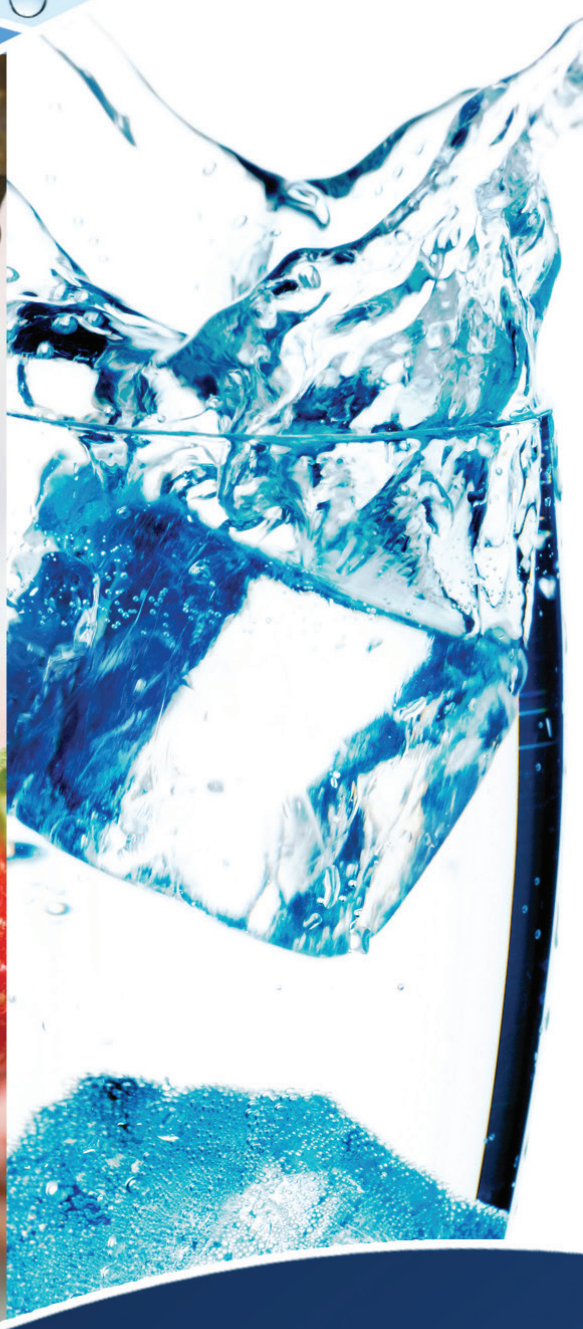
ANNUAL WATER QUALITY REPORT

Water Testing
Performed
in 2014



Presented By
Wayland DPW Water Division

PWS ID#: 3315000

Our Mission Continues

We are proud to present once again our annual water quality report covering all testing performed between January 1 and December 31, 2014. Most notably, last year marked the 40th anniversary of the Safe Drinking Water Act (SDWA). This rule was created to protect public health by regulating the nation's drinking water supply. We celebrate this milestone as we continue to manage our water system with a mission to deliver the best-quality drinking water. By striving to meet the requirements of SDWA, we are ensuring a future of healthy, clean drinking water for years to come.

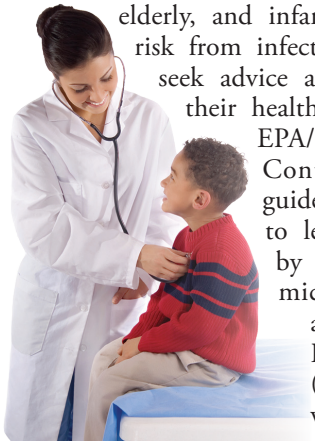
Please let us know if you ever have any questions or concerns about your water.

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 1999. 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.



Community Participation

You are invited to participate in our public forum and voice your concerns about your drinking water. The Board of Public Works meets the 2nd and 4th Tuesdays of each month beginning at 7 p.m. at Town Hall, 41 Cochituate Road, Wayland, MA.

Substances That Could Be in Water

To ensure that tap water is safe to drink, the Massachusetts Department of Environmental Protection (DEP) 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 which 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.

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/safewater/lead.

Benefits of Chlorination

Disinfection, a chemical process used to control disease-causing microorganisms by killing or inactivating them, is unquestionably the most important step in drinking water treatment. By far the most common method of disinfection in North America is chlorination.

- Before communities began routinely treating drinking water with chlorine (starting with Chicago and Jersey City in 1908), cholera, typhoid fever, dysentery, and hepatitis A killed thousands of U.S. residents annually. Drinking water chlorination and filtration have helped to virtually eliminate these diseases in the U.S. Significant strides in public health are directly linked to the adoption of drinking water chlorination. In fact, the filtration of drinking water plus the use of chlorine is probably the most significant public health advancement in human history.

How chlorination works:

- Potent Germicide Reduction in the level of many disease-causing microorganisms in drinking water to almost immeasurable levels.
- Taste and Odor Reduction of many disagreeable tastes and odors like foul-smelling algae secretions, sulfides, and odors from decaying vegetation.
- Biological Growth Elimination of slime bacteria, molds, and algae that commonly grow in water supply reservoirs, on the walls of water mains, and in storage tanks.
- Chemical Removal of hydrogen sulfide (which has a rotten egg odor), ammonia, and other nitrogenous compounds that have unpleasant tastes and hinder disinfection. It also helps to remove iron and manganese from raw water.

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.gracelinks.org/824/water-program or visit www.waterfootprint.org to see how the water footprints of other nations compare.

QUESTIONS?

For more information about this report, or for any questions relating to your drinking water, please call Don Millette, Water Department Superintendent, at (508) 358-3699.

Source Water Assessment

A Source Water Assessment Plan (SWAP) is now available at our office. This plan is an assessment of the delineated area around our listed sources through which contaminants, if present, could migrate and reach our source water. It also includes an inventory of potential sources of contamination within the delineated area and a determination of the water

supply's susceptibility to contamination by the identified potential sources. According to the Source Water Assessment Plan, our water system had a susceptibility rating of medium. If you would like to review the Source Water Assessment Plan, please feel free to contact our office during regular office hours.

Treatment Process

The Baldwin Pond Treatment Plant uses a process called Ultra Filtration. This type of filtration has several advantages over traditional water filtration:

- Removes pathogens and turbidity in only one treatment step
- Provides an absolute barrier for bacteria, viruses, and parasites
- Compared to conventional disinfection treatment, no deactivated pathogens remain in the water.

This process involves a number of steps starting with ozonation. Raw water is pumped into the Treatment Plant from a combination of three groundwater wells. Once in the plant, the raw water is dosed with ozone to oxidize the iron and manganese that is naturally present in the groundwater. Next, potassium hydroxide is added to adjust the pH of the raw water and polyaluminum chloride to aide in flocculation of the iron and manganese particles. Then the raw water enters the ozone contact tank where the oxidation and flocculation takes place. After 70 minutes of travel time, the water enters one of two 500-micron prefilters to remove larger particles. Once this process is complete, the raw water enters the Ultra Filtration Units. After filtration, the water travels to the clear well where sodium hypochlorite is added for disinfection, and sodium fluoride is added to help prevent tooth decay.

The Water Division continues to operate five (5) other wells that all have a similar treatment process. Water is pumped out of the ground where potassium hydroxide is added to adjust the pH. Sodium hypochlorite is added for disinfection, and sodium fluoride is added to help prevent tooth decay.

Water Main Flushing

Distribution mains (pipes) convey water to homes, businesses, and hydrants in your neighborhood. The water entering distribution mains is of very high quality; however, water quality can deteriorate in areas of the distribution mains over time. Water main flushing is the process of cleaning the interior of water distribution mains by sending a rapid flow of water through the mains.

Flushing maintains water quality in several ways. For example, flushing removes sediments like iron and manganese. Although iron and manganese do not themselves pose health concerns, they can affect the taste, clarity, and color of the water. Additionally, sediments can shield microorganisms from the disinfecting power of chlorine, contributing to the growth of microorganisms within distribution mains. Flushing helps remove stale water and ensures the presence of fresh water with sufficient dissolved oxygen and disinfectant levels, and an acceptable taste and smell.

During flushing operations in your neighborhood, some short-term deterioration of water quality, though uncommon, is possible. You should avoid tap water for household uses at such times. If you do use the tap, allow your cold water to run for a few minutes at full velocity before use, and avoid using hot water, to prevent sediment accumulation in your hot water tank.

Please contact us if you have any questions or if you would like more information on our water main flushing schedule.

Our Water Source

The Wayland DPW Water Division operates eight (8) ground water wells. The three (3) wells located at the Baldwin Pond site are part of the Baldwin Pond Water Filtration Facility. Listed below are the source names and their DEP ID numbers:

- Campbell Well: 3315000-02G, Gravel Packed Well located off of Campbell Rd.
- Chamberlain Well: 3315000-08G, Gravel Packed Well located off of Moore Rd.
- Meadowview Well: 3315000-05G, Gravel Packed Well located off of Oak Hill Rd.
- Happy Hollow #1: 3315000-03G, Gravel Packed Well located off of Old Conn Path
- Happy Hollow #2: 3315000-04G, Gravel Packed Well located off of Old Conn Path
- Baldwin Pond #1: 3315000-01G, Gravel Packed Well located on Old Sudbury Rd.
- Baldwin Pond #2: 3315000-07G, Gravel Packed Well located on Old Sudbury Rd.
- Baldwin Pond #3: 3315000-06G, Gravel Packed Well located on Old Sudbury Rd.

Sampling Results

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.

We participated in the 3rd stage of the EPA's Unregulated Contaminant Monitoring Regulation (UCMR3) program by performing additional tests on our drinking water. UCMR3 benefits the environment and public health by providing the EPA with data on the occurrence of contaminants suspected to be in drinking water, in order to determine if the EPA needs to introduce new regulatory standards to improve drinking water quality.

REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Haloacetic Acids [HAAs]–Stage 2 (ppb)	2014	60	NA	20	ND–20	No	By-product of drinking water disinfection
Nitrate (ppm)	2014	10	10	3.7	0.63–3.7	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes]–Stage 2 (ppb)	2014	80	NA	45.9	9.10–45.9	No	By-product of drinking water disinfection

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

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE AL/TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2011	1.3	1.3	.026	0/55	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2011	15	0	.003	0/55	No	Corrosion of household plumbing systems; Erosion of natural deposits

SECONDARY SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Fluoride (ppm)	2014	2.0	NA	0.90	NA	No	Erosion of natural deposits; Water additive that promotes strong teeth; Discharge from fertilizer and aluminum factories
Iron (ppb)	2014	300	NA	210	ND–210	No	Leaching from natural deposits; Industrial wastes
Manganese[1] (ppb)	2014	50	NA	119	ND–119	No	Leaching from natural deposits
pH (Units)	2014	6.5–8.5	NA	7.5	NA	No	Naturally occurring

UNREGULATED SUBSTANCES[2]

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Acetone (ppb)	2014	35	ND–35	NA
Bromodichloromethane (ppb)	2014	6.26	2.6–6.26	By-product of drinking water disinfection
Bromoform (ppb)	2014	0.70	0.55–0.70	By-product of drinking water disinfection
Chlorodibromomethane (ppb)	2014	5.14	3.2–5.14	By-product of drinking water disinfection
Chloroform (ppb)	2014	3.02	2.2–3.02	By-product of drinking water disinfection
Sodium (ppm)	2014	61.6	51.1–61.6	Naturally occurring: Runoff from use of salt on roadways

UNREGULATED CONTAMINANT MONITORING REGULATION3 (UCMR3) [2]

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
1,4-Dioxane (ppb)	2014	0.08	0.08–0.09	Dioxane is used as a solvent, cleaning agent, chemical stabilizer, surface coating, adhesive agent, and an ingredient in chemical manufacture.
Chlorate (ppb)	2014	111.29	58.0–220.0	The term "chlorate" most commonly refers only to chlorine in the +5 oxidation state, or chlorate ion. Chlorate ion is a known byproduct of the drinking water disinfection process, forming when sodium hypochlorite or chlorine dioxide are used in the disinfection process
Chlorodifluromethane (ppb)	2014	530.00	420.00–640.00	As a practical matter, VOCs are most often referred to in the context of chemicals that have the potential to affect the environment or human health. Consequently, VOCs are defined in different ways under different environmental, health, and safety regulations.
Chromium (ppb)	2014	0.24	0.22–0.27	Chromium is the 21st most abundant element in the Earth's crust and can be present in different chemical forms in plants, soil and volcanic dust, water, humans and animals. Because it is a prevalent natural element, chromium can be present in the air, food, and water.
Hexavalent Chromium (Dissolved) (ppb)	2014	0.11	0.04–0.20	Currently, all water systems test for "total chromium." In other words, they test for chromium in all its forms, including hexavalent chromium, but in most cases, not separately for hexavalent chromium. If the amount of total chromium in your tap water exceeds regulations set under the Safe Drinking Water Act, your water system will notify you.
Strontium (ppb)	2014	152.78	120.00–170.00	As part of its Third Unregulated Contaminant Monitoring Rule testing, the EPA is examining how prevalent strontium is in U.S. drinking water supplies and at what level it occurs. Under the current round of UCMR3 testing, many water systems nationwide are testing for "total strontium." In other words, they test for strontium in all its forms, rather than breaking it out into its various isotopes.

[1] Manganese is a naturally occurring mineral found in rocks, soil, groundwater, and surface water. Manganese is necessary for proper nutrition and is part of a healthy diet, but it can have undesirable effects on certain sensitive populations at elevated concentrations. MassDEP has set a health advisory limit for manganese at 300 ppb.

[2] 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.

Definitions

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

AL (Action Level): The concentration of a contaminant which, 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.

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.