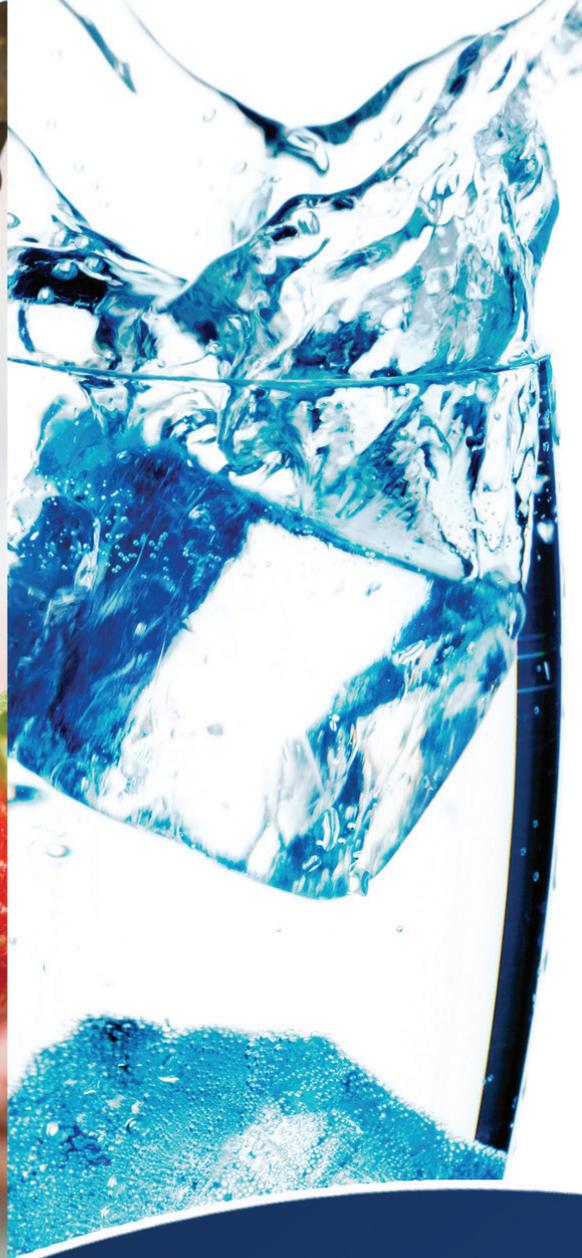


ANNUAL WATER QUALITY REPORT

WATER TESTING
PERFORMED
IN 2014



Presented By
Town of Danvers/Water Division

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.

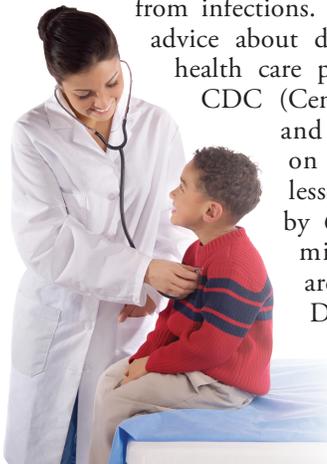
Please let us know if you ever have any questions or concerns about your water.

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 1951. 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 persons with cancer undergoing chemotherapy, persons 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 (DEP) and the U.S. Environmental Protection Agency (U.S. EPA) prescribes 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, which 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 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.

Community Participation

You are invited to participate in our public forum and voice your concerns about your drinking water. The Water Commissioners usually meet the fourth Thursday of each month beginning at 5:30 p.m. at the Business Division, 2 Burroughs Street, Danvers, Massachusetts. Contact the Business Office at (978) 774-0005 to confirm this location, date and time.

To The Last Drop

The National Oceanic and Atmospheric Administration (NOAA) defines drought as a deficiency in precipitation over an extended period of time, usually a season or more, resulting in a water shortage causing adverse impacts on vegetation, animals, and/or people. Drought strikes in virtually all climate zones, from very wet to very dry.

There are primarily three types of drought: Meteorological Drought refers to the lack of precipitation, or the degree of dryness and the duration of the dry period; Agricultural Drought refers to the agricultural impact of drought, focusing on precipitation shortages, soil water deficits, and reduced ground water or reservoir levels needed for irrigation; and Hydrological Drought, which pertains to drought that usually occurs following periods of extended precipitation shortfalls that can impact water supply (i.e., stream flow, reservoir and lake levels, ground water).

Drought is a temporary aberration from normal climatic conditions, thus it can vary significantly from one region to another. Although normally occurring, human factors, such as water demand, can exacerbate the duration and impact that drought has on a region. By following simple water conservation measures, you can help significantly reduce the lasting effects of extended drought.

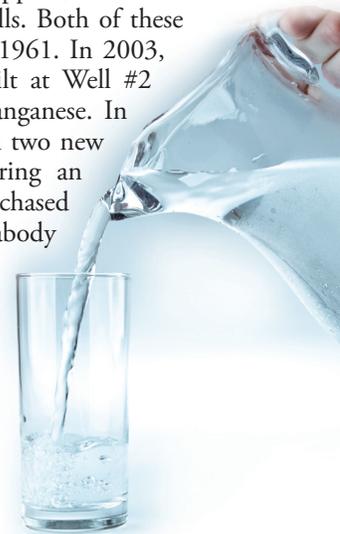
To learn more about water conservation efforts, check out U.S. EPA's Water Conservation Tips for Residents at: www.epa.gov/region1/eco/drinkwater/water_conservation_residents.html.

Where Does My Water Come From?

The Town of Danvers has been operating its drinking water pumping facility at Middleton Pond since 1876. The Vernon C. Russell Water Treatment Plant opened in 1976 and has continuously provided residents and businesses of Danvers and Middleton a safe and dependable source of drinking water. The water system has 9,781 service connections through which an average of 3.1 million gallons are pumped per day: 8,208 in Danvers and 1,573 in Middleton. The Town also has secondary reservoirs at Emerson Brook in Middleton and Swan Pond in North Reading.

In addition to these surface water supplies, the Town of Danvers has two water supply wells. Both of these wells were constructed during 1960-1961. In 2003, a greensand filtration plant was built at Well #2 to remove troublesome iron and manganese. In 2004, Well #1 was rehabilitated with two new replacement wells. If necessary, during an emergency, water may also be purchased from the cities of Beverly and Peabody through interconnections in the distribution system.

The Town of Danvers maintains a state-certified laboratory for bacterial analysis. We are also a member of the American Water Works Association and the New England Water Works Association.



QUESTIONS?

For more information about this report, or for any questions relating to your drinking water, please call Jason McCarthy, Water Treatment Plant Manager, at (978) 774-5054.

Special Note on Manganese

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 can have undesirable effects on certain sensitive populations at elevated concentrations. The Massachusetts Department of Environmental Protection (MassDEP) has set a health advisory limit for manganese at 300 micrograms per liter ($\mu\text{g/L}$).

MassDEP is requiring all water systems to analyze their drinking water for the presence of manganese so that they can characterize the occurrence, possible sources, and possible health risks associated with manganese in those water systems. Manganese is a natural component of most foods, including infant formula. The majority of manganese exposure in the general population comes from the diet. The overall dietary contribution from drinking water is smaller than food, but in situations where manganese levels in drinking water are elevated, the contribution can increase the overall intake of manganese. Low amounts of manganese in the diet are important for health. Several recent limited studies of children exposed to elevated levels of manganese in drinking water suggest possible associations with behavioral and neurological effects. The United States Environmental Protection Agency (USEPA) and MassDEP currently list manganese as a secondary contaminant with aesthetic concerns including unacceptable taste, staining of fixtures and dark, and cloudy water at levels greater than 50 $\mu\text{g/L}$. See EPA Drinking Water Health Advisory for Manganese at: http://www.epa.gov/safewater/ccl/pdfs/reg_determine1/support_cc1_magnese_dwreport.pdf.

MassDEP:

Drinking water may naturally have manganese and, when concentrations are greater than 50 $\mu\text{g/L}$, the water may be discolored and taste bad. Over a lifetime, the EPA recommends that people drink water with manganese levels less than 300 $\mu\text{g/L}$ and over the short term, EPA recommends that people limit their consumption of water with levels over 1000 $\mu\text{g/L}$, primarily due to concerns about possible neurological effects. Children up to 1 year of age should not be given water with manganese concentrations over 300 $\mu\text{g/L}$, nor should formula for infants be made with that water for longer than 10 days.

One of Danvers' three drinking water sources, Well #1, has tested at slightly above 300 $\mu\text{g/L}$ (310-360 $\mu\text{g/L}$). Well #1 is a supplemental water source that is blended at a minimum 5:1 with the primary source, the Danvers Water Treatment Plant, and is not used as a sole source of drinking water. The blended samples test around 40 $\mu\text{g/L}$, which is below the MassDEP health advisory limit.

Upgrades To The Water Treatment Process

Upgrades have been added to the treatment process including ozone. In contact with raw water, ozone neutralizes waterborne cysts and oxidizes most of the organics (taste, color, and odor). Ozone is also used in contact with water following the settling step to enhance the filtration process and further reduce organics.

In addition, a 50% filtration capacity has been added to the facility. This will provide the necessary treatment capacity to meet both water demand and regulatory compliance for years to come.

And finally, in the name of fiscal economization, new pumps, new electrical systems, and a new residuals de-watering system have been installed.

SWAP

The Source Water Assessment and Protection (SWAP) program, established under the federal Safe Drinking Water Act, requires every state to inventory land uses within the recharge areas of all public water supply sources. The state has determined that the risk of contamination is generally low-to-moderate from these land uses. A source's susceptibility to contamination does not imply poor water quality. Source water protection, monitoring, and treatment ensure that safe water is delivered to the tap. Residents can help by taking hazardous household chemicals to the Town's annual Household Hazardous Waste Day collection. You should also limit pesticide and fertilizer use in sensitive areas. The complete SWAP report is available for review at the Public Works office at Town Hall or by calling (978) 777-0001, ext. 3011. The report is also available online at <http://www.mass.gov/eea/docs/dep/water/drinking/swap/nero/3071000.pdf>



When was drinking water first regulated?

The Safe Drinking Water Act (SDWA) of 1974 represents the first time that public drinking water supplies were protected on a federal (national) level in the U.S. Amendments were made to the SDWA in 1986 and 1996.

How much water do we use every day?

The average person in the U.S. uses 80 to 100 gallons of water each day. (During medieval times, a person used only 5 gallons per day.) It takes 2 gallons to brush your teeth, 2 to 7 gallons to flush a toilet, and 25 to 50 gallons to take a shower.

When was chlorine first used in the U.S.?

In 1908, Jersey City, New Jersey, and Chicago, Illinois, were the first water supplies to be chlorinated in the U.S.

Seventy-one percent of Earth is covered in water: how much is drinkable?

Oceans hold about 96.5 percent of all Earth's water. Only three percent of the Earth's water can be used as drinking water. Seventy-five percent of the world's fresh water is frozen in the polar ice caps.

How much water is in our atmosphere?

Forty trillion gallons of water are carried in the atmosphere across the U.S. each day.

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 which 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

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.

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).

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

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 table below shows only those contaminants that were detected in the water. The state requires us to monitor for certain substances less 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 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
Barium (ppm)	2014	2	2	0.0099	NA	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chloramines (ppm)	2014	[4]	[4]	3.19	1.47–3.19	No	Water additive used to control microbes
Chlorine (ppm)	2014	[4]	[4]	3.29	1.43–3.29	No	Water additive used to control microbes
Di(2-ethylhexyl) Phthalate (ppb)	2013	6	0	0.94	NA	No	Discharge from rubber and chemical factories
Fluoride (ppm)	2014	4	4	1.2	0–1.2	No	Water additive which promotes strong teeth
Haloacetic Acids [HAA]–Stage 2 (ppb)	2014	60	NA	13.41	5.73–13.41	No	By-product of drinking water disinfection
Nitrate (ppm)	2014	10	10	2.54	0.02–2.54	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes]–Stage 2 ¹ (ppb)	2014	80	NA	82.93	23.09–82.93	No	By-product of drinking water disinfection
Total Coliform Bacteria (% positive samples)	2014	5% of monthly samples are positive	0	0	NA	No	Naturally present in the environment
Total Organic Carbon (ppm)	2014	TT	NA	3.563	1.677–3.563	No	Naturally present in the environment
Turbidity ² (NTU)	2014	TT	NA	0.42	0.08–0.42	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2014	TT=95% of samples <0.3 NTU	NA	99	NA	No	Soil runoff

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)	2014	1.3	1.3	0.15	0/30	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2014	15	0	6	1/30	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	EXCEEDANCE	TYPICAL SOURCE
Manganese (ppb)	2014	50	NA	360	30–360	Yes	Leaching from natural deposits

UNREGULATED SUBSTANCES³

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Sodium (ppm)	2014	38	NA	Erosion of natural deposits; Road de-icing agents; Water treatment process
Sulfate (ppm)	2014	30.1	16.9–30.1	Runoff/leaching from natural deposits; Water treatment process

¹ 80 ppb MCL is for a running annual average violation, which was not met.

² 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.

³ Unregulated contaminants are those for which the U.S. EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist U.S. EPA in determining their occurrence in drinking water and whether future regulation is warranted.