

The Quality of Your Drinking Water

The Pembroke Department of Public Works is committed to providing our customers with high quality drinking water that meets or surpasses state and federal standards for quality and safety. To ensure delivery of a quality product, we have made significant investments in treatment facilities, well maintenance, water quality monitoring, and the distribution system. We are pleased to report the results of our 2022 water testing and inform you about your drinking water.

Pembroke's Water System PWS ID# 4231000

Our water system includes four active groundwater supply wells with three treatment facilities, three elevated water storage tanks, and approximately 134 miles of water main piping. In addition, we maintain four interconnections with the neighboring distribution systems of Duxbury, Hanson, Hanover, and Kingston.

Pembroke's Water Treatment

In order to meet state and federal requirements for public drinking water, Pembroke's water receives treatment before it is supplied to our customers. The Bryantville Well requires treatment to remove high levels of iron and manganese in the water. All of our wells are treated for corrosion control. The pH of the water is raised with potassium hydroxide to reduce the corrosion of the water pipes in streets and the pipes in household plumbing. In addition, all of the wells are fluoridated to promote strong, healthy teeth and prevent tooth decay/cavities.

Substances in Your Tap Water

Sources of drinking water (both tap 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, 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 chemicals, which are byproducts 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, EPA and MassDEP prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) and Massachusetts Department of Public Health 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 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 (1-800-426-4791).

Nonpoint Source Water Pollution

Nonpoint source water pollution (stormwater pollution) occurs when water runs over land or through the ground, picks up contaminants, and deposits them in a waterbody or infiltrates groundwater. According to the EPA, nonpoint source pollution is now the leading source of water quality degradation. Water quality degradation can have harmful effects on drinking water supplies, recreation, fisheries, and wildlife. Each month, the Town of Pembroke provides a tip that you can use to reduce your impact on stormwater pollution on local cable access channels as well as our Department page of the Town website.

Cross Connection

A plumbing cross connection is the actual connection between any pipe carrying potable water and any nonpotable water piping. It is a public health threat. Garden hoses connected to an outside water tap without a hose bib vacuum breaker are the most common sources of cross connections in the home. Other common sources of cross connections in the home include connections of lawn irrigation systems, boilers, dishwashers, and appliances to the drinking water plumbing. Home businesses such as beauty parlors are locations where cross connections can be found. Businesses that must be protected from cross connections include hospitals, laboratories, mortuaries, piers, docks, marinas, chemical plants and metal plating industries. Cross connections can be found in air conditioning or cooling systems, fire protection systems, lawn irrigation systems, and high pressure boilers. During 2022, all Pembroke businesses' backflow devices were tested.

Vulnerability

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 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 appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Questions?

We encourage all customers to attend and participate in the meetings of the Department of Public Works Commissioners. Your commissioners are Richard Nicholson, Ian Campbell, and Andrew Wandell. Meetings are held as needed. Please refer to the Town website for times and location.

Would you like to know more about the Pembroke water supply system? Interested in participating in the decision making process? Please call Richard Nicholson, Ian Campbell, or Andrew Wandell at (781) 293-5620 with questions, comments, or concerns. Your Department of Public Works is located at Town Hall, 100 Center Street, Pembroke, MA 02359.

Greenscapes

The Town of Pembroke, six adjoining towns, and the North and South River Watershed Association have pooled our resources and brainpower to bring you a program for beautiful, low maintenance lawns. Greenscapes will save you time and money, attract birds and wildlife, and protect our environment by reducing the need for lawn watering and fertilizers.

Learn more at www.Greenscapes.org

Conserve

- Turn off water while brushing your teeth
- Install water-saving shower heads
- Water your lawn at dawn

Department of Public Works
Website: www.pembroke-ma.gov

The page is updated with the help of Sabrina Chilcott

Use Water Wisely



Pembroke Department of Public Works
100 Center Street
Town Hall
Pembroke, MA 02359

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Town of Pembroke
Department of Public Works Water Division
2022 Water Quality Report
Important Information About Your Drinking Water
PWS ID# 4231000



Water Quality Data Table

This report is based upon tests conducted for the Pembroke drinking water system in 2022. The presence of contaminants does not necessarily indicate that the water poses a health risk. Not listed are test results of other contaminants for which we tested and the results indicated the contaminants were not detected in the drinking water.

Samples Collected from the Well Supplies

Year Sampled	Substance (Contaminant)	Units	Highest Level Detected	Range of Detection	Highest Level Allowed (MCL)	Ideal Goals (MCLG)	Sources of Contaminant
Primary Contaminants							
2021	Alpha Emitters	pCi/L	1.80	ND - 1.80	15	0	Erosion of natural deposits
2022	Fluoride ¹	ppm	0.78	0.50 - 0.78	4.0	4.0	Erosion of natural deposits; discharge from fertilizer and aluminum factories; water additive which promotes strong teeth
2022	Nitrate	ppm	1.13	0.53- 1.13	10.0	10.0	Runoff from fertilizer use, leaching from septic tanks, erosion of natural deposits
2022	Perchlorate	ppb	0.32	0.18 - 0.32	2.0	NA	Rocket propellants, fireworks, munitions, flares, blasting agents
2022	PFAS6	ppt	7.5	ND - 7.5	20	NA	The use, disposal, or discharge and emissions from manufacturing sources of PFAS products such as moisture and oil resistant coatings and fire fighting foam
Secondary Contaminants							
2022	Manganese*	ppb	217	ND - 217	50 SMCL	300 ORSG	Natural sources as well as discharges from industrial uses
2022	Iron	ppb	230 ²	ND - 230	300 SMCL	NR	Natural and industrial sources as well as aging and corroding distribution systems and household pipes
Unregulated Contaminants³							
2020	Sodium ⁴	ppm	51.0	16.0 - 51.0	NR	20 ORSG	Discharge from the use and improper storage of sodium containing de-icing compounds or in water softening agents
2022	Chloroform	ppb	2.0	ND - 2.0	NR	70 ORSG	Byproduct of drinking water chlorination
2022	Bromodichloromethane	ppb	2.7	ND - 2.7	NR	NR	Byproduct of drinking water chlorination
2022	Dibromochloromethane	ppb	1.8	ND - 1.8	NR	NR	Byproduct of drinking water chlorination

Samples Collected from the Water Distribution System

Year Sampled	Substance (Contaminant)	Units	Highest Level Detected	Range of Detection	Highest Level Allowed (EPA's MCLs)	Ideal Goals (EPA's MCLGs)	Source/s of Contaminant
Primary Contaminants							
2022	Haloacetic Acids	ppb	3.3	ND-3.3	60	NA	Byproduct of drinking water disinfection
2022	Trihalomethanes	ppb	22.8	19.3 - 22.8	80	NA	Byproduct of drinking water disinfection

Year Sampled	Substance (Contaminant)	Units	90th Percentile	Range of Detection	Action Level	Ideal Goals (EPA's MCLGs)	No. of Sites	No. of Sites Above AL	Source/s of Contaminant
2022	Copper ⁵	ppm	0.15	ND - 26.5	1.3	1.3	60	0	Corrosion of household plumbing; erosion of natural deposits; leaching from wood preservatives
2022	Lead ⁵	ppb	5	ND - 20.9	15	0	60	0	Corrosion of household plumbing; erosion of natural deposits

1 Fluoride has a secondary MCL of 2.0 ppm to better protect human health.
 2 Use of water containing iron at concentrations above the secondary MCL may result in aesthetic issues including the staining of laundry and plumbing fixtures and water with an unpleasant metallic taste and rusty odor.
 3 Unregulated contaminants are those for which US EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist the US EPA in determining their occurrence in drinking water and whether future regulation is warranted.
 4 Some people who drink water containing sodium at high concentrations for many years could experience an increase in blood pressure.
 5 Lead and copper compliance is based on the 90th percentile value. Out of every 10 homes sampled, 9 were at or below this level. This number is compared to the action level to determine lead and copper compliance. The 90th percentile for lead and copper did not exceed the action level. Only one of the 60 samples collected for lead and copper exceeded the action level. This sample was collected at an abandoned building. All other samples were well below the action level, and were collected in occupied buildings that were actively in use.

Definitions

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

Maximum Contaminant Level (MCL) – The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal (MCLG) – The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

mfl – Million fibers per liter.

MRDL – (Maximum Residual Disinfectant Level): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that the 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 contaminations.

ND – Substance not detected in the sample.

NR – Not Regulated

ORSG – (Office of Research and Standards Guideline): 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 is a measure of the radioactivity in water.

PFAS – Per-and Polyfluoroalkyl Substance.

ppb – One part per billion; or micrograms per liter (ug/L).

ppm – One part per million; or milligrams per liter (Mg/L).

ppt – One part per trillion; or nanograms per liter (ng/L).

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

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

*Manganese

Manganese is a naturally occurring mineral found in rocks, soil, groundwater, and surface water. Manganese is necessary for proper nutrition and is part of a healthy diet but can have undesirable effects on certain sensitive populations at elevated concentrations. The United States Environmental Protection Agency (EPA) and MassDEP have set an aesthetics-based Secondary Maximum Contaminant Level (SMCL) for manganese of 50 ug/L (microgram per liter), or 50 parts per billion (ppb). In addition, MassDEP's Office of Research and Standards (ORS) has set a drinking water guideline for manganese (ORSG), which closely follows the EPA public health advisory for manganese. **Drinking water may naturally have manganese and, when concentrations are greater than 50 ppb, the water may be discolored and taste bad. Over a lifetime, the EPA recommends that people drink water with manganese levels less than 300 ppb, and over the short term, EPA recommends that people limit their consumption of water with levels over 1000 ppb, primarily due to concerns about possible neurological effects. Children younger than one year old should not be given water with manganese concentrations over 300 ppb, nor should formula for infants be made with that water for more than a total of ten days throughout the year.**

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 six months of age to children up to one year of age to address concerns about children's susceptibility to manganese toxicity. See EPA Drinking Water Health Advisory for manganese at: https://www.epa.gov/sites/production/files/2014-09/documents/support_cc1_magnese_dwreport_0.pdf and MassDEP Office of Research and Standards (ORSG) for manganese <http://www.mass.gov/eea/agencies/massdep/water/drinking/lead-and-other-contaminants-in-drinking-water.html#11>. The Town of Pembroke is actively monitoring manganese levels and will evaluate options to reduce levels if necessary.

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. The Pembroke Department of Public Works 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 and 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>.

Source Water Assessment and Protection

The Source Water Assessment and Protection (SWAP) program assesses the susceptibility of public water supplies to potential contamination by microbiological pathogens and chemicals. This system was assigned a susceptibility ranking of high using the information collected during the assessment by the Massachusetts Department of Environmental Protection. The SWAP report notes the following key areas as possible sources of contamination: residential land uses; transportation corridors; transmission lines; hazardous waste generation; material contamination; industrial parks (including a user of large quantities of toxic chemicals); agriculture; oil or hazardous material contamination sites; aquatic wildlife; sand and gravel mining; road and maintenance depots; and underground storage tanks located in the water supply protection area for the gravel packed wells. The report commends the water system for taking an active role in implementing source water protection measures in the Water Supply Protection Areas, through:

- The adoption of bylaws and health regulations that meet DEP's source protection regulations (310CMR 22.21(2)).
- Protection of wellheads and Zone 1s with gates, silent alarms and police patrols.
- Implementation and enforcement of Pembroke's Water Use Restriction Bylaw.

The complete SWAP report is available at the water department or online at www.state.ma.us/dep/brp/dws. For more information contact the water division at (781) 293-5620.

Unregulated PFAS Contaminants

PFAS6 is a group of 6 different contaminants that are regulated as a group. Other PFAS chemicals are unregulated. One of the 12 unregulated PFAS contaminants was detected. The highest quarterly locational average is reported.

Unregulated PFAS Contaminants	Units	Average	Range
Perfluorohexanoic acid (PFHxA)	ppt	1.36	ND – 3.30