<td>3.2</td>
<td>ND–3.2</td>
</tr>
<tr>
<td>Barium (ppm)</td>
<td>2015</td>
<td>2</td>
<td>2</td>
<td>0.0096</td>
<td>0.0086–0.0096</td>
</tr>
<tr>
<td>Combined Chlorine (ppm)</td>
<td>2015</td>
<td>[4]</td>
<td>[4]</td>
<td>3.7</td>
<td>2.2–3.7</td>
</tr>
<tr>
<td>Combined Radium (pCi/L)</td>
<td>2015</td>
<td>5</td>
<td>0</td>
<td>1.80</td>
<td>0.14–1.80</td>
</tr>
<tr>
<td>Haloacetic Acids [HAAs] (ppb)</td>
<td>2015</td>
<td>60</td>
<td>NA</td>
<td>NA</td>
<td>5.6–85.0</td>
</tr>
<tr>
<td>Nitrate (ppm)</td>
<td>2015</td>
<td>10</td>
<td>10</td>
<td>3.2</td>
<td>ND–3.2</td>
</tr>
<tr>
<td>TTHMs [Total Trihalomethanes] (ppb)</td>
<td>2015</td>
<td>80</td>
<td>NA</td>
<td>62.0</td>
<td>14.0–62.0</td>
</tr>
<tr>
<td>Turbidity (NTU)</td>
<td>2015</td>
<td>TT</td>
<td>NA</td>
<td>NA</td>
<td>0.25</td>
</tr>
</tbody>
</table>

Tap water samples were collected for lead and copper analyses from sample sites throughout the community.

<table>
<thead>
<tr>
<th>SECONDARY SUBSTANCES</th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>SUBSTANCE (UNIT OF MEASURE)</td>
<td>YEAR SAMPLED</td>
<td>AL</td>
<td>MCL</td>
<td>AMOUNT DETECTED (90TH% TILE)</td>
<td>SITES ABOVE AL/TOTAL SITES</td>
</tr>
<tr>
<td>Copper (ppm)</td>
<td>2014</td>
<td>1.3</td>
<td>1.3</td>
<td>0.096</td>
<td>0/36</td>
</tr>
<tr>
<td>Lead (ppb)</td>
<td>2014</td>
<td>15</td>
<td>0</td>
<td>6.3</td>
<td>1/36</td>
</tr>
</tbody>
</table>

| UNREGULATED SUBSTANCES | | | |
|------------------------|-----------------|------------------||
| SUBSTANCE (UNIT OF MEASURE) | YEAR SAMPLED | AMOUNT DETECTED | RANGE LOW-HIGH | TYPICAL SOURCE |
| Sodium (ppm) | 2015 | 11.0 | 8.5–11.0 | Natural sources; Runoff from use as salt on roadways; By-product of water treatment process |

1 Based on locational running annual averages (LRAAs).
2 Data indicates individual results, however compliance is based on LRAAs.
3 Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration system.
4 Unregulated contaminants are those for which the U.S. EPA has not established drinking water standards. The purpose of monitoring unregulated contaminants is to assist the EPA in determining their occurrence in drinking water and whether future regulation is warranted.
5 The Massachusetts Department of Environmental Protection maintains a guideline level of 20 parts per million (ppm) for sodium.
6 The 90% Value is the value below which 90% of the data falls. If the 90% value is below the Action Level, no further action is necessary. Note: Lead & Copper testing requirement is every 3 years and will be done again in 2017.
Definitions

90th Percentile: Out of every 10 homes sampled, 9 were at or below this level.

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

MCL (Maximum Contaminant Level): 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.

MCLG (Maximum Contaminant Level Goal): 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.

MRDL (Maximum Residual Disinfectant Level): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG (Maximum Residual Disinfectant Level Goal): 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 contaminants.

NA: Not applicable

ND (Not detected): Indicates that the substance was not found by laboratory analysis.

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

pCi/L (picocuries per liter): A measure of radioactivity.

ppb (parts per billion): One part substance per billion parts water (or micrograms per liter).

ppm (parts per million): One part substance per million parts water (or milligrams per liter).

SMCL (Secondary Maximum Contaminant Level): SMCLs are established to regulate the aesthetics of drinking water like taste and odor.

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