

**2016 Annual Water Quality Report
for the
NORTH CHELMSFORD WATER DISTRICT
DEP PWS ID # 3056002**

The North Chelmsford Water District is committed to providing residents with a safe reliable supply of high-quality drinking water. Our water is tested using sophisticated equipment and advanced procedures. North Chelmsford Water District meets state and federal standards. This annual “Consumer Confidence Report,” required by the Safe Drinking Water Act (SDWA), tells you where our water comes from, what our tests show about it, and many other things you should know about drinking water. North Chelmsford Water District’s drinking water meets or surpasses all federal and state drinking water standards.

This report is about your drinking water sources and quality; regulations that protect your health; programs that protect the quality of our water sources; and the treatment processes that assure our drinking water meets or surpasses all federal and state standards.

Location of the North Chelmsford Water District and hours of operation:

The Water District Office is located at 64 Washington Street, North Chelmsford, Mass. the office hours are 7:00 AM to 3:30 PM, Monday through Friday. A member of our maintenance staff is on-call at all times. After hours, the answering service takes messages and will page the on call person for water emergencies.

Telephone number (978)251-3931

Fax number (978)251-1181

E-mail address northchelmsfordwater@outlook.com

Internet Address: www.northchelmsfordwater.com

Board of Water Commissioners:

A three-member Board of Water Commissioners, elected by the water takers of North Chelmsford monitors the operations of the North Chelmsford Water District. Current members are Chairman, Bruce H. Clark, Chairman, David M. Irvine and Robert M. Leavitt, Clerk.

Water Commissioner Meetings:

Commissioners meet on the first Monday of each month at 6:00 PM at the Water District office. All meeting times and agendas are posted at the Chelmsford Town Hall. Those who wish to meet with the Commissioners are asked to put their request in writing and they will be added to the next agenda.

We encourage public interest and participation in our decisions affecting drinking water.

Our Groundwater Drinking Sources

The North Chelmsford Water District receives their water from four groundwater gravel-packed wells, known as the Bomil Well Field, withdrawing water from the Merrimack River Basin and recharging from Cold Spring Brook and Stony Brook. Our two water storage tanks have 5.9 million gallons of combined capacity.

The annual amount of water supplied to our customers was 233.6 million gallons in 2016.

Source Water Assessment Program, (SWAP)

The Source Water Program assesses the susceptibility of public water supplies to potential contamination due to land uses and activities within the recharge areas. Established under the Federal Safe Drinking Water Act the program requires every state to:

- Inventory land uses within the recharge areas of all public water supply sources
- Assess the susceptibility of drinking water sources to contamination from land uses
- Publicize the results to provide support for improved protection

What is My System Ranking?

A susceptibility ranking of "high" was assigned to this system using the information collected during the assessment by the Department of Environmental Protection.

The North Chelmsford Water District continues to take an active role in promoting source water protection. The Water Treatment Facility has been in full operation since June 06, 2011. The facility is operating as designed and is removing Iron and Manganese to below the SMCL's. In 2015 we continued with the new source approval for the two deep bedrock wells getting full approval to go forward to develop these two sources to improve the water quality and assure that we have sufficient water supply to meet our future needs. We continue to monitor and enforce the activities within the recharge area and report all violations to the proper authorities. We diligently continue to work with the Massachusetts Dept. of Environmental Protection, Massachusetts Highway Dept. and the Town of Chelmsford to reduce sodium levels and any other potential contaminations to our water supply.

Where can I see the SWAP Report?

The complete SWAP report is available at the North Chelmsford Water District, the Chelmsford Board of Health and online at www.mass.gov/dep/water/drinking/3056002.pdf for more information call Superintendent, Mr. Bruce J. Harper, Sr. at 978-251-3931.

Important Definitions

Action Level (AL) is the concentration of a contaminant, which, if exceeded, triggers treatment, or other requirement, which a water system must follow.

Maximum Contaminant Level (MCL) : 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.

Maximum Contaminant Level Goal (MCLG): 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.

Secondary Maximum Contaminant Levels (SMCLs) These standards are developed to protect the aesthetic qualities of drinking water and are not health based.

ppm-Parts Per Million or mg/l-Milligrams Per Liter-One part substance per million parts water.

ppb-Parts Per Billion or Ug/l- micrograms per liter- one part substance per billion parts water.

pCi/L Pico Curies Per Liter– Pico Curies per liter is a measure of the radioactivity in water.

ND-Non-detected -----NT-Not Tested-----WTP-Water Treatment Plant

90th Percentile – Nine out of every ten houses tested are at or below the reported level.

EPA-Environmental Protection Agency

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

Maximum Residual Disinfectant Level (MRDL): 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.

Maximum Residual Disinfectant Level Goal (MRDLG): The levels of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the uses of disinfectants to control microbial contaminants.

The following table lists all the drinking water contaminants that we detected during the 2016 calendar year or during the most recent sampling period within the past five years. These were the only contaminants detected in all the monitoring required by the state. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data presented in the table is from testing done from January 01, 2016 thru December 31, 2016. The state requires us to monitor for certain contaminants are not expected to vary significantly from year to year. Some of the data, although representative of the water quality, is more than one year old.

2016 Water Quality Testing Results
Microbiological Contaminants: None Detected (ND) in 2016

Radioactive Substances: Every Six Years Every Nine Years	Location	Unit	MCLG	Detected Level	Date Collected Date Analyzed	Typical source of contaminant
Gross-Alpha Emitters	Water Treatment Plant	PCi/L	0	0.0+/-1.4	09/04/2014 09/11/2014	Erosion of natural deposits
Radium 226 Radium-228	Water Treatment Plant	PCi/L	0	0.1+/-0.09 1.3+/-0.8	09/17/2014 09/18/2014	Erosion of natural deposits

Inorganic Substance Annually	Date Tested	Unit	MCL	Detected Level	Range	Typical source of Contaminant
Nitrate	06/01/2016	ppm	10	0.83	0 to -77	Runoff from fertilizer; leaching from septic Tanks; sewage; erosion of natural deposits.
Nitrite	06/01/2016	ppm	1.0	None Detected	None Detected	Runoff from fertilizer; leaching from septic tanks; sewage; erosion of natural deposits

SUBSTANCE Tested Every Three Years	Date Tested	Action Level	90 th percentile	# of sites found above the Action Level	Typical source of contaminant
Copper	09/03/2014	1.3 ppm	0.27	0	Corrosion of household plumbing systems.
Lead	09/03/2014	.015 ppm	0.003	0	Corrosion of household plumbing systems.

Synthetic Organic Contaminants: Every Three Years	Date Tested 09/02/15	Unit ppb	MCL	Detected Levels		Violation None	Typical source of Contaminant Control of annual and perennial broadleaf weeds, brush and vines rangeland and non-cropland areas,
				Water Treatment Plant NON DETECTED			
Volatile Organic Compounds:	Date Tested	Unit	MCL	Detected Levels		Violation	Typical source of contaminant
				Water Treatment Plant			
Chloroform	08/10/2016	ppb	None	2.65		None	By-product of drinking water chlorination
Bromodichloro-methane	08/10/2016	ppb	None	5.33		None	By-product of drinking water chlorination
Chlorodibromo-methane	08/10/2016	ppb	None	8.28		None	By-product of drinking water chlorination
Bromoform	08/10/2016	ppb	None	2.81		None	By-product of drinking water chlorination
Methyl tert butyl ether, (MtBE)	08/10/2016	ppb	None	ND		None	A fuel additive. the EPA has Issued a Drinking Water Advisory Range of 20,000 to 40,000 ppb
Regulated Contaminants	Date(s) Collected	* Highest Quarterly RAA	Range Detect-ed	MCLG or MRDLG		Violation	Possible Source(s) of Contamination
Chlorine (ppm)	Daily	0.14	0.02 to 0.47	4		None	Water additive used to control microbes
Trihalomethane (TTHM) (ppb)	Annual 08/09/2016	43.7	40.4 to 43.7	-----		None	By-product of drinking water chlorination
Haloacetic acids (HAA5s) (ppb)	Annual 08/09/2016	3.49	1.04 to 3.49	-----		None	By-product of drinking water chlorination

Perchlorate (ppb)	Every Three Years 08/09/2016	ug/l	ND	Sample Location	Detected Levels	Violation	Perchlorate Is natural occurring and manmade anion commonly associated with the solid salts of ammonium, potassium and sodium perchlorate.
				Water Treatment Plant	NONE	None	

Inorganic Compound (regulated)	Date Tested Every Nine Yrs WAIVER	Unit	MCL	Sample Location	Detected Levels	Violation	Typical source of contaminant
Arsenic	11/09/2012	ppm	0.010	Water Treatment Plant	NON DETECTED	None	Erosion of natural deposits
Barium	11/09/2012	ppm	2	Water Treatment Plant	0.038	None	Erosion of natural deposits
Nickel	11/09/2012	ppm	0.1	Water Treatment Plant	0.001	None	Erosion of natural deposits

Your drinking water meets EPA's standard for arsenic, EPA's standard balances the current Understanding of arsenic's possible health effects against the cost of Removing Arsenic from drinking water. EPA continues to research the health effects of arsenic which is a mineral known to cause cancer in humans at high Concentrations and is linked to other health effects such as skin damage and circulatory problems.

Secondary Contaminants	Date Tested	Unit	SMCL	MRL	Detected Levels					Violation	Typical source of contamination
					Well 1	Well 2	Well 3	Well 4	Water Treatment		
Calcium	06/23/2016	ppm	NONE	1	37.4	21.8	28.0	35.5	31.7	None	Mineral and Nutrient
Sulfate (So4)	06/23/2016	ppm	250	1	16.2	13.0	17.6	16.4	16.7	None	Mineral and Nutrient
Iron (Fe)	06/23/2016	ppm	0.3	1	0.01	0.085	0.006	0.009	ND	None	Naturally occurring element in soils.
Manganese (Mn)	06/23/2016	ppm	0.05	0.005	0.25	1.6	0.052	0.61	0.002	None	Naturally occurring element in soils
Potassium (K)	06/23/2016	ppm	NONE	1	6.5	7.3	5.2	5.5	41.0	None	Soft metal often linked up with chlorides
Alkalinity(CaCO3)	06/23/2016	ppm	NONE	1	16.0	27.0	25.0	20.0	58.0	None	The capacity of water to neutralize acid

COMPLIANCE WITH DRINKING WATER REGULATIONS

The North Chelmsford Water District received No Notice of Non-Compliance;

In order to assure that tap water is safe to drink, the U.S. Environmental Protection Agency (EPA) prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) regulations establish limits for contamination in bottled water that must provide the same protection for public health. All drinking water, including bottle water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contamination does not necessarily indicate that water poses a health risk. More information about contamination and potential health effects can be obtained by calling the EPA's Drinking Hotline at 800-426-4791.

Some people may be more vulnerable 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 who have 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.

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. The North Chelmsford Water District is 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 <http://www.epa.gov/safewater/lead>.

Sources of drinking water (both tap water and bottle water) include rivers, lakes streams, ponds, reservoirs, springs and wells. As water travels over the surface of land or through the ground, it dissolves naturally occurring minerals, and in some cases, radioactive material. It can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

Microbial Contaminants- such as viruses and bacteria, which may come from sewerage treatment plants, septic systems, agricultural livestock operations and wildlife.

Inorganic Contaminants- such as salts and metals, which can be naturally occurring or the results from urban storm water 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 agricultural, urban storm water runoff and residential uses.

Organic Chemical Contaminants- including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also, come from gas stations, urban storm water runoff and septic systems.

Radioactive Contaminants- which can be naturally occurring or be the results of oil and gas production and mining activities.

FREQUENTLY ASKED QUESTIONS (FAQS)

Is my water safe to drink?

North Chelmsford Water District meets or exceeds all governmental standards for drinking water.

What is Cross-Connection Control?

A cross-connection program is required to prevent drinking water contamination from unapproved sources. A cross-connection is formed at any point where a drinking water line connects to equipment, (boilers), systems containing chemicals (air conditioning systems, fire sprinkler systems, irrigation systems) or water sources of questionable quality. Contamination can occur when the pressure in the equipment or system is greater than the pressure inside the drinking water line (backpressure). Contamination can also occur when the pressure in the drinking line drops due to fairly routine occurrences, (main breaks, heavy water demand) causing contaminants to be sucked out from the equipment into the drinking water line, (backsiphonage). The purpose of the program is to prevent backsiphoning of non-potable water into the public drinking water distribution system. The installation of backflow prevention devices is recommended for all inside and outside hose connections. You can purchase devices at a hardware or plumbing supply store. Cross-connection and backflow information is available at the Water District. A cross-connection survey on Municipal and Commercial accounts is done at least once a year.

Is the Water hard or soft?

It is neither hard nor soft. Hardness in drinking water is usually caused by the presence of calcium and magnesium ions. When present in substantial amounts, the water is said to be "hard" because making soap lather is hard (difficult). Cleaning with hard water, that is, water that contains more than 150 milligrams per liter of hardness is difficult. Our water contains 98 milligrams per liter of hardness.

What causes my water to occasionally have a brown or black color? Naturally occurring iron and manganese in the water build up on the insides of the pipes and sloughs off from time to time. When we flush water mains, high concentrations of these minerals are removed from the pipes and the water is very dark. If fire hydrants are opened, this too can stir up sediment in the system. Usually, if you let your water run, it will clear up. If discoloration persists, however, call us and we will make recommendations or make an appointment to check it out.

Sometimes my water looks cloudy. Is this harmful?

No. Cloudiness in drinking water is caused by tiny air bubbles in the water similar to the gas bubbles in carbonated soft drinks. After a while, the bubbles rise to the top and are gone.

How is our water treated?

The Ultra Water Filtration System treats your water to meet or exceed drinking water standards. The treatment process uses state of the art technology and uses the following process: Chlorine Dioxide, a strong oxidizer; Potassium Hydroxide is added as a pH adjuster for corrosion control; Poly Aluminum Chloride is added to aid in the filtration process; post chlorination for disinfection at a residual level between 0.45 to 0.75 milligrams per liter. The treatment plant complies with all of the previous compliance order(s) from the Massachusetts Department of Environmental Protection..

We do not add fluoride to the water supply.

Are we connected to other Municipal Water Supplies?

Yes, we have two emergency connections with the Chelmsford Water District and two emergency connections with the City of Lowell.

Summer Water Management Program

May 01, 2017 to October 15, 2017

LEVEL 1 GREEN 6:00 AM to 9:00 AM OR 6:00 PM to 9:00 PM	LEVEL 2 YELLOW 6:00 PM to 9:00 PM	LEVEL 3 (RED) No outside water use until further notice
<p>Odd numbered addresses on odd numbered calendar days and even numbered addresses on even numbered days are allowed to use automatic sprinkler systems and non-automatic sprinkler systems during these times only.</p> <p>Watering with hand-held hoses and watering cans for small flower and vegetables gardens is allowed from 6AM to 9:00 PM on your designated day using the odd/even model.</p>	<p>Odd numbered addresses on odd numbered calendar days and even numbered addresses on even numbered days are allowed to use automatic sprinkler systems and non-automatic sprinkler systems during these times only.</p> <p>Watering with hand-held hoses and watering cans for small flower and vegetables gardens is allowed from 6AM to 9:00 PM on your designated day using the odd/even model.</p>	<p>You can also find out which level is in effect in your Water District by calling our office:</p> <p>North Chelmsford Water District 978-251-3931</p> <p>East Chelmsford Water District 978-453-0121</p> <p>Chelmsford Water District 978-256-2931 or 978-256-2381</p>
<p>Levels in effect will be posted through out the Districts and in the local media. The signs will show the level number in the following colors LEVEL 1-----GREEN LEVEL 2-----YELLOW LEVEL 3-----RED</p>	<p>Why Do We Need Levels? To ensure adequate pressure and fire protection, storage tanks must be $\frac{3}{4}$ full. If this amount cannot be replenished during non-watering times more restrictive hours must be established by going up a level.</p>	<p>Watch for water-wise tips for your landscaping needs in your bills and in the local media. Consult local nurseries and irrigation service providers for advice on water-wise landscaping maintenance. Our personnel are ready to address your concerns.</p>

NOTE: All automatic lawn sprinklers systems require permitting from the North Chelmsford Water District and the local Plumbing Inspector. All systems must have rain sensors, backflow prevention devices and be zoned properly with timers set according to the Level we are in.

Substance	Date Tested	Detected Level	Annual Average
Sodium	Quarterly	133 to 144 PPM/mg/l	138.25 ppm/ mg/l

THE MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
AND
THE DEPARTMENT OF PUBLIC HEALTH
SODIUM NOTICE FOR PUBLIC WATER SYSTEM

The principal source of exposure to sodium is the diet. The average American diet can contain anywhere from 2,000 mg/d to 24,000 mg/d depending on the amount of table salt added to food. Fruits, vegetables, and meats naturally contain sodium. Many foods such as dairy products and processed foods contain higher concentrations of sodium. For example, 2 slices of white bread could contain close to 300 mg of sodium, 1 frankfurter 400-800 mg and diet cola 20 mg of sodium. Sodium is often added during food preparation and at the table to food. Drinking water contributes a small fraction (less than 10%) to the overall sodium intake.

Sodium is a naturally occurring common element found in soil and water. It is necessary for the normal functioning of the human systems. Sodium is part of a complex physiological mechanism involved in regulating fluids in the human systems. The normally functioning kidney compensates for moderate changes in sodium intake by increasing or decreasing sodium and fluid excretion in the urine. Small changes in the sodium intake do not adversely affect plasma sodium concentrations in the majority of the population. The natural mechanisms of fluid regulation maintain a relatively constant concentration of plasma sodium. Adequate daily total sodium intake has been estimated to range from 115 to 750 milligrams per day (mg/d) for infants, 325 to 2700 mg/d for children and 1100 to 3300 mg/d for adults.

Some people, however, have difficulty regulating fluid volume as a result of several diseases, including congestive heart failure, kidney disease and hypertension. Some individuals are genetically susceptible to hypertension, a condition that may be enhanced by elevated plasma sodium levels. Monitoring sodium intake in these individuals is important in the management of their particular malady.

The Department of Environmental Protection (DEP) is requiring all public water suppliers to notify the local Board of Health, the Massachusetts Department of Public Health and the Massachusetts Department of Environmental Protection of the detected concentrations of sodium in drinking water. Notification is required so that individuals who are on sodium restricted diets or who wish to monitor their sodium intake for other reasons will be able to take the amount of sodium in their water into account.

The guideline of 20 milligrams per liter, (Mg/l) or 20 Parts Per Million, (PPM) for sodium, when exceeded, does not require treatment of the water to reduce the levels to prevent adverse health effects on public health. Rather, the guideline represents a level of sodium in water that physicians and sodium sensitive individuals should be aware of in cases where sodium exposures are being carefully controlled.

We'll be happy to answer any questions about the North Chelmsford Water District and our water quality.

Call 978-251-3931, Fax 978-251-1181 or E-Mail us at northchelmsfordwater@outlook.com

Sincerely,
Bruce J. Harper, Sr.
Water Superintendent