

TOWN OF NEEDHAM ANNUAL WATER QUALITY REPORT WATER TESTING PERFORMED IN 2016

Meeting the Challenge

Once again the Town of Needham is proud to present our annual drinking water report, that covers all drinking water testing performed between January 1 and December 31, 2016. 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 water users.

Please remember that we are always available to assist you should you ever have any questions or concerns about your water. Please contact Christopher Seariac, Water & Sewer Superintendent at (781) 455-7550 or Stephen Cusick, Water Treatment Plant Manager at (781) 416-4071.



**Presented By
Needham Water Division PWS ID # 3199000**

Information on Your Source Water

Where Does the Town's Water Come From?



Needham draws potable water from two separate sources. The primary source is the Charles River Wellfield, which has been the major source of water since the 1930's. Water is drawn from three ground water wells and treated at the adjacent Charles River Water Treatment Facility. The Town's secondary source comes from the Massachusetts

Water Resources Authority (MWRA), primarily in the summer. The MWRA supply is conveyed through a 36" diameter pipe from the MWRA's Metro West Tunnel in Weston to a booster station on St. Mary's Street. In addition, Needham has emergency interconnections to provide and receive water from the neighboring towns of Wellesley and Dedham. Your water is pumped directly into the two elevated water storage tanks (Dunster & Birds Hill) that have a combined capacity of 4 million gallons. In 2016 Needham averaged 3.3 million gallons per day. 73% was produced from it's primary source, and 27% from it's secondary source.

Understanding Our Water Treatment Process



In order to maintain compliance with Federal and State Drinking water standards, Needham well water must be treated before it reaches consumers' taps. The Charles River Water

Treatment Facility utilizes processes which include the removal of manganese by oxidation and filtration. Sodium hydroxide is used to raise the natural pH and alkalinity of water to reduce the corrosion of lead and copper from household plumbing systems. Chlorine, a highly efficient disinfectant, is added to kill disease-causing bacteria that water or it's transport pipes might contain. Adding chlorine precipitates (oxidizes) the manganese prior to removal by greensand filtration. Chlorine levels are continuously monitored and controlled to ensure that disinfection residuals are maintained at the Facility and throughout the distribution system. Ortho-polyphosphate, a food based additive, is then added to minimize calcium precipitating in hot water systems. Finally, fluoride is added to prevent tooth decay. In our system, the fluoride level is adjusted to an optimal level averaging 0.7 parts per million (ppm) to improve oral health in children. At this level, it is safe, odorless, colorless, and tasteless. All components of the water distribution and treatment systems are closely monitored by State certified operators through a computerized Supervisory Control and Data Acquisition (SCADA) system.

Source Water Protection

To ensure the highest quality of drinking water for residents, the Town has adopted by-laws and health regulations designed to preserve and protect existing and potential sources of drinking water supplies and conserve natural resources. The Department of Environmental Protection (DEP) approved the Town's water source protection strategy based on land use and operational restrictions in areas of influence to the Town's drinking water wells. The information collected was incorporated into the Source Water Assessment Protection (SWAP) report. The report is a planning tool to support local and state efforts to improve water supply protection. The assessment helps focus protection efforts on appropriate best management practices and drinking water source protection measures. Residents can help protect sources by taking hazardous household chemicals to hazardous material collection days and by limiting the use of pesticides and fertilizers. The Town of Needham's three drinking water wells are located within one water supply protection area. The complete SWAP report is available on-line at:

<http://www.mass.gov/eea/docs/dep/water/drinking/swap/nero/31999000.pdf>.

Water Quality Results

We are pleased to report that during the past year, water delivered to your home complied with all State and Federal drinking water regulations. In 2016, the Town collected hundreds of water samples for the presence of bacteria, nitrates, volatile organics, synthetic organics, total trihalomethanes, haloacetic acids, inorganics, perchlorate, lead and copper. The table below contains only the contaminants that were detected in Needham's water supply. Although the substances are below the Maximum Contaminant Level (MCL) set by the EPA, we feel it is important for you to know what was detected and the amount present in the water.

Tested After Treatment

Substance Unit of Measure	Year Sampled	MCL Highest Level Allowed	Amount Detected	Range of Detections	Violation	Typical Source
Chlorine (ppm)	2016	4 MRDL	0.75 avg	0.70-0.85	No	Water additive for disinfection
Fluoride (ppm)	2016	4 MRDL	0.70 avg	0.60-0.85	No	Water additive which promotes strong teeth
Manganese (ppm)	2016	0.05 SMCL	0.008 avg	0.005-0.015	No	Naturally found mineral in the earth
Iron (ppm)	2016	0.3 SMCL	0.01	ND- 0.01	No	Naturally found mineral in the earth
Total Coliform	2016	No more than 5% of samples positive in a given month		Highest # of Positive Samples 1*	No	Naturally present in the environment

* Follow up testing confirmed negative coliform at positive test site.

Regulated Contaminants

(TTHM) Total Trihalomethanes	2016	80 ppb	42	7.1-56	No	Byproducts of drinking water chlorination	
(HAA5) Haloacetic Acids	2016	60 ppb	8.7	2.7-13	No	Byproducts of drinking water chlorination	
Nitrate	2016	10 ppm	0.41	0.41	No	Runoff from fertilizer use, leaching from septic tanks	
Perchlorate	2016	2 ppm	0.007	0.007	No	Rocket propellants, fireworks, flares, blasting agents	
Barium	2015	2 ppm	0.055	0.055	No	Discharge of drilling wastes and from metal refineries. Erosion of natural deposits.	
Substance Unit of Measure	Year Sampled	90th Percentile	AL	MCLG	# of Sites Sampled	Sites above the action level	Typical Source
Lead * (ppb)	2015	7	15	0	30	1	Corrosion of household plumbing
Copper* (ppm)	2015	0.04	1.3	0	30	0	

* The next round of sampling will be in the summer of 2017.

Secondary Contaminants

Substance Unit of Measure	Year Sampled	SMCL	MCLG	Range of Detections	Violation	Typical Source
Chloride (ppm)	2015	250	NA	94	No	Runoff/leaching from natural deposits.
Sodium (ppm)	2015	NO MCL	NA	51.1	No	Natural sources and runoff from use of salt on roadways.

Unregulated Contaminants	Year Sampled	Range Detected (ppb)	UCMR: (Unregulated Contaminant Monitoring Rule)
Chromium (total)	2013-2015	0.21-0.32	All public water suppliers are required to report unregulated contaminant monitoring results whenever they are detected, that is, any detect above the minimum reporting level (MRL). Unregulated contaminants are those that don't yet have a drinking water standard set by the US Environmental Protection Agency (EPA)
Chromium -6	2013-2015	0.095-0.134	
Strontium	2013-2015	35.3-142	
Chlorate	2013-2015	36-187	

Definitions & Acronyms

ppm = parts per million **ppb** = parts per billion **ND** = not detected **90th Percentile** - Out of every 10 homes sampled, 9 were at or below this level.

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

Environmental Protection Agency (EPA)- The federal agency responsible for the development of SDWA regulations.

Department of Environmental Protection (DEP)- The Massachusetts state regulatory agency responsible for the implementation of the SDWA.

LRAA (Locational Running Annual Average): The average of analytical results for samples taken at a monitoring location during the previous four calendar quarters.

Amount detected values for TTHM and HAA5 are reported as LRAA's.

Maximum Contaminant Level (MCL) - The highest allowable level of a contaminant in drinking water. MCL's are set as close to the MCLG's as feasible using the best available treatment technology.

Maximum Contaminant Level Goal (MCLG)- The level of a contaminant in drinking water below which there is not known, or expected, risk to health.

Maximum Residual Disinfection Level (MRDL) – The highest level of a drinking water disinfectant allowed in drinking water.

There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants

Safe Drinking Water Act (SDWA) - The Federal Law that governs the regulation of public water supplies.

SMCL (Secondary Maximum Contaminant Level): The highest level of a contaminant that is allowed in drinking water for the secondary contaminant. SMCL's are established to regulate the aesthetics of drinking water like appearance, taste and odor.

Drinking Water & Public Health

The Safe Drinking Water Act (SDWA) is the main Federal law that ensures the quality of Americans' drinking water. Under SDWA, EPA sets standards for drinking water quality and oversees the states, municipalities, and other water suppliers who implement those standards. SDWA authorizes the EPA to set national health-based standards for drinking water to protect against both naturally-occurring and man-made contaminants that may be found in drinking water. The EPA, MassDEP, and Needham DPW then work together to make sure that these standards are met. The Food and Drug Administration (FDA) and the Massachusetts Department of Public Health have established regulations that limit contaminants in bottled water which must provide the same protection for public health.

Contaminants that may be present in source water include:

Microbiological contaminants: such as viruses and bacteria that may come from sewage septic systems, agricultural livestock and wildlife.

Pesticides and herbicides: that may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses.

Inorganic contaminants: such as salts and metals that can be naturally-occurring or result from urban storm water runoff, industrial, or domestic wastewater discharges, oil and gas production, mining or farming.

Organic contaminants: synthetic and volatile organic chemicals that are by-products of industrial processes and petroleum production, urban storm water run off, and septic systems.

Radioactive contaminants: can be naturally occurring or result from oil and gas production, and mining activities.

Contaminants in Bottled and Tap Water

Drinking water, including bottled water, may reasonably be expected to contain small amounts of some contamination. 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 (1-800-426-4791). In order to ensure that tap water is safe to drink, the Massachusetts DEP and EPA prescribe regulations which limit the amount of certain contaminants in water provided by public water systems.

Drinking Water and People With Weakened Immune Systems

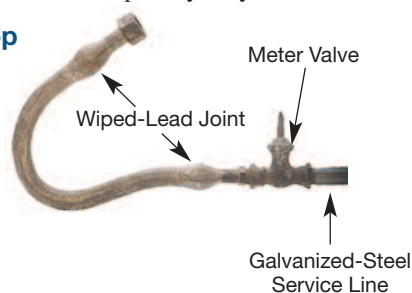
Some people may be more vulnerable than others to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice from their health care providers.

Your drinking water is routinely tested for these substances in accordance with Federal and State drinking water regulations. These substances have not been detected or are significantly below the (MCL) allowed.

What can I do to reduce exposure to lead in drinking water?

- Any time water has gone unused for more than 6 hours, run each faucet used for drinking or cooking until after the water becomes cold.
- Never use hot water from the faucet for drinking or cooking, especially when making baby formula or other food for infants.
- Ask your local water department if there are lead service lines leading to your home.
- Check your plumbing fixtures to see if they are lead-free. Be careful of places you may find lead in or near your home. Paint, soil, dust and some pottery may contain lead.

Lead Pipe Loop



What you need to know about lead in tap water?

Under EPA regulations, Needham must test tap water in homes that are likely to have high lead levels. These are usually homes with lead service lines. The EPA requires that 90% of the sampled homes must have lead levels below the action level of 15 parts per billion (ppb). To further decrease your potential exposure, you should always use cold water for drinking and cooking.

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 old service lines and home plumbing. Needham is responsible for providing high quality 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 and cooking. If you are concerned about lead in your water, you may wish to have your water tested. You may also contact the DPW for information pertaining to your water service pipe. Additional 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: <http://www.epa.gov/safewater/lead>



Needham's Cross Connection Control Program

What is a cross connection?

A cross connection is an ACTUAL or POTENTIAL link between the potable water supply and a source of contamination (sewage, chemicals, gas, etc.). This has the potential of becoming a hazardous situation if the contaminant source were to enter (backflow) into the potable water. Backflow occurs when the water flow is reversed, due to a change in pressure, and water flows backwards, into and throughout the system. Contamination can also occur when the pressure in the drinking water system drops due to occurrences such as water main breaks and heavy water demand, causing contaminants to be drawn (back-siphonage) into the potable water system.

Where do I find cross connections?

Garden hoses connected to an outside water tap are the most common sources of cross connections in the home. The garden hose creates a hazard when submerged in non-potable water such as a swimming pool or when attached to a chemical sprayer for weed control.

Who protects public drinking water from cross connections?

Your public water supplier is required to survey all industrial, commercial and municipal facilities to ensure that all cross connections are eliminated or protected by an appropriate backflow device. The water supplier is also responsible for inspecting and testing each backflow prevention device to ensure it is providing maximum protection.

What can I do to prevent backflow?

You can prevent backflow in your home plumbing system by installing an inexpensive hose-bib vacuum breaker on each of your outside water spigots.



Improvements to the Water System

Each part of the water system needs routine maintenance in order to maintain a safe and dependable water supply. Listed are some of the projects undertaken by the Water Division in 2016.

- Replaced 3 older fire hydrants to ensure water supply for fire protection.
- Upgraded 1,330 older water meters.
- Replaced 132 (lead or cast iron pipe) water service connections.
- Replaced 271 feet of 6 inch water main on Donna Rd.
- Replaced 800 feet of 8 inch water main on Alfreton Rd.
- Repaired 7 water main breaks and 13 service leaks.
- Conducted water main flushing to improve overall aesthetics.
- Conducted a leak detection survey of the entire water system. The survey is necessary to locate and eliminate leaks from the system.
- Conducted Dunster Rd and Birds Hill storage tank security and sanitary inspections.
- Well #3 Replacement project constructed and placed on-line in February 2017.

Future Projects for 2017

- On-going water main and water service replacement programs.
- Well #2 Redevelopment at the Charles River Water Treatment Facility.
- Upgrade Supervisory Control and Data Acquisition system (SCADA) at the Charles River Water Treatment Facility.
- Integrate Water and Sewer Operations into the Town's GIS system.

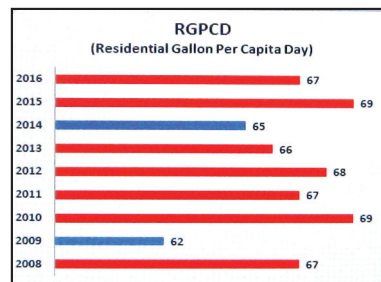
Water Conservation

The Massachusetts Department of Environmental Protection (MassDEP) mandated that the Town of Needham implement restrictions on outdoor water use. The purpose of the restrictions set by the Commonwealth is to reduce residential water use to less than 65 gallons per person per day to ensure a sustainable drinking water supply and to protect natural resources and stream flow for aquatic life. Needham has made a slight improvement from 69 gallons per person per day in 2015 to 67 gallons per person per day in 2016. If all residents make a concerted effort to conserve just a few gallons per day, millions of gallons of water can be saved over the course of the year.

Summer is an especially important time to save water. Needham's water supply is usually sufficient to meet normal water demands. However, during the summer, residential water usage and irrigation usage tends to increase. Listed below are helpful hints on ways to conserve outdoor water usage.

Be WATER SMART - Conserve

- Water your lawn only as needed. Too frequent watering can actually weaken a lawn by encouraging shallow roots. The general rule of thumb is one inch per week, including rain.
- Timing is critical for lawn watering. Water your lawn in the early morning or late evening to avoid excess evaporation.
- Install mulch to keep roots cool and moist. Mulch serves as a ground cover that reduces water evaporation from the soil.
- Keep your blades sharp and high. Raising your lawn mower blade prevents tearing of the grass. Longer grass provides shade for the roots and helps reduce water loss.
- Use shut off-nozzles on hoses and automatic shut-off devices on irrigation systems. Unattended hoses can use 10 gallons or more per minute.



During 2016, Needham Water Division delivered over 1.2 billion gallons of water to its customers.

**WHERE TO GO FOR
MORE INFORMATION**

**Massachusetts Dept. of
Environmental Protection**

www.mass.gov/dep
617-292-5500

Massachusetts Dept. of Public Health

www.mass.gov/dph
617-624-6000

Massachusetts Water Resource Authority

www.mwra.com
617-242-5323

**Department of Conservation
and Recreation**

www.mass.gov/dcr/watersupply.htm
617-626-1250

**US Center for Disease Control
and Prevention (CDC)**

www.cdc.gov
800-232-4636

U.S Environmental Protection Agency

www.epa.gov
800-311-3435

**State Certified Water Quality
Testing Labs**

[www.mwra.com/04water/html/
testinglabs.html](http://www.mwra.com/04water/html/testinglabs.html)

Needham Department of Public Works

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**2016
WATER QUALITY
REPORT**

*Drinking water test results and
other important information
from the Town of Needham*