

## 2021 WATER QUALITY REPORT

For  
**BYFIELD WATER DISTRICT**  
**Byfield, Massachusetts**  
**DEP PWSID # MA3205001**

This report is a snapshot of drinking water quality that we provided last year. Included are details about where your water comes from, what it contains, and how it compares to state and federal standards.

### PUBLIC WATER SYSTEM INFORMATION

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#### Water System Improvements

Our water system is routinely inspected by the Department of Environmental Protection (DEP). The DEP inspects our system for its technical, financial and managerial capacity to provide safe drinking water to you. To ensure that we provide the highest quality of water available, your water system is operated by a Massachusetts certified operator who oversees the routine operations of our system.

#### Opportunities for Public Participation

If you would like to participate in discussions regarding your water quality, you may attend one of the Byfield Water District's water board meetings. These meetings are posted at Town Hall and the Water Office door. Meetings are held at the water office located in Pearson Plaza on Fruit Street. Meetings are held on the second Wednesday of each month at 6:30p.m., all meetings are open to the public.

### YOUR DRINKING WATER SOURCE

#### Where Does My Drinking Water Come From?

Drinking water for the Byfield Water District comes from two groundwater supplies. The Byfield water system is also connected to the towns of Georgetown and Rowley water systems for emergency use.

| Location of Source | DEP Source ID# | Source Type | Source Name         |
|--------------------|----------------|-------------|---------------------|
| Forest Street      | 3205001-04G    | Groundwater | Forest St. Well     |
| Larkin Road        | 3205001-05G    | Groundwater | Larkin Rd PW-5 Well |
| Larkin Road        | 3205001-02G    | Groundwater | Larkin Rd. GP Well  |

#### How Are These Sources Protected?

The Department of Environmental Protection has prepared a Source Water Assessment Program (SWAP) Report for the water supply source(s) serving this water system. The SWAP Report assesses the susceptibility of public water supplies.

Residents can help protect sources by:

- Practicing good septic system maintenance
- Taking hazardous household chemicals to hazardous materials collection days
- Limiting pesticide and fertilizer use, etc.

#### Where Can I See The SWAP Report?

The complete SWAP report is available at the Byfield Water District office and online at <http://www.mass.gov/eea/docs/dep/water/drinking/swap/nero/3205001.pdf>

## SUBSTANCES FOUND IN TAP WATER

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 from human activity.

Contaminants 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, and wildlife.

**Inorganic contaminants** -such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, and 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 chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

**Radioactive contaminants** -which can be naturally occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the Department of Environmental Protection and U.S. Environmental Protection Agency (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 (DPH) regulations establish limits for contaminants in bottled water that must provide the same protection for public health. All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (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 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).

### Is My Water Treated?

Every effort is made to provide you with safe and pure drinking water. To improve the quality of the water delivered to you, the following chemical is added to your water:

**Sodium Hypochlorite:** A disinfectant to protect you against microbial contaminants.

The water quality of our system is constantly monitored by the Byfield Water District to determine the effectiveness of existing water treatment.

**Carus 1205:** A polyphosphate used to sequester manganese. Its purpose is to keep manganese in suspension to help reduce discolored water in the distribution system.



## IMPORTANT DEFINITIONS

**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.

**Maximum Residual Disinfectant Level (MRDL)** -- The highest level of a disinfectant (chlorine, chloramines, chlorine dioxide) 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 level of a drinking water disinfectant (chlorine, chloramines, chlorine dioxide) below which there is no known or expected risk to health. MRDLG's do not reflect the benefits of the use of disinfectants to control microbial contaminants.

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

**Action Level (AL)** – The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

**90<sup>th</sup> Percentile** – Out of every 10 homes sampled, 9 were at or below this level.

ppm = parts per million, or milligrams per liter (mg/l)  
ppb = parts per billion, or micrograms per liter (ug/l)  
ppt = parts per trillion, or nanograms per liter  
pCi/L = picocuries per liter (a measure of radioactivity)  
nd = Not Detected  
n/a = Not Applicable  
RAA = Running Annual Average

**Secondary Maximum Contaminant Level (SMCL)** – These standards are developed to protect the aesthetic qualities of drinking water and are not health based.

**Massachusetts 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 services as an indicator of the potential need for further action.

## EDUCATIONAL INFORMATION

**Manganese** - Drinking water may naturally have manganese and, when concentrations are greater than 50 µg/L, the water may be discolored and taste bad. Over a lifetime, the EPA recommends that people drink water with manganese levels less than 300 µg/L and over the short term, EPA recommends that people limit their consumption of water with levels over 1000 ug/L, primarily due to concerns about possible neurological effects. Children up to 1 year of age should not be given water with manganese concentrations over 300 ug/L, nor should formula for infants be made with that water for longer than 10 days. The ORSG differs from the EPA's health advisory because it expands the age group to which a lower manganese concentration applies from children less than 6 months of age to children up to 1 year of age to address concerns about children's susceptibility to manganese toxicity. See: EPA Drinking Water Health Advisory for Manganese

[http://www.epa.gov/safewater/ccl/pdfs/reg\\_determine1/support\\_cc1\\_magnese\\_dwreport.pdf](http://www.epa.gov/safewater/ccl/pdfs/reg_determine1/support_cc1_magnese_dwreport.pdf) and  
MassDEP Office of Research and Standards Guideline (ORSG) for Manganese  
<http://www.mass.gov/eea/agencies/massdep/water/drinking/manganese-in-drinking-water.html>

## WATER QUALITY TESTING RESULTS

### What Does This Data Represent?

The water quality information presented in the tables is from the most recent round of testing done in accordance with the regulations. All data shown was collected during the last calendar year (2021) unless otherwise noted in the tables.

| Regulated Contaminant                      | Date(s) Collected | Highest Result or Highest Running Average Detected | Range Detected | MCL or MRDL | MCL G or MRDLG | Violation (Y/N) | Possible Source(s) of Contamination                                                         |
|--------------------------------------------|-------------------|----------------------------------------------------|----------------|-------------|----------------|-----------------|---------------------------------------------------------------------------------------------|
| <b>Inorganic Contaminants</b>              |                   |                                                    |                |             |                |                 |                                                                                             |
| Arsenic (ppm)                              | 2021              | 0.006                                              | 0.005 – 0.006  | 0.010       | 0              | N               | Natural deposits, runoff from orchards, runoff from glass and electronics production waste. |
| Nitrate (ppm)                              | 2021              | 0.68                                               | 0.26 – 0.68    | 10          | 10             | N               | Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits |
| Perchlorate (ppb)                          | 2021              | 0.08                                               | 0.08           | 2           | N/A            | N               | Rocket propellants, fireworks, munitions, flares, blasting agents                           |
| Sodium (ppm)                               | 2019              | 42                                                 | 37 - 42        | None        | None           | N               | Naturally occurring deposits, road salts, water treatment chemicals                         |
| Barium (ppm)                               | 2019              | 0.015                                              | 0.015          | 2           | 0              | N               | Discharge of drilling waste, discharge from metal refineries, erosion of natural deposits   |
| <b>Disinfection By-Products</b>            |                   |                                                    |                |             |                |                 |                                                                                             |
| Haloacetic Acids (HAA5) (ppb)              | 2021              | 10                                                 | 4.6 - 10       | 60          | -----          | N               | Byproduct of drinking water disinfection                                                    |
| Total Trihalomethanes (TTHMs) (ppb)        | 2021              | 40                                                 | 39 - 40        | 80          | -----          | N               | Byproduct of drinking water chlorination                                                    |
| <b>Radioactive Contaminants</b>            |                   |                                                    |                |             |                |                 |                                                                                             |
| Gross Alpha (pCi/L)<br>(minus uranium)     | 2020              | .92                                                | .92            | 15          | 0              | N               | Erosion of natural deposits                                                                 |
| Radium 226 & 228 (pCi/L) (combined values) | 2020              | 1.13                                               | 0.85 – 1.13    | 5           | 0              | N               | Erosion of natural deposits                                                                 |
|                                            |                   |                                                    |                |             |                |                 |                                                                                             |



| Secondary Contaminant  | Date(s) Collected | Result or Range Detected | SMCL      | Possible Source                                                |
|------------------------|-------------------|--------------------------|-----------|----------------------------------------------------------------|
| Iron (ppb)             | 2020              | ND                       | 300       | Naturally occurring, corrosion of cast iron pipes              |
| Manganese (ppb)        | 2021              | 0.1                      | 50        | Erosion of natural deposits                                    |
| Sulfate                | 2020              | 24 – 30                  | 250       | Natural sources                                                |
| Chloride               | 2020              | 44 – 106                 | 250       | Runoff and leaching from natural deposits, seawater influence. |
| pH                     | 2020              | 7.2 – 7.6                | 6.5 – 8.5 | Runoff and leaching from natural deposits, seawater influence. |
| Odor (T.O.N.)          | 2020              | 2                        | 3         | Erosion of natural deposits, leaching of wood preservatives.   |
| Total Dissolved Solids | 2020              | 228 – 340                | 500       | Erosion of natural deposits.                                   |

|              | Date(s) Collected | 90 <sup>TH</sup> percentile | Action Level | MCLG | # of sites sampled | # of sites above Action Level | Possible Source of Contamination                                                                       |
|--------------|-------------------|-----------------------------|--------------|------|--------------------|-------------------------------|--------------------------------------------------------------------------------------------------------|
| Lead (ppb)   | 2021              | 0                           | 15           | 0    | 10                 | 0                             | Corrosion of household plumbing systems; Erosion of natural deposits.                                  |
| Copper (ppm) | 2021              | 0.35                        | 1.3          | 1.3  | 10                 | 0                             | Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives |

***Per- and Polyfluoroalkyl Substances (PFAS)***

| Regulated Contaminant | Date(s) Collected | Highest Result or Highest Running Average Detected | Range Detected | MCL or MRDL | MCLG | Violation (Y/N) | Possible Source(s) of Contamination                                                                                                                                                                                                                                                                                            |
|-----------------------|-------------------|----------------------------------------------------|----------------|-------------|------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PFAS6 (ppt)           | 2021              | 7                                                  | 0 – 7          | 20          | 0    | N               | Discharge and emissions from industrial 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 these PFAS, such as fire-fighting foams. |

**PFAS Health Effect** - Some people who drink water containing these PFAS in excess of the ORSG 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.

**Arsenic** – While your drinking water meets the standard for arsenic, it does contain low levels of 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 low levels 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.

**Sodium**-sensitive individuals, such as those experiencing hypertension, kidney failure, or congestive heart failure, should be aware of the sodium levels where exposures are being carefully controlled.

**Lead** - 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. Byfield 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>.

**Radon** - is a radioactive gas that you cannot see, taste, or smell. It is found throughout the U.S. Radon can move up through the ground and into a home through cracks and holes in the foundation. Radon can build up to high levels in all types of homes. Radon can also get into indoor air when released from tap water from showering, washing dishes, and other household activities. Compared to radon entering the home through soil, radon entering the home through tap water will in most cases be a small source of radon in indoor air. Radon is a known human carcinogen. Breathing air containing radon can lead to lung cancer. Drinking water containing radon can lead to lung cancer. Drinking water containing radon may also cause increase risk of stomach cancer. If you are concerned about radon in your home, test the air in your home. Testing is inexpensive and easy. Fix your home if the level of radon in your air is 4 picocuries per liter of air (pCi/l) or higher. There are simple ways to fix a radon problem that aren't too costly. For additional information, call the Massachusetts Department of Public Health, Radon Program at 413-586-7525 or call EPA's Radon Hotline (800-SOS-RADON).

### **CROSS CONNECTIONS**

A cross connection is a direct arrangement of a piping line, which allows the potable water supply to be in contact with a contaminant. Contamination is possible from either back-siphonage or backpressure. The Byfield Water District has an active cross connection control program that is directed toward its commercial, industrial and institutional users to prevent the existence of unprotected cross connections. The most common residential cross connections are from items such as private wells, lawn irrigation system or garden hoses connected to a hand held fertilizer sprayer or left lying in a pool or other contamination source. Private wells should not be run into buildings that are also being supplied public water, as the possibility of mistakenly connecting the two systems together exists. If residential users are concerned with the possibility that they may have cross connections in their home, they are welcome to contact the Byfield Water District office at (978)462-3023 for more information.

### GALLONS OF WATER PUMPED BY ALL WELL SOURCES DURING 2021

65,901,400