2021 Annual
Drinking Water Quality Report
North Reading Water Department

Massachusetts Department of Environmental Protection

Public Water Supply ID No. 3213000

Safe Drinking Water

The North Reading Water Department is proud to again provide our annual Drinking Water Quality Report, covering all drinking water testing performed between January 1 and December 31, 2021. The Water Department works hard to provide water that meets all federal and state drinking water 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 our water customers.

Please remember that we are always ready to assist you, should you ever have questions or concerns about your drinking water.

Sincerely,

Mark E. Clark
Water Superintendent
North Reading Department of Public Works

Where Does My Drinking Water Come From?

In 2021, the North Reading Water Department received 100% of the water supplied to residents and businesses in North Reading from the Town of Andover.

Andover's water supply comes from Haggetts Pond, which has a watershed of 1,422 acres contributing to the pond. In addition, the pond is supplemented with water from Fish Brook and from the Merrimack River.

These three water sources are used to produce up to 18 million gallons of drinking water on days of maximum demand, and approximately 2 billion gallons of water per year.

This water is treated and then pumped and distributed to residents and businesses in Andover and North Reading. North Reading customers consumed over 550 million gallons of water in 2021.

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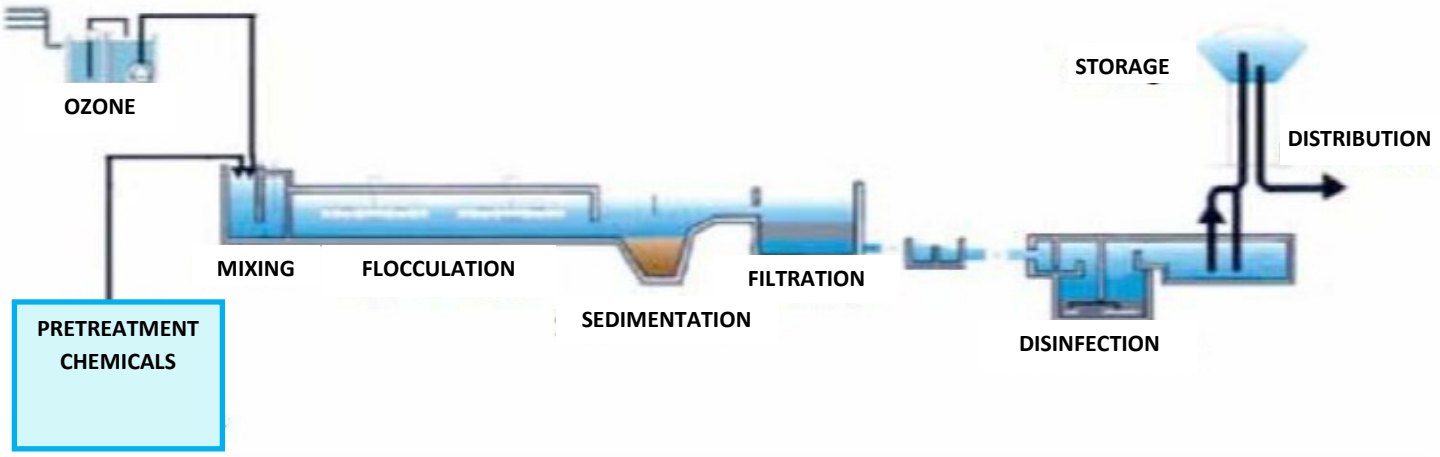
How Is My Drinking Water Treated?

All the water in Andover and North Reading is treated at the Andover Water Treatment Plant before it enters the water distribution system and eventually is supplied to the residents and businesses connected to the water system. Water treatment involves a number of physical and chemical processes to make sure the water is safe to drink.



Water from Haggetts Pond is pumped through screens into the water treatment plant, where the water is treated with ozone to reduce organics in the water, reduce taste and odor and aid in filtration. Pretreatment chemicals are added to and mixed with the water. These chemicals are used to attach to any organic or other contamination in the water, allowing the tiny particles that are suspended in the water to cluster together (also known as “flocculation”) to the point where the particles are heavy enough to settle out of the water in the sedimentation basins. The water is then filtered through granulated activated carbon to remove any remaining particles and also assist in removing taste and odor causing compounds. The filtered water then flows into a clear well where it is disinfected with chlorine and fluoride is added to assist in dental health.

Treated water from the clear well is pumped into the water distribution system, which provides water to residences and businesses in both Andover and North Reading. The water entering North Reading is again treated with chlorine to provide against any microbial growth within the water distribution system.

Water storage tanks are used to keep a reserve volume of water available to meet fluctuations in water demand over the course of the day and to provide sufficient water when needed for fire fighting.

This water treatment process helps to provide a very high quality, safe drinking water at all times. Water quality is monitored by both continuous monitoring equipment and laboratory testing. Both the water treatment plant and the water distribution systems are operated and maintained by certified Drinking Water Operators, licensed by the MassDEP. A virtual tour of the Andover Water Treatment Plant may be made by visiting

https://andoverma.gov/water-sewer.

Contaminants That May Be Present in Drinking Water

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 materials, and the water can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in the source water include:

Microbial contaminants such as viruses and bacteria, which may come from sewage treatment plants, septic system, agricultural livestock operations and wildlife.

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

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

Organic chemical contaminants include 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 can be naturally occurring or be the result of oil and gas production and mining activities.

Other Important Health Information

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 with HIV/AIDS or other immune system disorders, some elderly, and some infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/ Centers for Disease Control and Prevention (CDC) guidelines on lowering the risk of infection by cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791) or on their web site at http://water.epa.gov.drink.hotline.

What US EPA Says About Contaminants and Health Risks

Drinking water, including bottled water, may reasonably be expected to contain at lease small amounts of some contamination. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminfants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (800-426-4791).

In order to ensure that tap water is safe to drink, the Department of Environmental protection (MassDEP) and U.S. Environmental Protection Agency (US EPA) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and Massachusetts Department of Public Health (MassDPH) regulations establish limits for contaminants in bottled water that must provide the same protection for public health. In order for a water supplier to service residents, we must follow these limits that are continually monitored by the MassDEP.

Water Quality Sampling Results

In 2021, hundreds of samples were collected in order to test for the presence of potential contaminants in the drinking water, including biological, inorganic, volatile organic or synthetic organic contaminant. The information contained in the tables below show only the contaminants that were detected in the water.

Samples are collected in accordance with state and federal regulations. Regulations may require that sampling for certain potential contaminants be conducted less frequently than once per year because the concentrations of these substances do not change frequently. For these substances, the most recent sampling data is included, along with the year in which the samples were collected.

Definitions:

90th Percentile: Out of every 10 homes samples, 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.

Level 1 Assessment: A Level 1 Assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.

Level 2 Assessment: A Level 2 Assessment is a very detailed study of the water system to identify potential problems and determine (if possible) why an E.coli MCL violation has occurred and/or why total coliform bacteria have been found in our water system on multiple occasions.

LRAA (Locational Running Annual Average): The average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters. Amount Detected values for HAAs and TTHMs are reported as LRAAs.

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 health risk. MCLGs allow for a margin of safety.

MMCL (Massachusetts Maximum Contaminant Level): An MCL established by MassDEP and not by US EPA.

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 the control of microbial contaminants.

MRDLG (Maximum Residual Disinfection 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

Office of Research and Standards Guideline (OSRG): This is the concentration of a chemical in drinking water at or below which adverse health effects are unlikely to occur after chronic (lifetime) exposure. If exceeded, it serves as an indicator of the potential need for further action.

pCi/L (picocuries per liter): A measure of radioactivity.

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).

ppt (parts per trillion): One part substance per trillion parts water (or nanograms per liter).

Running Annual Average (RAA): The average of four consecutive quarters of data.

SMCL (Secondary Maximum Contaminant Level): SMCLs are established to regulate aesthetics of drinking water, like taste and odor.

TNTC: Too Numerous To Count

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

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

Regulated Substances								
Parameter (Units)	Date(s) Collected	Maximum Amount Detected[1]	Range of Detection[2]	MCL	MCLG	Violation	Typical Source	Health Effects
Fluoride (ppm)	Daily	0.82	0.36 - 0.82	4	4	No	Water additive which promotes strong teeth.	Some people who drink water containing Fluoride in excess of the MCL over many years could get bone disease, including pain and tenderness of the bones. Children may get mottled teeth.
Fluoride has a Secondary Maximum Contaminant Level (SMCL) of 2 ppm to better protect human health.								
Nitrate (ppm)	1/7/2021	<1.0	N/A	10	10	No	Run-off from fertilizer use; Leaking septic tanks; Erosion of natural deposits.	Infants below the age of six months who drink water containing Nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
Perchlorate (ppb)	7/6/2021	0.05	N/A	2	N/A	No	Rocket propellants, fireworks, munitions, flares, blasting agents.	Perchlorate interferes with the normal function of the thyroid gland and thus has the potential to affect growth and development, causing brain damage and other adverse effects, particularly in fetuses and infants. Pregnant women, the fetus, infants, children up to the age of 12, and people with hyperthyroid conditions are particularly susceptible to perchlorate toxicity.
Turbidity[3]	Daily	0.26	0.02 - 0.26	TT = 1.0 max TT <0.3 95% of time	N/A	No	Soil run-off	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

Bacterial Indicator Contaminants								
Parameter (Units)	Date(s) Collected	Maximum Amount Detected[1]	Range of Detection[2]	MCL	MCLG	Violation	Typical Source	Health Effects
Total Coliform Bacteria[8] (colonies/ml)	Weekly	1.0%	0% - 4.3%	<5% of samples positive in one month	0	No	Naturally present in the environment.	Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system.
		0.0%	0.0%			No		
Heterotrophic Plate Count[8] (cfu/ml)	Weekly	216	0 - 216	500	N/A	No	Heterotrophic plate count is an indicator method that measures a range of naturally occurring bacteria in the environment.	Heterotrophic Plate Count is not associated with health effects, but is a method that measures the bacteria quality of the water as an indicator of the adequacy of water treatment.
		375	0 - 375			No		
Total Organic Carbon (ppm)	Monthly	1.810	0.707 - 1.810	TT = 35-45% removal	N/A	No	Naturally present in the environment.	Total Organic Carbon (TOC) has no health effects. However, Total Organic Carbon provides a medium for the formation of disinfection by-products. These by-products include Trihalomethanes (THMs) and Haloacetic Acids (HAAs). Drinking water containing these by-products in excess of the MCL may lead to adverse health effects, liver or kidney problems, or nervous system effects, and may lead to an increased risk of getting cancer.

Lead and Copper								
Parameter (Units)	Date(s) Collected	90th Percentile	Action Level	# Sites Above Action Level	MCLG	Violation	Possible Sources of Contamination	Health Effects
Lead[8] (ppb)	2021	20	15	6/31	0	Yes	Corrosion of household plumbing systems; Erosion of natural deposits.	Infants and children who drink water containing lead in excess of Action Level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.
		2		0/32		No		
Copper[8] (ppb)	2021	90	1,300	0/31	1,300	No	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives.	Copper is an essential nutrient, but some people who drink water containing copper in excess of the Action Level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the Action Level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.
		91		0/32		No		

Disinfection By-Products								
Parameter (Units)	Date(s) Collected	Highest Quarterly Running Average[4]	Range of Detection[5]	MCL	MCLG	Violation	Typical Source	Health Effects
Haloacetic Acids[8] (HHA5, ppb)	Quarterly	8.9	2.5 - 16	60	N/A	No	By-product of drinking water disinfection.	Some people who drink water containing Haloacetic Acids in excess of the MCL over many years may have an increased risk of getting cancer.
		13.1	1.2 - 25			No		
Total Trihalomethanes[8] (TTHMs, ppb)	Quarterly	49	16 - 63	80	N/A	No	By-product of drinking water disinfection.	Some people who drink water containing Trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.
	Monthly	62	17 - 85			No		

Chlorine								
Parameter (Units)	Date(s) Collected	Maximum Amount Detected[1]	Range of Detection[2]	MRDL	MRDLG	Violation	Typical Source	Health Effects
Chlorine[8] (ppm)	40 times per month	1.14	0.01 - 1.14	4	4	No	Water additive to control microbes.	Some people who use water containing chlorine well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort.
	21 times per month	1.78	0.01 - 1.78			No		

Bromate								
Parameter (Units)	Date(s) Collected	Running Annual Average[4]	Range of Detection[5]	MCL	MCLG	Violation	Typical Source	Health Effects
Bromate (ppb)	Monthly	1.5	<1.0 - 1.8	10	0	No	By-product of drinking water disinfection.	Some people who drink water containing bromate in excess of the MCL over many years have an increased risk of getting cancer.

Radionuclides								
Parameter (Units)	Date(s) Collected	Maximum Amount Detected[1]	Range of Detection[2]	MCL	MCLG	Violation	Typical Source	Health Effects
Gross Alpha[8] (pCi/L)	2014	0.3	N/A	15	0	No	Erosion of natural deposits.	Next Sampling Due in 2023.
		1.2	0.0 - 1.2			No		
Radium-226[8] (pCi/L)	2014	0.38	N/A	-	-	No		
		ND	N/A			No		
Radium-228[8] (pCi/L)	2014	0.29	N/A	-	-	No		
		ND	N/A			No		
Combined Radium[8]	2014	ND	N/A	5	0	No	Erosion of natural deposits.	
		0.7	0.0 - 0.7			No		

Per- and Polyfluoroalkyl Substances (PFAS)							
Parameter (Units)	Date(s) Collected	Maximum Amount Detected[1]	Range of Detection[2]	MMCL[9] (ppt	Violation	Possible Sources of Contamination	Health Effects
PFAS6 (ppt)	Quarterly	ND	N/A	20	No	Discharges and emissions from industrial and manufacturing sources associated with the production or use of these PFAS, including production of moisture and oil resistant coatings on fabrics and other materials. Additional sources include the use and disposal of products containing PFAS, such as fire fighting foams.	Some people who drink water containing PFAS in excess of the MCL may experience certain adverse effects. These could include effects on the liver, blood, immune system, thyroid, and fetal development. These PFAS may also elevate the risk of certain cancers.

Unregulated PFAS Substances							
Parameter (Units)	Date(s) Collected	Maximum Amount Detected[1]	Range of Detection[2]	OSRG	Violation	Possible Sources of Contamination	Health Effects
Perfluoro-hexaconic acid (PFHxA, ppt)	Quarterly	2.2	0.45 - 2.2	20	No	Discharges and emissions from industrial and manufacturing sources associated with the production or use of these PFAS, including production of moisture and oil resistant coatings on fabrics and other materials. Additional sources include the use and disposal of products containing PFAS, such as fire fighting foams.	Some people who drink water containing PFAS in excess of the MCL may experience certain adverse effects. These could include effects on the liver, blood, immune system, thyroid, and fetal development. These PFAS may also elevate the risk of certain cancers.

Unregulated Substances							
Parameter (Units)	Date(s) Collected	Result or Range Detected[2]		OSRG	Violation	Typical Source	Health Effects
Bromodichloro-methane (ppb)	Quarterly	0.7 - 6.0		None	No	Trihalomethane; by-product of drinking water chlorination.	Some people who drink water containing bromodichloromethane at high concentrations for many years could experience liver and kidney problems.
Chlorodibromo-methane (ppb)	Quarterly	0.9 - 3.8		None	No	Trihalomethane; by-product of drinking water chlorination.	Some people who drink water containing chlorodibromomethane at high concentrations for many years could experience liver and kidney problems.
Chloroform (ppb)	Quarterly	0.45 - 5.2		70	No	Trihalomethane; by-product of drinking water chlorination.	Some people who drink water containing chloroform at high concentrations for many years could experience liver and kidney problems and may have an increased risk of cancer.

Secondary Contaminants							
Parameter (Units)	Date(s) Collected	Result or Range Detected[2]	Average Detected	SMCL	OSRG or Health Advisory	Typical Source	Health Effects
Alkalinity (mg/L, as CaCO3)	1/7/2021	26.2		None			
Aluminum (ppm)	1/7/2021	0.11		0.2	N/A	Residue from water treatment process; Erosion of natural deposits	May produce colored water.
Calcium (ppm)	1/7/2021	12		None			
Chloride (ppm)	1/7/2021	86		250	N/A	Runoff from leaching and natural deposits.	May produce a salty taste.
Hardness (as CaCO3)	1/7/2021	40			N/A		
Magnesium (ppm)	1/7/2021	2.7					
Manganese[6] (ppb)	1/7, 2/4, 3/3, 4/7, 7/6, 8/4, 9/2, 10/5/21	3.3 - 40	17	50	300	Natural sources as well as discharges from industrial uses	Use of water containing Manganese at concentrations above the SMCL may result in aesthetic issues including the staining of laundry and plumbing fixtures and water with an unpleasant bitter metallic taste, odor, and black or brown water.
Odor (T.O.N.)	1/7/2021	40			N/A		
pH	1/7/2021	7.9		6.5 - 8.5	N/A	Runoff and leaching from natural deposits; Adjustment at water treatment plant for corrosion control.	Low pH may produce a bitter metallic taste; corrosion. High pH may produce a slippery feel; soda taste; deposits.
Potassium (ppm)	1/7/2021	3.2			N/A		
Sodium[7] (ppm)	1/7/2021	57	65	20	N/A	Discharge from use and improper storage of sodium containing de-icing compounds or in water softening agents.	Some people who drink water containing sodium at high concentrations for many years could experience an increase in blood pressure.
Sulfate (ppm)	1/7/2021	25		250	N/A	Runoff and leaching from natural deposits; industrial wastes.	May produce a salty taste.
Total Dissolved Solids (TDS) (ppm)	1/7/2021	260		500	N/A	Runoff and leaching from natural deposits.	May produce hardness; deposits; colored water; staining; salty taste.

1 We are obligated to report to you the maximum value detected during the analysis of multiple samples of drinking water collected during the past calendar year.

2 The values listed here are the overall range of results that were recorded during multiple tests conducted in the past calendar year on the drinking water.

3 Turbidity is a measure of the cloudiness of the water and of treatment performance. It is monitored as it is a good indicator of the effectiveness of the filtration system.

4 This is the highest average value calculated for all the locations where THMs and HAAs were sampled during calendar year 2021.

5 The values listed in this range are based on individual samples rather than averages of multiple samples.

6 US EPA has established a lifetime Health Advisory (HA) of 300 ppb for manganese to protect against concerns of potential neurological effects, and a one-day and 10-day HA of 1,000 ppb for acute exposure.

7 Sodium is naturally present in the environment and the raw water treated fro drinking at levels above the MassDEP guideline of 20 ppm. This value is strictly a Guideline, and does not imply that a value higher than 20 ppm poses risk. The water treatment process does not remove sodium from the water.

8 Sample results shown highlighted in yellow indicate the result of samples collected from the North Reading water system. All other samples were collected at the Andover Water Treatment Plant of from the Andover water system.

9 Mass DEP has established a Massachusetts Maximum Contaminant Level (MMCL) of 20 parts per trillion (ppt) for PFAS6.

Unregulated Contaminants

The US EPA continues in its efforts to ensure drinking water is safe for all consumers. Unregulated contaminants are those contaminants for which the US EPA has not yet established drinking water standards, but monitoring is underway to determine the occurrence of these contaminants in drinking water and whether future regulations are warranted. The results of North Reading's sampling under Phase 3 and Phase 4 of the Unregulated Contaminant Monitoring Rule (UCMR 3 and UCMR 4) are summarized on the following page.

Unregulated Contaminant Monitoring Rule - Phase 3 (UCMR 3)			
Parameter (Units)	Year Sampled	Highest Amount Detected	Range of Detection
Chlorate (ppb)	2016	830	160 - 830
Hexavalent Chromium (ppb)	2016	0.1	0.062 - 0.100
Molybdenum (ppb)	2016	1.7	0.0 - 1.7
Strontium (ppb)	2015	170	77 - 170
Vanadium (ppb)	2015	0.46	0.00 - 0.46

Unregulated Contaminant Monitoring Rule - Phase 4 (UCMR 4)				
Parameter (Units)	Years Sampled	Reporting Limits[1] (ppb)	Lowest Amount Detected[2, 3]	Highest Amount Detected
2-Propen-1-ol (Allyl Alcohol) (ppb)	2019 - 2020	0.50	ASBRL	
1-Butanol (ppb)	2019 - 2020	2.00	ASBRL	
2-Methoxyethanol (ppb)	2019 - 2020	0.40	ASBRL	
Germanium (ppb)	2019 - 2020	0.30	ASBRL	
Manganese (ppb)	2019 - 2020	0.40	2.2	109
Ethoprop (ppb)	2019 - 2020	0.03	ASBRL	
Alpha-Hexachlorocyclohexane (ppb)	2019 - 2020	0.01	ASBRL	
Dimethipin (ppb)	2019 - 2020	0.02	ASBRL	
Chlorpyifos (ppb)	2019 - 2020	0.03	ASBRL	
Profenofos (ppb)	2019 - 2020	0.30	ASBRL	
Tribufos (ppb)	2019 - 2020	0.07	ASBRL	
Oxyfluorfen (ppb)	2019 - 2020	0.05	ASBRL	
Tebuconazole (ppb)	2019 - 2020	0.20	ASBRL	
Total Permethrin (cis- & trans-) (ppb)	2019 - 2020	0.04	ASBRL	
Butylated Hydroxyanisole (BHA) (ppb)	2019 - 2020	0.03	ASBRL	
O-Toluidine (ppb)	2019 - 2020	0.007	ASBRL	
Quinoline (ppb)	2019 - 2020	0.02	ASBRL	
MonoChloroAcetic Acid (ppb)	2019 - 2020	2.00	ASBRL	
MonoBromoAcetic Acid (ppb)	2019 - 2020	0.30	ASBRL	
DiChloroAcetic Acid (ppb)	2019 - 2020	0.20	0.8	29.4
TriChloroAcetic Acid (ppb)	2019 - 2020	0.50	BRL	31.3
BromoChloroAcetic Acid (ppb)	2019 - 2020	0.30	BRL	5.6
BromoDiChloroAcetic Acid (ppb)	2019 - 2020	0.50	BRL	7.1
DiBromoAcetic Acid (ppb)	2019 - 2020	0.30	BRL	1.2
ChloroDiBromoAcetic Acid (ppb)	2019 - 2020	0.30	0.3	1.2
TriBromoAcetic Acid (ppb)	2019 - 2020	2.00	ASBRL	
HAA5 Group (ppb)	2019 - 2020		1.5	61.2
HAA6Br Group (ppb)	2019 - 2020		0.4	14.1
HAA9 Group (ppb)	2019 - 2020		2.1	74.8
Anatoxin-a (ppb)	2019 - 2020	0.03	ASBRL	
Cylindrospermopsin (ppb)	2019 - 2020	0.09	ASBRL	
Total Microcystin (ppb)	2019 - 2020	0.30	ASBRL	

[1] Reporting Limit lists the smallest concentration that could be reported by the laboratory.

[2] A result listed as ASBRL indicates that All Samples tested Below the Reporting Limit for the given parameter.

[3] A result listed as BRL indicates the lowest concentration of a given parameter tested Below the Reporting Limit for that parameter.

Source Water Protection

The Massachusetts Department of Environmental Protection (MassDEP) has prepared Source Water Assessment and Protection (SWAP) Reports for North Reading and Andover. These reports are available at the Water Department Office, and are posted on the Town's web site at www.northreadingma.gov.

This report is an assessment of the area around our sources through which contaminants, if present, could migrate and reach our source water. The report also includes an inventory of potential sources of contamination within the delineated source areas, asd a determination of the water supply's susceptibility to contamination by the identified potential sources of contamination.

Every resident and property owner plays an important role in ensuring the safety of the public water supply. All of North Reading lies within the watershed of the Ipswich River. To help maintain the ecological health of the river and its tributaries, as well as the ponds and wetlands in North Reading, the Water Department recommends the following practices:

- **Lawn Care:** Don't overwater your lawn and limit the application of chemicals for lawn maintenance. When fertilizers, pesticides and herbicides are applied, any chemical not taken up by the vegetation can make its way to the aquifer. Follow the manufacturer's recommendations for application doses and frequency.
- **Household Wastes:** Store and dispose of hazardous wastes properly. We all use products that pose a threat to the environment. Used oils, fuels, paints, batteries, and old thermometers containing mercury are all examples of common household wastes that can, if not properly disposed of, contaminate water supplies. Contact the Department of Public Works at (978) 357-5260 or the Board of Health at (978) 357-5242 for more information on waste disposal.
- **Auto Care:** Washing your car can send detergents and other contaminants into catch basins that flow directly into water bodies. Use a commercial car wash or wash the car on the lawn so water will infiltrate into the ground.
- **Pet Waste:** Pet waste can be a significant source of bacteria and excess nutirents in local waters. When walking your pet, remember to pick up the waste and dispose of it properly.
- Report anyone making illegal use of fire hydrants. The only people authorized to use fire hydrants in North Reading are the Fire Department and the DPW. In addition to the theft of water, the improper use of fire hydrants may cause a number of problems, including damage to the water mains, discolored water, and even contamination of the water system. Notify the Police or DPW if you observe anyone operating a fire hydrant without authorization.
- If you live or walk near the water supplies, help us guard against any activity that might threaten the supplies. The Water Department receives chemical deliveries in tanker trucks, but only when an employee of the Water Department is present. Similarly, contractors performing maintenance work at our facilities are normally accompanied by an employee. Should you witness anything in the area od a water supply facility that appears strange, please report it to the Police of DPW immediately.

Storm Water

Storm water is the rain water and snow melt that is collected in the storm drains, typically through catch basins on the roadways, and is then discharged through outfalls.

North Reading is in the process of implementing new storm water controls, as required by the US EPA. These efforts are designed to help protect the Town's water resources against contamination and sedimentation resulting from water passing through the Town's storm water drainage system.

Please visit the Town web site at www.northreadingma.gov for more information on storm water.

What is a Cross Connection?

A cross connection is any location where lines supplying drinking water are connected to equipment (such as boilers), systems containing chemicals (such as fire fighting systems and air conditioning systems), or water sources of questionable water quality (such as swimming pools). Cross connections are a major concern as these connections can contaminate the drinking water supply. Contamination can occur when the pressure in the equipment is higher than the pressure in the water system (back pressure), or when the pressure in the water system drops (backsiphonage).

Outside water taps and water hoses are the most common sources of cross connection contamination in the home. The garden hose creates a potential hazard when submerges in a swimming pool or when connected to a chemical sprayer for fertilizer or weed killing. Garden hoses that are left lying on the ground may also be contaminated by fertilizers, cesspools or lawn and garden chemicals.

Public water supplies are at jeopardy for contamination unless appropriate valves, known as backflow protection devices, are installed and maintained. North Reading has surveyed all industrial, commercial and institutional facilities to make sure that potential cross connections are identified and eliminated or properly protected by a backflow device. We also inspect and test each backflow preventer to ensure that it is providing maximum protection.

For more information on backflow prevention, call the US EPA's Safe Drinking Water Act hotline at (800) 426-4791, or call the Water Department at (978) 357-5246.

Chlorine in Drinking Water

Chlorine is added to your drinking water for disinfection. Chlorine prevents the growth of bacteria or other microbial organisms in the water distribution system. We maintain a chlorine residual throughout the system in order to protect against contamination.

We are required to monitor the chlorine concentrations both where the water enters the distribution system and throughout the distribution system.

The use of chlorine and other disinfectants reduces the risk of waterborne disease; however, disinfectants can create unhealthy compounds known as disinfection by-products (DBPs). Haloacetic Acids and Trihalomethanes are DPBs that form when chlorine is added to water that contains naturally occurring organic matter.

The Benefits of Fluoridation

Fluoride is a naturally occurring element that is present oin many water supplies in trace amounts. In the North Reading water system, the fluoride level is adjusted to an optimal level on 0.7 parts per million (ppm) to improve oral health in children. At this level, fluoride is safe, odorless, colorless and tasteless. North Reading has been fluoridating the water since the 1970's.

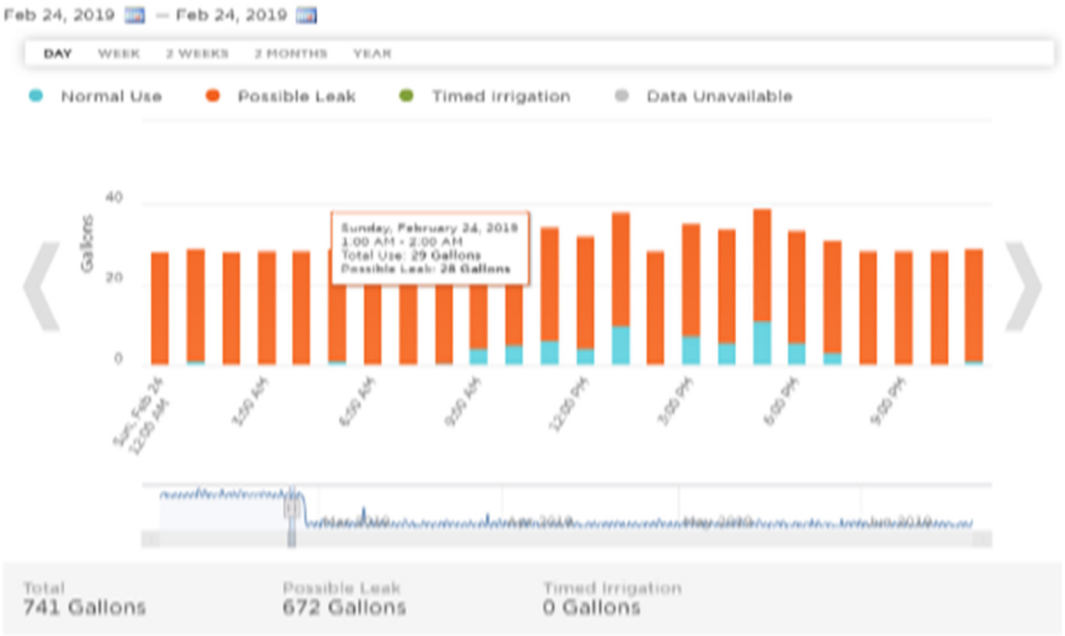
There are over 3.9 million people in 140 Massachusetts water systes, and over 184 million people in the U.S. who receive the health and economic benefits of fluoridation.

WaterSmart—How Your Water Meter Can Save You Money!

North Reading recently replaced the water meters with new "smart" water meters. This newest generation of water meters collects hourly meter readings and transmits this information to the Water Department. Now, rather than manually collecting four meter readings from your water meter each year, we are receiving 24 meter readings every day.

What is the benefit of all that additional information? Reading the meters this frequently gives the Water Department a better ability to review and understand water use trends, including identifying suspected water leaks in homes and businesses. The WaterSmart platform, available at no cost to North Reading Water Department customers, allows customers to view the same data for their account, and to receive alerts when the software identifies unusual water use or potential leakage before the water use results in an unusually high bill.

Below is an example of water use data supplied to North Reading by Watersmart. The blue sections of the graph show what WaterSmart analytics determined to be normal water use for this property. The orange section is suspected leakage. Of the 741 gallons of water used at this property on this day, 672 gallons—over 90% of the total—are the result of a possible leak.



This leak – if it had been uncorrected for the entire billing quarter—would have added $1,015 to the water bill that quarter. The property owner found a leaking toilet, repaired the leak, and avoided the high bill.

Visit northreading.watersmart.com to explore Water Smart. Contact the Water Department at (978) 357-5209 or by email at watersmart@northreadingma.gov if you require assistance in activating your WaterSmart account.

Be WaterSmart!

Questions

The North Reading Water Department recognizes that some of the information presented in this report is technical in nature and may be difficult to understand. If you have questions about this information, or if you are interested in learning more information about North Reading's water supply, or ways to help protect our water supplies, please contact Mark Clark of the Water Department at (978) 357-5246.