

Town of Falmouth

Annual Drinking Water Quality Report 2018

Mass DEP PWSID # 4096000

PUBLIC WATER SYSTEM INFORMATION: The Town of Falmouth's water system is operated by the Department of Public Works – Water Division, under the direction of Superintendent Stephen Rafferty. The Department and the Superintendent can be contacted by phone at 508-457-2544 or at srafferty@falmouthmass.us. Producing drinking water that meets all regulatory requirements today and in years to come requires timely investment in the infrastructure of the system with treatment upgrades, piping maintenance and replacement, and evaluation and development of secure sources of water for future needs. The investments required and the costs of operation are

supported through the water rates and debt financing for major capital projects. Please review this report carefully, it is intended to increase your awareness of our water issues and contains important information about our water system.

OPPORTUNITIES FOR PUBLIC PARTICIPATION: We welcome and encourage your input, participation and support on the implementation, planning and financing of system improvements. In October of 2017 the Long Pond Water Treatment Plant was placed into service providing high quality ozonated and filtered water into the system. We are continuing with planning and implementing other necessary projects such as a system wide flushing of the water pipes, and identifying and securing additional sources of water. Planning also includes development of a program for the replacement of old and undersized water mains. As we progress on these future initiatives we will be making presentations to citizen groups, Town Boards, the Board of Selectmen and at precinct and Town Meetings. The department's home page is <http://www.falmouthmass.us/314/water-department> and contains additional information. We encourage you to attend informational meetings and to get involved.

REGULATORY COMPLIANCE: This report provides a snapshot of the quality of the drinking water and a summary of the water system. Included are details about where your water comes from, what it contains, and how it compares to state and federal standards. The Falmouth Water Department takes pride in ensuring delivery of a quality product. We have an extensive and ongoing program of sampling by independent labs to monitor the quality of the water from each of our six active sources of water. The system is also regulated by the Massachusetts Department of Environmental Protection (Mass DEP) who review our sampling results and monthly operating records. With six sources of water, each with its own unique raw quality necessitates that we use a variety of site specific treatment to achieve compliance. The system is overseen 24/7 by a team of Certified Operators trained in treatment operation as well as operation of the distribution system. The staff takes pride in achieving compliance with regulatory requirements and providing our customers safe, reliable drinking water. We intend to continue that tradition in 2019.

WATER CONSERVATION EFFORTS: The Town is allocated a finite amount of water each year under the provisions of the Water Management Act. The allocation is set by the State based on the number of system users, an expectation that there is minimal leakage, and that users are prudent and conservative in their consumption of water. With the seasonal water demands of our community, the variable population and the age of our pipes compliance with these regulations is an ongoing challenge. Our success in compliance will directly impact obtaining the approvals needed to develop additional supplies of water. Supplies that are necessary to sustain our community. Water conservation and prudent supply management is key to the long term availability of our water supplies. As part of management of usage, Voluntary Conservation Measures are necessary and have been implemented to achieve the goals of regulatory compliance and water conservation. A conscientious effort by everyone in the community is necessary for these conservative measures to have a positive effect. The Town therefore implemented the following Voluntary Conservation Measures:

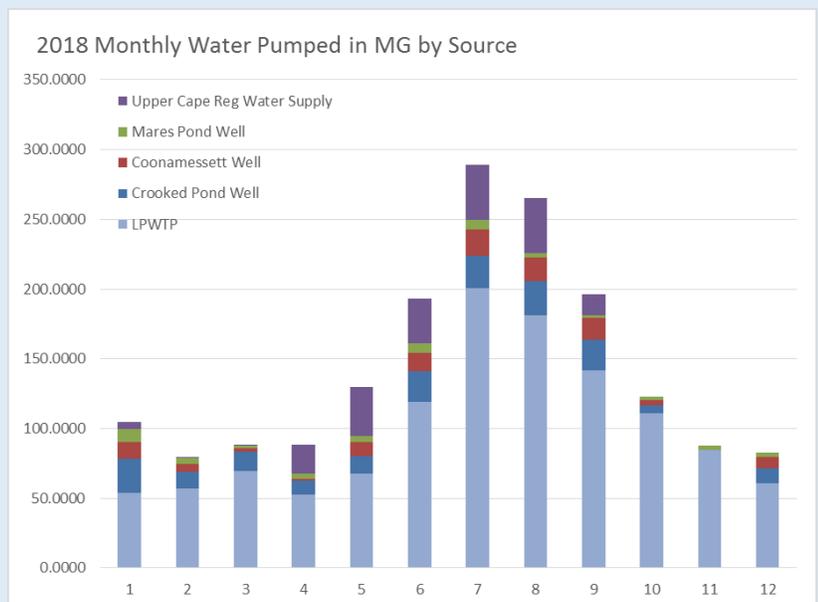
- Watering of lawns is limited to odd / even days only (based on house address) between the hours of 7:00 p.m. and 7:00 a.m.
- Washing of sidewalks, patios and driveways is prohibited (excluding businesses for safety / health reasons).
- Pistol-grip nozzles are required for all hoses used for washing cars and all hoses at dockside facilities.
- Restaurants may only serve water when requested by patrons.

FALMOUTH'S WATER SUPPLY. There is a single body of water, the Sagamore Lens, that is our water supply. We draw water from the Lens at six locations, a combination of surface water and ground water. The piping system that distributes the water consists of over 300 miles of water main and over 21,000 water services. All water is treated with Sodium Hydroxide to stabilize the pH at a value of 7.8 to 8.4. All water is disinfected with Sodium Hypochlorite.

The largest source is Long Pond. In 2018 it provided 69.5% of the supply. Water from Long Pond is treated using dissolved air floatation to remove algae, ozonation for taste and odor reduction, and dual media, activated carbon filtration followed by disinfection and pH control.

The Crooked Pond Well and the Coonamessett Well pump to the Crooked Pond Treatment Facility. The treatment process consists of air-stripping, activated carbon adsorption and manganese-greensand filtration followed by disinfection and pH adjustment.

The water from the Mares Pond Well, and the Upper Cape Regional Water Supply Cooperative is disinfected and pH adjusted. The Fresh Pond well was taken out of service in April of 2017 due to levels



of perchlorate in excess of the State regulatory limit of 2ppb. In 2018 we piloted treatment of that water with an ion exchange filter and we are working with the DEP to place that source back in service with appropriate treatment.

IS OUR WATER SAFE TO DRINK? Yes. Some people may be more vulnerable to contaminants in drinking water than the general population. Immune-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/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* are available from the Safe Drinking Water Hotline (800-426-4791). Our water system makes every effort to provide you with safe and pure drinking water. All surface waters and some ground water sources contain numerous microorganisms some of which can cause people to be sick. To eliminate disease carrying organisms it is necessary to disinfect the water. Disinfection does not sterilize the water, but it does destroy harmful organisms. We utilize sodium hypochlorite at all our sources for disinfection. Disinfection with chlorine has been proven effective at ensuring that water is free of harmful organisms and safe to drink.

CORROSION OF INTERNAL HOUSEHOLD PLUMBING: Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing system. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested by a laboratory. Flushing your tap for 30 seconds to 2 minutes before using can reduce lead levels. Additional information is available from the Safe Drinking Water Hotline (800-426-4791). Sixty homes were tested for lead and copper in 2018. 54 of the homes were below the detection limit. Six had measurable values. Two values (.0016 and .0031) were above the MCL of 0.015. The town did comply with a regulatory limit that 90 percent of samples must be below 0.015 mg/l of lead. None of the sixty copper samples taken during 2018 exceeded the acceptable level of 1.3 mg/l. The 90 percentile for copper was 0.104 mg/l.

SUBSTANCES FOUND IN TAP WATER: Drinking water, including bottled water, frequently contain at least small amounts of some contaminants at levels below the maximum contaminant level. 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. 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/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. 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 from human activity. The Environmental Protection Agency (EPA) and the state Department of Environmental Protection (DEP) prescribe regulations which limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and the Massachusetts Department of Public Health regulations establish limits for contaminants in bottled water which must provide the same protection for public health. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (1-800-426-4791).

In nature, all water contains some impurities. As our water filters through layers of soil and rock in the ground that make up the Sagamore Lens, it dissolves or absorbs the substances that it touches. Most of these substances are harmless. However, at certain levels, minerals, just like man-made chemicals are considered contaminants that can make water unpalatable or even unsafe. In order to ensure that tap water is safe to drink, EPA and Mass DEP prescribes regulations, which limit the amount of certain contaminants in water provided by public water systems. 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. Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites, which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches. **Cryptosporidium:** Testing was performed nine times in 2017 and the results were ND (non-detect). *Cryptosporidium* is a microbial parasite that has been found in surface water throughout the U.S. Ingestion of *cryptosporidium* may cause cryptosporidiosis, an abdominal infection. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals are able to overcome the disease within a few weeks. *Cryptosporidium* must be ingested for it to cause disease, and may be passed through other means than drinking water.
- **Inorganic contaminants** such as salts and metals, which can be naturally-occurring or result from storm 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, storm water runoff, and residential uses.
- **Organic chemical contaminants** including synthetic and volatile organics, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff and septic systems.
- **Radioactive contaminants** which can be naturally occurring or be the result of oil and gas production and mining activities. **Radon** – No tests were performed for Radon. The United States Environmental Protection Agency sets drinking water standards and has determined that radon is a health concern at certain levels of exposure. Radon is a naturally occurring radioactive contaminant that occurs in groundwater. It is a gas and is released from water into household air during water use. Radon has been found in epidemiology studies to cause lung cancer in humans at high exposure levels. At lower exposure the risk of lung cancer is reduced. Presently EPA is reviewing a standard for radon in water. Radon is a radioactive gas that you cannot see, taste, or smell. It is found throughout the United States. 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 be (in most cases) 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 may also cause increased 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 on radon, call the Massachusetts Department of Public Health, Radon Program at 413-586-7525 or call EPA's Radon Hotline, 800-SOS-RADON.

Results of 2013 testing	Reported Level	Range
Strontium ppb	27	24-32
Vanadium ppb	0.10	ND-0.35
Hexavalent Chromium ppb	0.05	ND-0.09
Chlorate ppb	163	ND-330

- Unregulated contaminants** are those for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted. Unregulated contaminants were last evaluated in 2013. Compounds detected in the Falmouth sources are tabulated in the table above.

CROSS CONNECTIONS: To protect the public potable water supply from the possibility of contamination or pollution by isolating contaminants or pollutants which could backflow or back-siphon into the public water system backflow preventers are installed at facilities that pose a risk. To promote the elimination or control of existing cross connections, actual or potential, between its customers in-plant potable water system, and non-potable systems. To provide for the maintenance of a continuing program of cross connection control which will effectively prevent the contamination or pollution of all potable water systems by cross connection. For information regarding our program please visit our website at www.falmouthmass.us/314/water-department.

SOURCE WATER

PROTECTION: Mass DEP 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 to potential contamination by microbiological pathogens and chemicals. The report commends the Town for its proactive source protection efforts to reduce risks and promote water resource education. All of our water



sources are considered highly susceptible (except Mares Pond Well = medium susceptibility) to contamination from a variety of sources such as: fuel spills, fertilizer use, MMR plume migrations and septic systems. The complete SWAP report is available on-line at <http://www.mass.gov/dep/water/drinking/swapreps.htm>. For more information contact the Massachusetts Department of Environmental Protection at (508) 946-2766. Residents can help protect sources by: Practicing good septic system maintenance, supporting water supply protection initiatives, taking hazardous household chemicals to hazardous materials collection days, and limiting pesticide and fertilizer use.

DEFINITIONS: **MCLG** – Maximum Contaminant Level Goal, or the level of a contaminant in drinking water below which there are no known or expected health risks. **MCL** – Maximum contaminant level, the highest level of a contaminant that is allowed in drinking water. **AL** - Action level, or the concentration of a contaminant which, when exceeded, triggers treatment or other requirements which a water system must follow. **TT** – Treatment technique, or required process intended to reduce the level of a contaminant in drinking water. **MRDLG** – Maximum residual disinfectant level goal or the level of drinking water disinfectants below which there is no known or expected health risk. **MRDL** – Maximum residual disinfectant level or the highest level of a disinfectant allowed in drinking water. Abbreviations: **NA** – not applicable, **ND** – none detected, **NR** – not regulated, **NTU** – Nephelometric Turbidity Units, **PPM** – parts per million, **PPB** – parts per billion, **PPT**- parts per trillion, **PPQ**- parts per quadrillion, **MFL** – million fibers per liter, **pCi/L** – pico curies per liter, a measurement of radioactivity. **CASRN** - Chemical Abstract Services Registry Number. **MDL**- maximum daily load.

WATER QUALITY SUMMARY: Each year, your water is collected and tested for over 100 possible impurities. The following Table provides information about substances that have been detected above the recommended MCL in recent water quality testing. In total, over 2,000 samples were taken throughout 2018. Prior to the construction of the Long Pond Water Treatment Plant in 2017 we had multiple samples of Stage 2 Disinfection by-products that were elevated or exceeded the MCL. In 2018 sampling results were over 60% lower than historical providing measurable proof of the efficiency of the new plant.

2018 Water Quality Results

Contaminant/Unit of Measure	Number detected Over Number sampled	Average Level Detected samples	Range of Detection all samples	MCL	Violation Y/N	MCGL	Likely Source of Contamination and Health Effects
Radionuclides - data represents values from prior years sampling							
Gross Alpha pCi/l	NA	0.43	0.24-0.61	15	N	0	Erosion of Natural deposits. Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer.
Radium 226 pCi/l	NA	0.06	0.05-0.08	5	N	0	Erosion of Natural deposits. Some people that drink water containing radium 226 in excess of the MCL over many years may have an increased risk of getting cancer
Radium 228 pCi/l	NA	0.44	ND-0.80	5	N	0	Erosion of Natural deposits. . Some people that drink water containing radium 228 in excess of the MCL over many years may have an increased risk of getting cancer
Inorganic Contaminants							
Nitrate ppm	5/5	0.44	0.07-1.00	10	N	10	Runoff from fertilizer use; Leaching from septic tanks, sewage; 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	0/6	Non Detect	Non Detect	2.0	N	NA	Rocket propellants. Fireworks, munitions, flares, blasting agents. Perchlorate interferes with 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, and children up to the age of 12 and people with hypothyroid condition are particularly susceptible to perchlorate toxicity.
Microbiological							
Total coliform Disinfected water samples	732	0	0	***	N	0	Naturally Present in the environment. Bacteria that are used as an indicator that other potentially harmful bacteria may be present. ***Presence of coliform bacteria in 5% of monthly samples for systems that collect 40 or more samples/month is a violation
Stage 2 Disinfection By-Products							
TTHM ppb Total Trihalomethanes	31/32	16.64	1.12-32.6	80	N	NA	By product of Chlorination Process. Some people who drink water containing trihalomethanes in excess of the MCL over many years, experience problems with their liver, kidneys or central nervous system and may have an increased risk of getting cancer. Compliance for TTHM's is determined as an "annual running average" of all samples. The detected levels shown are the highest average of (4) quarterly averaged values.
HAA5 ppb Haloacetic Acids	29/32	3.25	1.03-7.06	60	N	NA	By product of Chlorination Process. Some people who drink water containing haloacetic acid in excess of the MCL over many years, experience problems with their liver, kidneys or central nervous system and may have an increased risk of getting cancer. Compliance for HAA5's is determined as an "annual running average" of all samples. The detected levels shown are the highest average of (4) quarterly averaged values.
Volatile Organic Compounds							
Chloroform ppb	4/7	0.45	ND – 1.14	none	N	none	Trihalomethane, By-product of drinking water chlorination. Some people who drink water containing Chloroform, Bromodichloromethane and Chlorodibromomethane at high concentrations for many years could experience liver and kidney problems. It is an unregulated contaminate
Bromodichloromethane	2/7	0.28	ND – 1.12	none	N	none	
Chlorodibromomethane	2/7	0.41	ND – 1.7-	none	N	none	
Synthetic Organic Compounds							
Tetrachloroethylene (PCE), ppb	6/24	0.33	ND – 3.03	5.0	N	5.0	Distribution system samples and do not represent source water quality. PCE likely source is the lining adhesive within certain AC pipelines.