

Town of Needham

Annual Water Quality Report

Water Testing Performed in 2018



The Town of Needham is proud to present its twentieth annual water quality report covering all testing and water infrastructure projects performed in 2018. The Needham Water & Sewer Division continues to be proactive, managing challenges, including national concerns over lead pipes, and actively maintaining infrastructure. The Division strives to serve the community by providing safe drinking water in a courteous, efficient and environmentally sustainable manner. Please take a few minutes to read this report and learn about Needham's water system.



Presented By
Needham Water & Sewer Division, PWS ID# 3199000

Where does the Town's water come from?

The Town of Needham's primary source of water is the Charles River Well field. From this location, 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 Resource Authority (MWRA). MWRA water is primarily utilized in the summer, when demand is at its highest. The MWRA supply is conveyed through a pipe from the MetroWest Tunnel in Weston to a booster pump station on St. Mary Street. The water distribution system includes 146 miles of water mains and two elevated water storage tanks (Dunster & Birds Hill) that have a combined capacity of 4 million gallons. In 2018 Needham averaged just below 3.6 million gallons per day, of this amount 73% was produced from its primary source, and 27% from its secondary source.



Charles River Water Treatment Facility



Saint Mary Street Water Pumping Station

Source Water Protection

To ensure the highest quality of drinking water for residents, the Town of Needham 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 Massachusetts Department of Environmental Protection (MassDEP) 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 chemicals to hazardous material collection days and by limiting the use of pesticides and fertilizers. The Town has three drinking water wells located within one water supply protection area.

The complete SWAP report is available on line at: <https://www.mass.gov/eea/docs/dep/water/drinking/swap/nero/3199000.pdf>

Needham's Water Treatment Process

In order to maintain compliance with Federal and State Drinking water standards, the Town of Needham's well water must be treated before it reaches consumers' taps. The Charles River Water Treatment Facility removes manganese by oxidation and filtration. The Division treats drinking water with the following processes:

- **Chlorine:** used as a disinfectant to prevent bacteria. Adding chlorine aids in the removal of iron and manganese during greensand filtration. Chlorine levels are continuously monitored and controlled to ensure that disinfection residuals are maintained at the facility and throughout the distribution system.
- **Sodium Hydroxide:** used to raise the natural pH and alkalinity of water to reduce the corrosion of lead and copper from household plumbing systems.
- **Ortho-polyphosphate:** a food based additive that is added to minimize calcium precipitating in hot water systems.
- **Fluoride:** added to prevent tooth decay. In the Town's 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 processes are closely monitored by State certified operators through a computerized Supervisory Control and Data Acquisition (SCADA) system. According to the water quality results, shown on the following page, Needham's water complies with all State and Federal regulations. The table contains only the contaminants that were detected in Needham's water supply, although the compounds are below the Maximum Contaminant Level (MCL) set by the EPA. The Town understands how important it is for residents and businesses to be aware of what is in their water.



Water Hardness Guide

This information is provided so that residents can adjust their appliance settings.

Needham's water is moderately hard, with a 98.4 range of detection.

NOTE: 1 Grain per gallon (gpg) = 17.1 ppm

AMOUNT (PPM)	RATING
<60 ppm	Soft
61-120 ppm	Moderately hard
121-180 ppm	Hard
>181 ppm	Very hard

Tested After Treatment						
Compound Unit of Measure	Year Sampled	MCL Highest Level Allowed	Amount Detected	Range of Detections	Violation	Typical Source
Chlorine (ppm)	2018	4 MRDL	0.75 avg	0.63-0.86	No	Water additive for disinfection
Fluoride (ppm)	2018	4 MRDL	0.70 avg	0.62-0.81	No	Water additive which promotes strong teeth
Manganese (ppm)	2018	0.05 SMCL	0.008 avg	0.003-0.016	No	Naturally found mineral in the earth
Iron (ppm)	2018	0.3 SMCL	0.01	ND-0.01	No	Naturally found mineral in the earth
Total Coliform	2018	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 sites.

Regulated Contaminants							
Compound Unit of Measure	Year Sampled	90th Percentile	AL	MCLG	# of Sites Sampled	Sites above the action level	Typical Source
(TTHM) Total Trihalomethanes	2018	80 ppb	27.8 (LRAA)	10.0-52	No		Byproducts of water disinfection
(HAA5) Haloacetic Acids	2018	60 ppb	10.6 (LRAA)	4.0-21	No		Byproducts of water disinfection
Nitrate	2018	10 ppm	0.96	0.96	No		Runoff from fertilizer use, leaching from septic tanks
Perchlorate	2018	2 ppm	0.09	0.09	No		Rocket propellants, fireworks, flares, blasting agents
Barium	2018	2 ppm	0.070	0.070	No		Discharge of drilling wastes and from metal refineries. Erosion of natural deposits.
Lead (ppb)	2017	3	15	0	30	0 (Residential)	Corrosion of household plumbing
Copper (ppm)	2017	0.03	1.3	0	30	0 (Residential)	
Lead (ppb) *	2018		15	0	21	0 (Schools)	
Copper (ppm)	2018		1.3	0	21	0 (Schools)	

Note: Public Schools are not included as part of the 90th percentile. Hillside, Eliot & Newman schools were sampled as part of the Health Division protocol

Secondary Contaminants						
Compound Unit of Measure	Year Sampled	SMCL	MCLG	Range of Detections	Violation	Typical Source
Chloride (ppm)	2018	250	NA	88	No	Runoff/leaching from natural deposits.
Sodium (ppm)	2018	NO MCL	NA	80	No	Natural sources and runoff from use of salt on roadways.
Hardness (ppm)	2018	NO MCL	NA	98.4	No	Presence of multivalent cations such as Calcium & Magnesium
Unregulated Contaminants	Year Sampled	Range Detected (ppb)	UCMR: (Unregulated Contaminant Monitoring Rule)			
Chromium (total)	2013-2015	0.21-0.32	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.			
Chromium -6	2013-2015	0.095-0.134				
Strontium	2013-2015	35.3-142				
Chlorate	2013-2015	36-187				

Note: Next round of sampling will be in 2020

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 (Action Level): 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 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.

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

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.

Important Health Information

To ensure that tap water is safe to drink, the Massachusetts Department of Environmental Protection (MassDEP) and the US Environmental Protection Agency (EPA) prescribe regulations limiting the amount of certain contaminants in water provided by public water systems. 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. Drinking water, including bottled water, may contain small amounts of contaminants. The presence of these contaminants does not necessarily indicate the water poses a health risk.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, reservoirs and wells. As water travels over the surface of land or through the ground, it dissolves naturally occurring minerals and other compounds.

Compounds 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 runoff, and septic systems.

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



Routine water testing is a standard operating procedure of the Needham Water Division.

Some people may be more vulnerable than others to contaminants in drinking water than the general population. Immunocompromised 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 the substances in accordance with Federal and State drinking water regulations. These substances have not been detected or are significantly below the (MCL) maximum contaminant level allowed.

Important Information from EPA about Lead

Under EPA regulations, the Town of 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.

Elevated levels of lead, if present, 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. The Town is responsible for providing high quality water, but cannot control the variety of materials used in plumbing components. When 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 please contact the Water Division for further testing guidance. 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** at 1-800-426-4791 or www.epa.gov/safewater/lead.

Lead Testing in Needham Public Schools

The Town of Needham continues to coordinate with the MWRA to provide lab analysis for all drinking water fountains in public schools. The Water Division in conjunction with the Health Division has implemented a routine sampling protocol for lead testing in public schools. In 2018, results showed that levels of lead and copper are well below the action level (AL). Please reference the Water Quality Results Table for additional information.



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.

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.

Each part of the water system needs routine maintenance in order to maintain a safe and dependable water supply. Listed below are some of the projects undertaken by the Water Division in 2018:

- Upgraded 1,454 older water meters.
- Replaced 286 (lead or cast iron pipe) water service connections.
- Repaired 7 water main breaks and 13 service leaks.
- Replaced 8 older fire hydrants to ensure water supply for fire protection.
- Conducted 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 water storage tank security and sanitary inspections.
- Upgraded telemetry at the Water Storage Tanks to radio frequency.
- Replaced 275 ft. of 6 in. water main on Bonwood Rd.
- Installed 3,260 ft. of 16 in. water main on Oak St and Marked Tree Rd. This replaced an old 14 in. cast iron main.
- Installed 20 ft. of 12 in. water main on Marked Tree Rd.
- Installed 355 ft. of 8 in. water main at the intersections along Oak St. and Marked Tree Rd.
- Installed 20 ft. of 6 in. water main at the intersections along Oak St. and Marked Tree Rd.



Water Conservation

As of May 2018, the Town is no longer mandated by MassDEP to enforce a mandatory water restriction. However, residents and business are still encouraged to conserve water.

Below are some helpful water conservation tips:

- 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.
- Avoid over fertilizing your lawn. A soil test will show if phosphorus is needed. Fertilizer applications increase the need for water.
- Place a rain barrel under your gutter downspouts to collect rainwater for gardening or landscaping projects. Rain barrels can be purchased at the Needham Department of Public Works. To order, please call the DPW Administration Office at #781-455-7550.
- Timing is critical for lawn watering. Water your lawn overnight or between 5:00AM and 9:00AM. Mid-day watering will result in evaporation.
- Install mulch to keep roots cool and moist. Mulch serves as a ground cover that reduces water evaporation from the soil.
- Install low-flow shower heads and sink aerators to help conserve water inside your home.

Water Main Flushing

Distribution mains (pipes) convey water to homes, businesses, and hydrants in your neighborhood. Upon entering distribution mains, the water is very high quality, however, water quality can deteriorate in areas 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 they do not pose health concerns, they can affect the taste, clarity, and odor of the water. Flushing helps remove stagnant water and ensures the presence of fresh water with sufficient disinfectant levels.

During flushing operations in your neighborhood, some short-term deterioration of water quality, though uncommon, is possible. You should avoid tap water 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.

Flushing operations in Needham typically commence at night in the spring. During this season and time of day, the demand for water tends to be at its lowest.

For additional information about flushing, please visit: www.needhamma.gov/hydrantflushing

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 through 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. Vacuum breakers can mitigate possible cross connections.

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.

Additional Resources

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

List of State Certified Water Quality
Testing Labs

www.mwra.com/04water/html/testinglabs.html

617-242-5233



Pictured above is the Filter Room at the Charles River Water Treatment Facility.
The Filter Room is where ground water is treated and then distributed.

Questions?

For more information about this report, or for any questions relating to your drinking water, please call Stephen Cusick, Water Treatment Plant Manager at 781-416-4071 or the Water & Sewer Division at 781-455-7550.



Water & Sewer Division Staff

Committed to Quality
Serving the Needham Community since 1889