

Annual Water Quality Report

Presented by the North Reading Water Department – PWS ID No 3213000 – Water Testing Performed through 2019

Safe Drinking Water

The North Reading Water Department is proud to again present our annual drinking water report, covering all drinking water testing performed between January 1 and December 31, 2019. The Water Department works hard to provide water that meets all state and federal 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 users.

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

Table of Contents

| | |
|---|--------------|
| Safe Drinking Water | Page 1 |
| SWAP Report | Page 1 |
| Where Does My Water Come From? | Page 2 |
| How Is My Water Treated? | Page 2 |
| Substances That Could Be in Water | Page 2 |
| The Benefits of Fluoridation | Page 2 |
| Water Quality Sampling Results | Pages 3 to 5 |
| PFAS in Drinking Water | Pages 6 to 7 |
| Unregulated Contaminant Monitoring Rule – Phase 4 | Page 8 |
| Chlorine in Drinking Water | Page 9 |
| What Is a Cross Connection? | Page 9 |
| How Can Your New Water Meter Save You Money? | Page 9 |
| Public Notice – Total Coliform – October, 2019 | Page 10 |
| Public Notice – Total Trihalomethanes – May, 2020 | Page 11 |
| Transition to Andover Water | Page 12 |
| Important Health Information | Page 12 |
| Questions and Where to Learn More | Page 12 |

Source Water Assessment and Protection Report

The Massachusetts Department of Environmental Protection (MassDEP) has prepared a Source Water Assessment and Protection (SWAP) Report for the North Reading. This report is available at the Water Department office and is posted on the Town’s web site: www.northreadingma.gov. This report is an assessment of the delineated area around out listed sources through which contaminants, if present, could migrate and reach our source water. It also includes an inventory of potential sources of contamination within the delineated areas, and a determination of the water supply’s susceptibility to contamination by the identified potential sources.

Every resident and property owner in North Reading 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:

- 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 water table. Follow the manufacturer’s recommendation for application doses and frequency.
- 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) 664-6060 or the Board of Health at (978) 664-6042 for more information on waste disposal.
- 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 of a water supply facility that appears strange, please report it to the Police or DPW immediately.

The North Reading DPW is also in the process of implementing new storm water controls, as required by the U.S. EPA, 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.

Where Does My Water Come From?

North Reading draws water from four active wellfields: the Lakeside Boulevard Wellfield, the Route 125 Well, the Railroad Bed Wellfield, and the Central Street Wellfield. In addition to these wellfields, North Reading maintains two active interconnections with the Town of Andover that are used to supplement our wells.

In 2019, the North Reading Water Department supplied over 580 million gallons of water to the Town, averaging 1.59 million gallons per day. In the peak summer day, the water demand exceeded 2.00 million gallons.

The Water Department maintains approximately 80 miles of water mains that transport water through the community to more than 4,900 service connections. The water system also includes approximately 750 fire hydrants and three water storage tanks holding a total of 3.3 million gallons of water.

Note: The Water Quality Report for the Town of Andover may be viewed on the Andover web site at www.andoverma.gov.

How Is My Water Treated?

All water produced by the North Reading Water Department comes from gravel packed wells. The sand and gravel around the wells acts as a natural filter against many contaminants. As rainfall and melting snow pass through these soils, the water dissolves small amounts of the iron and manganese that make up these soils. Iron and manganese do not typically pose a health concern, but they do cause a number of problems including unpleasant tastes and odors, discolored water, and staining of plumbing fixtures, and they can cause discolored laundry. Although water containing low levels of iron and manganese is safe to drink, treatment to minimize these minerals is still desirable. The North Reading Water Department treats the water to remove or reduce the iron and manganese concentrations. The water is chemically treated to change the dissolved iron and manganese to small particles that are then filtered out of the water. Following filtration, a disinfectant (chlorine) is added to protect against microbial contaminants, the water is treated with potassium hydroxide to raise the pH of the water and make it less corrosive, and fluoride is added to assist in dental health.

Substances That Could Be In Drinking Water

To ensure that tap water is safe to drink, the Department of Environmental Protection (MassDEP) and the U.S. Environmental Protection Agency (U.S. EPA) prescribe regulations limiting the amounts 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. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk.

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

Microbial Contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, or wildlife;

Inorganic Contaminants, such as salts or metals, which can be naturally occurring or may result from urban stormwater runoff, industrial or domestic wastewater discharges, oil or gas production, mining, or farming;

Pesticides and Herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses;

Organic Chemical Contaminants, including synthetic and volatile organic compounds, which are by-products of industrial processes and petroleum production and may also come from gas stations, urban stormwater runoff, and septic systems;

Radioactive Contaminants, which can be naturally occurring or may be the result of oil and gas production or mining activities.

More information about contaminants and potential health effects can be obtained by calling the U.S. EPA's Safe Drinking Water Act Hotline at (800) 426-4791.

The Benefits of Fluoridation

Fluoride is a naturally occurring element that is present in many water supplies in trace amounts. In the North Reading water system, the fluoride level is adjusted to an optimal level of 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 1970s. There are over 3.9 million people in 140 Massachusetts water systems, and over 184 million people in the U.S. who receive the health and economic benefits of fluoridation.

Water Quality Sampling Results

In 2019, we collected hundreds of water samples in order to test for the presence of any radioactive, microbiological, inorganic, volatile organic or synthetic organic contaminants. The information in the tables below show only those contaminants that were detected in the water. State and federal drinking water regulations require testing for certain substances less frequently than once per year because the concentrations of these substances do not change frequently. For those substances, the most recent sampling data is included, along with the year in which the sample was collected.

The sample results also include information on emerging drinking water contaminants, including information on PFAS in drinking water on pages 6 to 7 and the results of samples collected as part of Phase 4 of the Unregulated Contaminant Monitoring Rule (UCMR4) on page 8.

Definitions

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.

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.

MRDL (Maximum Residual Disinfectant Level): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

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

NA: Not Applicable

NTU: Nephelometric Turbidity Units

Office of Research and Standards Guideline (ORSG): 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).

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

SMCL (Secondary Maximum Contaminant Level): SMCLs are established to regulate the 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 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

| Substance (Unit of Measure) | Year Sampled | MCL (MRDL) | MCLG (MRDLG) | Amount Detected | Range Low-High | Violation Yes/No | Typical Source |
|---|-------------------|--------------------|-----------------|--------------------|-------------------|---------------------|--|
| Inorganic Contaminants | | | | | | | |
| Barium (ppm) | 2018 | 2 | 2 | 0.038 | 0.005-0.038 | No | Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits |
| Fluoride (ppm) | 2018 | 4 | 4 | 0.53 | 0.34-0.53 | No | Water additive which promotes strong teeth |
| Nickel (ppm) | 2018 | 0.1 ⁽¹⁾ | NA | 0.019 | 0.00-0.019 | No | Discharge from domestic wastewater, landfills, and mining and smelting operations |
| Nitrate (ppm) | 2019 | 10 | 10 | 0.27 | 0.12-0.27 | No | Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits |
| Perchlorate (ppm) | 2019 | 2 | NA | 0.11 | 0.088-0.110 | No | Inorganic chemicals used as oxidizers in solid propellants for rockets, missiles, fireworks and explosives |
| Sodium (ppm) | 2018 | 20 ⁽¹⁾ | NA | 69.4 | 66.4-69.4 | No | Use of de-icing chemicals like road salts |
| Radioactive Contaminants | | | | | | | |
| Alpha Emitters (pCi/L) | 2014 | 15 | 0 | 1.2 | 0.0-1.2 | No | Erosion of natural deposits |
| Combined Radium (pCi/L) | 2014 | 5 | 0 | 0.7 | 0.0-0.7 | No | Erosion of natural deposits |
| Disinfection Contaminants Contaminants | | | | | | | |
| Chlorine (ppm) | 2019 | [4] | [4] | 1.63 | 0.01-1.63 | No | Water additive used to control microbes |
| Heterotrophic Plate Count (cfu/mL) | 2019 | 500 | NA | TNTC | 0-TNTC | No | Naturally present in the environment |
| Haloacetic Acids (HAAs)(ppm) | 2019 Quarterly | 60 | NA | 17.8 (LRAA) | 1.32-31.1 | No | By-product of drinking water disinfection |
| Total Trihalomethanes (TTHMs) (ppb) | 2019 Quarterly | 80 | NA | 77.3 (LRAA) | 35.4-112 | No ⁽²⁾ | By-product of drinking water disinfection |

Notes: (1) There is not current MCL for Nickel or Sodium; however, the MassDEP Office of Research and Standards has established a guideline (OSRG) as shown for these contaminants.

(2) The TTHM level did not result in a violation in 2019. However, subsequent testing required a Public Notice to be issued in 2020. A copy of the Public Notice is included on Page 11.

| Bacteria | | | | | | | |
|-------------------------|-----------------|--------|------|------------------|------------|-----------------------|------------------------------|
| Substance | Year Sampled | MCL/TT | MCLG | Value | Date | Violation Yes/No | Possible Sources |
| Total Coliform Bacteria | 2019 | MCL/TT | 0 | > 5% Positive | July, 2019 | Yes ⁽³⁾⁽⁴⁾ | Human and animal fecal waste |

Notes: (3) Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct a Level 1 assessment to identify any problems that may have contributed to the positive sample results.

(4) The North Reading Water Department failed to conduct the Level 1 Assessment on time, and was required to issue a Public Notice relative to this failure. A copy of the Public Notice is included on Page 10.

| Lead and Copper | | | | | | | |
|--------------------------------|-----------------|-------------------------|------|------------------------------------|--|---------------------|--|
| Substance (Unit of Measure) | Year Sampled | Action Level (AL) | MCLG | Amount Detected (90th %tile) | Sites Above AL/Total Sites Above | Violation Yes/No | Typical Source |
| Copper (ppm) | 2018 | 1.3 | 1.3 | 0.119 | 0/30 | No | Corrosion of household plumbing systems; Erosion of natural deposits |
| Lead (ppm) | 2018 | 15 | 0 | 4 | 1/30 | No | Corrosion of household plumbing systems; Erosion of natural deposits |

Tap water samples for lead and copper are collected at residences throughout the town. For additional information on lead in drinking water, visit www.northreadingma.gov/sites/northreadingma/uploads/leadandcopper_2018.pdf

Water Quality Sampling Results (Continued)

Secondary Substances

| Substance (Unit of Measure) | Year Sampled | SMCL | Amount Detected | Violation Yes/No | Typical Source | Health and/or Aesthetic Effect |
|--------------------------------|-----------------|---------|--------------------|---------------------|--|---|
| Alkalinity (ppm as CaCo3) | 2018 | None | 35.7-130 | No | Naturally occurring, chemicals used in treatment | |
| Calcium (ppm) | 2018 | None | 11.7-19.4 | No | Naturally occurring, chemicals used in treatment | |
| Chloride (ppm) | 2018 | 250 | 110-152 | No | Runoff and leaching from natural deposits | May produce a salty taste |
| Color (Color Units) | 2018 | 15 | 0-12 | No | | May produce a visible tint |
| Hardness (ppm as CaCo3) | 2018 | None | 39.4-63.0 | No | Naturally occurring, chemicals used in treatment | |
| Manganese (ppm) ⁽¹⁾ | 2018 | 0.05 | 0.015-0.018 | No | Natural sources, discharges from industrial uses | May result in staining of laundry or plumbing fixtures, bitter metallic taste, odor, |
| Magnesium (ppm) | 2018 | None | 2.49-3.57 | No | Naturally occurring, chemicals used in treatment | |
| pH (pH Units) | 2018 | 6.5-8.5 | 8.9-9.1 | No | Naturally occurring, chemicals used in treatment | Low pH may produce a bitter, metallic taste and corrosion; High pH may produce a slippery feel, soda taste and deposits |
| Potassium (ppm) | 2018 | None | 2.50-73.2 | No | Naturally occurring, chemicals used in treatment | |
| Sulfate (ppm) | 2018 | 250 | 8.37-26.1 | No | Runoff and leaching from natural deposits; industrial wastes | May produce a salty taste |
| Total Dissolved Solids (ppm) | 2018 | 500 | 230-410 | No | Runoff and leaching from natural deposits | May produce hardness; deposits; colored water; staining; salty taste |
| Turbidity (NTU) | 2018 | None | 0.22-0.57 | No | Naturally occurring, removed in treatment | |

Notes (1) The US EPA has established a lifetime Health Advisory (HA) of 0.300 ppm and an acute Health Advisory of 1.000 ppm for Manganese.

Unregulated Substances

| Substance (Unit of Measure) | Year Sampled | Amount Detected | Range Low-High | Typical Source |
|--------------------------------|-----------------|--------------------|-------------------|---|
| Bromodichloromethane (ppb) | 2019 | 17 | 15-17 | By-product of drinking water chlorination |
| Bromoform (ppb) | 2019 | 1.5 | ND-1.5 | By-product of drinking water chlorination |
| Chlorodibromomethane (ppb) | 2019 | 11 | 2.0-11 | By-product of drinking water chlorination |
| Chloroform (ppb) | 2019 | 72 | 18-72 | By-product of drinking water chlorination |

Unregulated Contaminant Monitoring Rule - Phase 3

| Substance (Unit of Measure) | Year Sampled | Amount Detected | Range Low-High |
|--------------------------------|-----------------|--------------------|-------------------|
| 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 contaminants are those for which the US EPA has not established drinking water standards. The purpose of unregulated monitoring is to assist the US EPA in determining the occurrence of these contaminants in drinking water and whether future regulation is warranted.

The North Reading Water Department participated in Phase 4 of the Unregulated Monitoring Contaminant Rule between May, 2019 and March, 2020. Results of this round of sampling is presented on page 8. North Reading also sampled for PFAS between November, 2019 and January, 2020. PFAS are being regulated by the MassDEP beginning in April of 2020. Information on PFAS, including North Reading and Andover water sampling results, is included on Paged 6 and 7 of this report.

PFAS in Drinking Water

Massachusetts has recently established a drinking water standard for PFAS in public water supplies. PFAS have been linked to low infant birth weights, kidney cancer and other health effects. The new Massachusetts Maximum Contaminant Level (MCL) has been set at 20 ng/L (nanograms per liter or parts per trillion).

PFAS have not been regulated in drinking water in the past. North Reading did test for PFAS in 2014 and 2015 as part of the UCMR 3 (Uncontaminated Contaminant Monitoring Rule – Phase 3) testing program. This testing did not detect these substances in the water from the North Reading wells or in the water supplied by Andover at that time. However, new laboratory capabilities have enabled testing for these substances to much lower detection levels.

What are PFAS and where do they come from?

PFAS is the short name for Per- and PolyFluoroAlkyl Substances, used to describe six chemical compounds:

- Perfluorooctane Sulfonic Acid (PFOS)
- Perfluorooctanoic Acid (PFOA)
- Perfluoroheptanoic Acid (PFHpA)
- Perfluorononanoic Acid (PFNA)
- Perfluorohexane Sulfonic Acid (PFHxS)
- Perfourodecanoic Acid (PFDA)

PFAS are manmade chemicals first developed in the 1940s. In the 1950s, manufacturers began using PFOS and PFOA for their ability to repel water, protect surfaces and resist heat, among other applications. Common uses were as carpet and fabric protectants (Scotchgard prior to 2001 – PFOS) and in non-stick cookware (Teflon was manufactured prior to 2013 using PFAS). In the 1960s, the US Navy developed firefighting foams containing PFAS.

How do PFAS end up in drinking water?

PFAS can enter the drinking water when there is a potential source of PFAS contamination in the vicinity of the water supply source. Some sources associated with PFAS contamination include:

- Airfields
- Fire Training Areas
- Manufacturing Facilities
- Waste Disposal Sites
- Landfills

PFAS are known as “forever chemicals” as they are resistant to natural breakdown in the environment. For example, the fibers of a piece of carpet disposed of in a landfill will break down, but the PFAS sprayed on the carpet will remain. These chemicals can then migrate to groundwater and surface waters.

What levels of PFAS has North Reading measured in the drinking water?

In late 2019 and early 2020, both the North Reading Water Department (NRWD) and Andover Water Department (AWD) collected samples from our supplies prior to treatment (Raw) and after treatment (Treated). The results are summarized in the table below.

All the results are listed in units of nanograms per liter (ng/L), which are equivalent to parts per trillion in drinking water. Results shown as ND indicate the compound was Not Detected in that sample, indicating the level was below the capability of the laboratory to measure.

The sum of the six regulated PFAS compounds at 17 of the 18 sample sites tested below the Massachusetts Maximum Contaminant Level of 20 ng/L. The Water Department removed the West Village Water Treatment Plant and the Railroad Bed Wells that supply this treatment plant from service in January of 2020 upon learning that this facility exceeded the proposed MCL.

Note that the water we are receiving from Andover tested in the range of 3.7 to 5.8 ng/L, which is well below the MCL of 20 ng/L.

Summary of PFAS Sample Results from November 2019 and January 2020

| Sample Location | Raw or Treated | Sample Date | Sample By | Sample Results in ng/L (ppt) | | | | | | Sum of Six |
|------------------------|----------------|-------------|-----------|------------------------------|------|-------|------|-------|------|------------|
| | | | | PFOA | PFOS | PFHxS | PFNA | PFHpA | PFDA | |
| Andover - Haggets Pond | Raw | 11/4/19 | AWD | 6.3 | 3.2 | ND | ND | 2.3 | ND | 11.8 |
| Andover WTP | Treated | 11/4/19 | AWD | 3.7 | ND | ND | ND | ND | ND | 3.7 |
| Andover WTP | Treated | 11/4/19 | AWD | 3.9 | ND | ND | ND | ND | ND | 3.9 |
| West Village WTP | Treated | 11/13/19 | NRWD | 10.5 | 6.3 | 2.1 | ND | 3.7 | ND | 22.6 |
| West Village WTP | Treated | 1/8/20 | NRWD | 8.2 | 5.0 | 1.8 | ND | 3.0 | ND | 18.0 |
| Railroad Bed Well No 1 | Raw | 1/8/20 | NRWD | 7.5 | 5.0 | 2.1 | ND | 2.7 | ND | 17.3 |
| Railroad Bed Well No 2 | Raw | 1/8/20 | NRWD | 7.7 | 4.8 | ND | ND | 3.2 | ND | 15.7 |
| Lakeside Blvd WTP | Treated | 1/9/20 | NRWD | 4.5 | 2.0 | ND | ND | ND | ND | 6.5 |
| Lakeside Well No 4 | Raw | 1/9/20 | NRWD | 5.8 | 3.4 | ND | ND | ND | ND | 9.2 |
| Route 125 Well | Raw | 1/9/20 | NRWD | ND | ND | ND | ND | ND | ND | 0.0 |
| Andover - Central St | Treated | 1/9/20 | NRWD | 4.4 | ND | ND | ND | ND | ND | 4.4 |
| Andover - Main St | Treated | 1/9/20 | NRWD | 4.0 | ND | ND | ND | 1.8 | ND | 5.8 |
| Batchelder School | Treated | 1/9/20 | NRWD | 3.8 | ND | ND | ND | ND | ND | 3.8 |
| Hood School | Treated | 1/9/20 | NRWD | 3.8 | ND | ND | ND | ND | ND | 3.8 |
| Little School | Treated | 1/9/20 | NRWD | 5.9 | 4.4 | ND | ND | 2.5 | ND | 12.8 |
| Middle/High School | Treated | 1/9/20 | NRWD | 3.7 | ND | ND | ND | ND | ND | 3.7 |
| Swan Pond Storage Tank | Treated | 1/9/20 | NRWD | 4.2 | ND | ND | ND | 1.9 | ND | 6.1 |
| Town Hall | Treated | 1/9/20 | NRWD | 4.2 | ND | ND | ND | 1.8 | ND | 6.0 |

What is being done now?

As noted, the one facility that was producing water above the new MCL has been taken out of service. North Reading is currently purchasing additional water from Andover to offset the water produced by this source. North Reading is in the process of transitioning to being fully supplied by Andover with our drinking water.

Both North Reading and Andover will continue to monitor for PFAS in the drinking water according to the MassDEP regulations, and will make the results of testing available to the communities.

Where can I get more information on PFAS?

Below are links to information provided by the Massachusetts Department of Environmental Protection and the US Environmental Protection Agency of PFAS in drinking water:

<https://www.mass.gov/service-details/per-and-polyfluoroalkyl-substances-pfas-in-drinking-water>

<https://www.epa.gov/pfas>

Unregulated Contaminant Monitoring Rule – Phase 4

The North Reading Water Department participated in the Unregulated Contaminant Monitoring Rule – Phase 4 (UCMR4) between May, 2019 and March, 2020. The UCMR is designed to collect data on potential drinking water contaminants that are not subject to current regulations in order to determine the prevalence of these contaminants in drinking water across the nation. These results may be used to promulgate future drinking water regulations with respect to these contaminants.

| | Parameter | Units | Range of Detections | | Reporting Limits |
|------------------|----------------------------------|-------|---------------------|------|------------------|
| | | | Min | Max | |
| Group AM1 | 2-Propen-1-ol (Allyl Alcohol) | ug/L | ASBRL | | 0.50 |
| | 1-Butanol | ug/L | ASBRL | | 2.00 |
| | 2-Methoxyethanol | ug/L | ASBRL | | 0.40 |
| | Germanium | ug/L | ASBRL | | 0.30 |
| | Manganese | ug/L | 2.2 | 109 | 0.40 |
| | Ethoprop | ug/L | ASBRL | | 0.03 |
| | Alpha-Hexachlorocyclohexane | ug/L | ASBRL | | 0.01 |
| | Dimethipin | ug/L | ASBRL | | 0.02 |
| | Chlorpyifos | ug/L | ASBRL | | 0.03 |
| | Profenofos | ug/L | ASBRL | | 0.30 |
| | Tribufos | ug/L | ASBRL | | 0.07 |
| | Oxyfluorfen | ug/L | ASBRL | | 0.05 |
| | Tebuconazole | ug/L | ASBRL | | 0.20 |
| | Total Permethrin (cis- & trans-) | ug/L | ASBRL | | 0.04 |
| | Butylated Hydroxyanisole (BHA) | ug/L | ASBRL | | 0.03 |
| | O-Toluidine | ug/L | ASBRL | | 0.007 |
| | Quinoline | ug/L | ASBRL | | 0.02 |
| Group AM2 | MonoChloroAcetic Acid | ug/L | ASBRL | | 2.00 |
| | MonoBromoAcetic Acid | ug/L | ASBRL | | 0.30 |
| | DiChloroAcetic Acid | ug/L | 0.8 | 29.4 | 0.20 |
| | TriChloroAcetic Acid | ug/L | BRL | 31.3 | 0.50 |
| | BromoChloroAcetic Acid | ug/L | BRL | 5.6 | 0.30 |
| | BromoDiChloroAcetic Acid | ug/L | BRL | 7.1 | 0.50 |
| | DiBromoAcetic Acid | ug/L | BRL | 1.2 | 0.30 |
| | ChloroDiBromoAcetic Acid | ug/L | 0.3 | 1.2 | 0.30 |
| | TriBromoAcetic Acid | ug/L | ASBRL | | 2.00 |
| | HAA5 Group | ug/L | 1.5 | 61.2 | |
| | HAA6Br Group | ug/L | 0.4 | 14.1 | |
| | HAA9 Group | ug/L | 2.1 | 74.8 | |
| Group AM3 | Anatoxin-a | ug/L | ASBRL | | 0.03 |
| | Cylindrospermopsin | ug/L | ASBRL | | 0.09 |
| | Total Microcystin | ug/L | ASBRL | | 0.30 |

1. All results reported in units of ug/L (micrograms per liter), which is equal to parts per billion.
2. Reporting Limit lists the smallest concentration that can be reported by the laboratory.
3. A minimum Range of Detection of BRL indicates the lowest concentration of a given parameter was Below the Reporting Limit for that parameter.
4. A Range of Detection listed as ASBRL indicates that All Samples tested Below the Reporting Limit for the given parameter.

Chlorine in Drinking Water

Chlorine is added to your drinking water for disinfection to prevent 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 entering 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 disinfectant by-products (DBPs). Haloacetic Acids and Total Trihalomethanes are DBPs that form when chlorine is added to water that contains naturally occurring organic matter.

What is a Cross Connection?

A cross connection is any location where lines supplying drinking water are connector to equipment (such as boilers), systems containing chemicals (such as air conditioning systems, fire sprinkler systems and irrigation 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 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 submerged in a swimming pool or when attached 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 prevention 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 by a backflow preventer. We also inspect and test each backflow preventer to ensure that it is providing maximum protection.

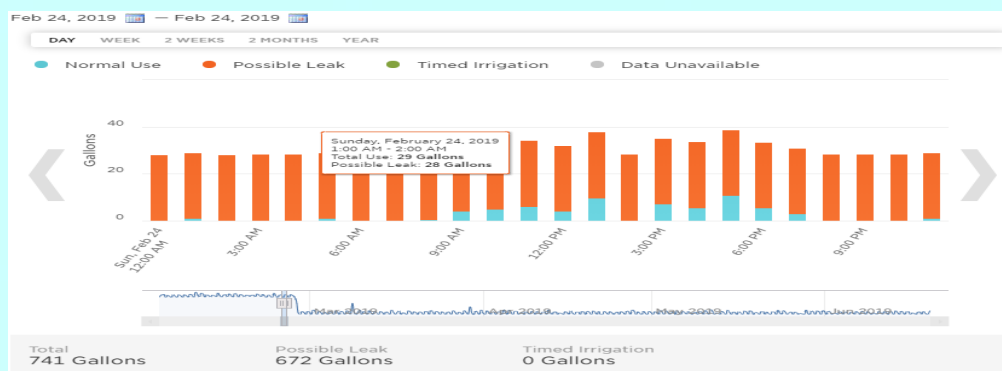
For more information on backflow prevention, call the US EPA's Safe Drinking Water Act Hotline at (800) 426-4791, or call the Water Department at (978) 664-6046.

How Can Your Water Meter Save You Money?

Over the past two years, the water meters in North Reading were replaced with new "smart" water meters. This newest generation of water meters collects hourly meter readings, stores the readings internally, and then once a day transmits those hourly readings to the Water Department in Town Hall. Rather than getting one "snapshot" reading from your water meter once every three months, we are now receiving more than 2,000 meter readings every three months.

What is the benefit of all that additional information? Reading the water 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 this software identifies unusual water use or potential leakage **before the water use results in an unusually high water 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 determine to be normal water use for this property. The orange sections are 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.



A leak of 672 gallons per day – if left uncorrected for an entire billing quarter – would add \$1,015 to the water bill for that quarter. This property owner found a leaking toilet, and was able to repair this leak and avoid a high water bill.

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

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

North Reading Water Department Failed to Conduct Required Assessment to Address Coliform Bacteria Contamination of the Water System

During recent routine monitoring, some water samples collected from our water system tested positive for total coliforms. *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. We found coliforms indicating the need to look for potential problems in water treatment or distribution.*

When this occurs, we are required to conduct an assessment to identify problems and to correct any problems that are found. We failed to conduct the required assessment by September 5, 2019.

Although this incident is not an emergency, as our customers, you have a right to know what happened and what we are doing to correct this situation.

What should I do?

- **You do not need to boil your water or take other corrective actions.** However, if you have specific health concerns, consult your doctor.
- People with severely compromised immune systems, infants, and some elderly may be at increased risk. These people should seek advice about drinking water from their health care providers. General guidelines on ways to lessen the risk of infection by microbes are available from EPA's Safe Drinking Water Hotline at 800-426-4791.

What does this mean?

Since total coliform bacteria are generally not harmful themselves, this is not an emergency. If it had been, you would have been notified immediately. Three samples collected on August 6 tested positive for total coliform. Nine repeat samples collected within 24 hours of the Water Department receiving notification from our laboratory all tested negative for total coliform, and the remainder of the samples collected in the month of August also tested negative for total coliform.

Whenever we detect total coliform bacteria in any sample, we also then test that sample to determine whether other bacteria of greater concern – such as *E. coli* – are present. All samples tested negative for the presence of *E. coli*. A positive total coliform sample in our water distribution system also triggers a requirement that we then sample all of our sources to test for *Enterococcus*. We did not find any of these other bacteria in our subsequent testing. If we had, we would have notified you immediately.

What is being done?

The North Reading Water Department continually adds a low dosage of chlorine to the water as a means of protecting against the presence of disease-causing organisms in the drinking water. In response to some water samples testing positive for total coliform, the Water Department increased the dose of chlorine added to the drinking water. In addition, as required, we collected additional coliform samples from our water system to verify this action of additional chlorine was effective in eliminating the presence of total coliform.

For more information, please contact Mark Clark of the Water Department at (978) 664-6046 or by email at water@northreadingma.gov.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by the North Reading Water Department, PWS ID # 3213000

Date Distributed: October 25, 2019

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

North Reading Water Department Total Trihalomethanes (TTHM) MCL Violation

The North Reading Water Department recently violated a drinking water standard for Total Trihalomethanes (TTHM). Although this incident was not an emergency, as our customers, you have a right to know what happened and what we are to correct this situation.

We routinely monitor for the presence of drinking water contaminants. Recent testing results determined that our system exceeded the standard, or maximum contaminant level (MCL), for TTHM at one of our sampling locations on Riverpark Drive in North Reading. The standard for TTHM is 80 parts per billion (ppb). Compliance with this standard is determined by averaging the results of samples collected at each sampling location for the past four quarters. The level of TTHM averaged at this location for the past four quarters is 96 ppb.

What should I do?

- There is nothing you need to do. You do not need to boil your water or take other corrective actions. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours.
- If you have a severely compromised immune system, have an infant, are pregnant, or are elderly, you may be at increased risk and should seek advice from your health care providers about drinking this water.

What does this mean?

This is not an emergency. If it had been an emergency, you would have been notified within 24 hours. TTHM are four volatile organic chemicals which form when disinfectants (such as chlorine) react with natural organic matter in the water.

People who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system, and may have an increased risk of getting cancer.

Please see <https://www.mass.gov/service-details/tthm-in-drinking-water-information-for-consumers> for a fact sheet on TTHMs / HAA5s.

What is being done?

The North Reading Water Department adds chlorine as a disinfectant to the water to guard against the growth of potentially harmful bacteria in our water distribution system. As noted above, disinfectants can react with natural organic matter in the water to form TTHM.

The North Reading Water Department has decreased the amount of chlorine being added to the water as a means of decreasing the level of TTHM. The most recent sample collected from the site on Riverpark Drive in April of 2020 tested at 47 ppb indicating the changes made by the Water Department have been effective in reducing the TTHM levels to below the maximum contaminant level.

The North Reading Water Department continues to work to maintain the balance needed to ensure sufficient chlorine is added for effective disinfection without exceeding the limits for TTHM in our drinking water. As North Reading transitions to being fully supplied with water from Andover, we will continue to sample the drinking water to ensure it meets all state and federal drinking water quality standards.

For more information, please contact Mark Clark of the Water Department at (978) 664-6046 or at water@northreadingma.gov

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by the North Reading Water Department, PWS ID#: 3213000

Date distributed: 05/11/20

Transition to Andover Water

The Town of North Reading is moving forward with a transition to purchasing 100% of the water we use for drinking water to be supplied by the Town of Andover. North Reading has historically purchased most of our water from Andover for many years, as we were the first community in the state to receive an Interbasin Transfer Act Permit to allow drinking water in one river basin to be supplied with water from another river basin. In North Reading's case, water from the water "rich" Merrimack River basin is imported into the water "poor" Ipswich River basin.

In 2018, North Reading and Andover entered into a 99-year agreement governing this supply of water. North Reading is currently working to obtain the necessary permits from the state to be able to fully implement this water purchase. It is anticipated that the permits will be issued by the Commonwealth in the summer of 2019.

North Reading will then undertake construction of chlorine booster stations to allow for re-chlorination of the water we receive from Andover in order to prevent against any type of microbial growth in the water distribution system. Work on water main redundancy near the location of the interconnections will also take place to ensure an uninterrupted supply of water.

Additional information relative to these projects may be obtained by contacting the North Reading Water Department by emailing water@northreadingma.gov or by calling (978) 357-5246.

Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as those with cancer undergoing chemotherapy, those who have undergone organ transplants, people with HIV/AIDS or other immune disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The US EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are also available from the **Safe Drinking Water Act Hotline** at (800) 426-4791 or on the web at <http://water.epa.gov/drink/hotline>.

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.

Water is life . . . Don't waste it!