



HARWICH WATER DEPARTMENT

2016 Consumer Confidence Report

Drinking Water Quality Issue 20 PWS ID #4126000

The Harwich Water Department (HWD) is pleased to report that **Harwich water meets or exceeds required water quality standards**. This annual Consumer Confidence Report provides important water source data, monitoring, and test results. If you have questions about this report, please contact Superintendent, Dan Pelletier at 508-432-0304. Additional information is available at www.harwichwater.com and at the HWD office located at 196 Chatham Rd.

2016 IN REVIEW

- The elevated water storage tank located on Lothrop Ave was demolished & a new ground level water storage tank and pumping station was constructed in its place.
- Continued implementation of our meter change out program has brought the department up to 99.9% radio read meters.
- Implemented unidirectional flushing program which is designed to improve water quality throughout the community.
- Removed and replaced 88 water services containing lead or copper goosenecks.
- Pump station maintenance including the replacement of aging roof hatches, upgrades to pump station heating equipment, removal of antiquated PARCO Valves, installation of a back-up generator to support the Rt. 39 tank.
- Cleaned, redeveloped, and installed a new vertical turbine pump & motor at Well 4.
- Replaced submersible pump & motor at Well 2 & Well M1.
- Designed the new SCADA system to be constructed per 2016 Annual Town Meeting (ATM) request.
- Purchased a new John Deere 75g excavator

2017 GOALS

The department is diving into 2017 full speed. With the design of the new SCADA system complete, construction will begin very soon, completion is expected prior to the summer pumping season. We are also wrapping up the Lothrop Ave. water tank project. This spring the tank and building will be painted and landscape plantings will be installed. In 2017 we plan on laying the groundwork to begin replacing the 2" water mains throughout the community as well. Lastly, authorization is being requested at the 2017 ATM to fund the purchase of 2 new vehicles as well as funding for the replacement of old water services from the water main to the curb stop along the National Grid project route. This is a preventative maintenance project to prevent the need to repair old leaky services after National Grid installs their gas main and curb-to-curb paving is completed.



CONSERVATION AND LEAK DETECTION

Water is a precious and limited resource and it should not be wasted. Water conservation reduces the need for developing new water sources and storage facilities, protects both streams and wetlands, and can save you money. Water that is used outdoors during the summer accounts for up to 60% of the Town's total annual water consumption.

Here are suggestions that will help you conserve water in and around your property:

Indoor

- Run your washing machine and dishwasher only when they are full.
- Consider installing low-flow faucets, toilets, and showerheads.
- Keep showers under 5 minutes.
- Fix leaking faucets, pipes, toilets, etc.; a slow drip can waste over 100 gallons a day!
- Turn off the water while you shave and brush your teeth.
- Replace old dishwashers and clothes washers with energy efficient machines that use less water.
- Check your toilets for leaks by placing a few drops of food coloring in the tank. If the coloring shows in the bowl after 15 minutes without flushing, it has a leak. Flush away the coloring when done.

Outdoor

- Adjust sprinklers so only your lawn is watered and not the house, sidewalk, or street.
- Minimize evaporation by watering before 6 a.m. or after 6 p.m.
- Install a rain sensor shut-off device on your automatic sprinklers.
- Plant during the spring or fall when watering requirements are lower.
- Use a layer of organic mulch around trees and plants to reduce evaporation and weed growth.
- Consider planting drought resistant plants and grass to reduce the need of watering.
- Use a broom instead of a hose to clean your driveway or sidewalk.
- Adjust your mower to a higher setting. Longer grass shades root systems and holds soil moisture better

IN THE NEWS

The Massachusetts Department of Environmental Protection awarded the Harwich Water Department with a 2016 certificate for outstanding performance and achievement.

Superintendent Daniel Pelletier accepted the award at a presentation ceremony in May on behalf of the Department. Out of 1,735 public water systems in Massachusetts, 12 awards were given under the medium and large system category. In the past ten years, Harwich Water has won this award eight times.

Since 1991, MassDEP has given this award to acknowledge the many dedicated professionals whose accomplishments are worthy of special recognition in maintaining consistent and safe delivery of potable water to residents of the Commonwealth.



HARWICH WATER SYSTEM & SOURCE INFORMATION

The drinking water supply for the Town comes from 14 gravel packed wells. Wellfields are located in South, East and North Harwich, and draw water from the Monomoy Lens Aquifer. These 14 wells pumped 853,298,922 gallons of water in 2016. The sand and gravel act as a huge underground reservoir, which is continually replenished by rainfall and snowmelt. The wells have a high susceptibility to contamination due to the absence of hydro geologic barriers (i.e. clay) that can prevent contaminant migration. After the water is pumped from the ground, it is treated with the chemicals Sodium Hydroxide (NaOH) and Sodium Hypochlorite (Chlorine). NaOH is added at very low concentrations to increase the pH of the water and reduce its natural corrosivity. Low pH can stain plumbing fixtures and degrade the water quality by leaching copper and lead out of private services. The water treatment plants improve water quality by removing dissolved iron and manganese from the water supply.

Name	MASSDEP ID	Source Type	Location
Wells 1 thru 3	4126000-01G	Groundwater	off Chatham Rd.
Well 2	4126000-02G	Groundwater	off Chatham Rd.
Well 3	4126000-03G	Groundwater	off Chatham Rd.
Main Station	4126000-04G	Groundwater	off Chatham Rd.
Well 4	4126000-05G	Groundwater	off Chatham Rd.
Well 5	4126000-06G	Groundwater	off Depot Rd.
Well 6	4126000-07G	Groundwater	off Depot Rd.
Well 7	4126000-08G	Groundwater	off Depot Rd.
Well 8	4126000-09G	Groundwater	off Bay Rd.
Well 9	4126000-10G	Groundwater	off Bay Rd.
Well 10	4126000-11G	Groundwater	off North Westgate Rd.

MONOMOY LENS AQUIFER

The large Monomoy ponds (Long, Seymour and Hinckley) receive groundwater discharge from the lens, which then feeds the Herring River so that groundwater ultimately discharges into Nantucket Sound. The Monomoy Lens is the second largest of the six mounds or cells of elevated groundwater that comprise the aquifer. The lens supplies generally excellent drinking water from its porous sand and gravel deposits. The water is considered “soft” due to the lack of calcium and magnesium. Municipal water supplies are treated to neutralize the pH. Naturally occurring iron and manganese can cause staining, odor and taste problems. Sodium chloride can be elevated in coastal areas due to salt spray or saltwater intrusion.

REGULATIONS AND LIMITS—DEP, EPA, FDA, DPH

In order to ensure that tap water is safe to drink, the MassDEP and US EPA prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and the Massachusetts Department of Public Health (DPH) 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.

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 some infants can be particularly at risk for infections. These people should seek advice from their health agents about drinking water. EPA/Centers for Disease Control and Prevention (DC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Drinking Water Hotline 1-800-426-4791.

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 facilities, 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 agricultural, 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.

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. Harwich 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>.

SOURCE WATER ASSESSMENT PROGRAM (SWAP REPORT)

MassDEP prepared a Source Water Assessment (SWAP) Report for the water supply sources serving Harwich. Since there are a number of land uses and activities that are potential sources of contamination, Harwich has a high susceptibility ranking. SWAP notes the following key issues for our sources; inappropriate activities in Zone I areas, residential land uses and activities, storm water pollution, transmission line right-of-way, and transportation corridor within Zone IIs, and comprehensive wellhead protection planning for Zone IIs. The complete SWAP Report is available at the HWD and online at <http://www.mass.gov/eea/docs/dep/water/drinking/swap/sero/swap-sero.pdf>.

CROSS CONNECTIONS

A cross connection is formed at any point where a drinking water line connects with any equipment or system containing chemicals or water of questionable quality such as irrigation systems or boilers. HWD recommends the installation of backflow prevention devices, such as a low cost hose bib vacuum breaker, for all inside and outside hose connections. Such devices can be found at your local hardware store. This is a great way for you to help protect the water in your home as well as the drinking water supply. For more information on our cross connection program, visit: www.harwichwater.com.

UNREGULATED CONTAMINANTS

Unregulated contaminants are those of which the EPA has not established drinking water standards. Monitoring assists the EPA in determining their occurrence in drinking water and whether future regulation is warranted.

IRON & MANGANESE

Iron and manganese are often present in groundwater at levels that can discolor the water, or cause it to take on unpleasant odors or tastes. Even though the water may still be safe to drink, it is preferable that the iron and manganese be removed.

MassDEP has reduced the monitoring requirements at T-2 (Fed by Wells 5, 6, & 7), T-3(Fed by Wells 8 & 9), Well 10, & Well 11 for inorganic contaminants, and Wells 7, 10, & 11 for volatile organic contaminants and because the source is not at risk of contamination. The last sample collected for Inorganic Compounds was taken on 2/26/15-3/23/15, and Volatile Organic Compounds was taken on 2/26/15-3/23/15 and was found to meet all applicable US EPA and MassDEP standards.

Inorganic Contaminants							
Contaminant (Units)	Date Collected	MCL	MCLG	Highest Result	Range	Possible Source(s) of Contamination	Violation Y/N
Arsenic (ppb)	2/26/2015	10	0.01	0.002	0.000-0.002 ppb	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes	No
Barium (ppm)	2/26/2015	2	2	0.01	ND-0.01 ppm	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits	No
Nitrate as N (ppm)	2/29/2016 3/2/2016 3/23/2016	10	10	2.2	ND-2.2 ppm	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits	No
Selenium (ppb)	2/26/2015	50	0.05	0.004	ND-0.004	Erosion of natural deposits; Discharge from metal refineries; Discharge from mines	No
Turbidity (NTU)	11/17/2015	5	---	0.22	ND-0.22	Soil Runoff	No
Turbidity is a measure of the cloudiness of the water. It is monitored it because it is a good indicator of water quality							
Microbiological Contaminants							
		Highest % Positive in a month	Total # Positive	MCL	MCLG	Possible Source(s) of Contamination	Violation Y/N
Total Coliform Bacteria	Weekly	2.5%	1	5%	0	Naturally present in environment	No
Fecal Coliform or <i>E. Coli</i>	Weekly	----	1	*	0	Human and animal fecal waste	No
* Compliance with the fecal coliform/ <i>E.coli</i> MCL is determined upon additional repeat testing.							
Volatile Organic Contaminants							
Contaminant (Units)	Date Collected	MCL	MCLG	Highest Result Detected	Range Detected	Possible Source(s) of Contamination	Violation Y/N
MTBE - Methyl Tertiary Butyl Ether (ppb)	2/29/2016 3/2/2016 3/23/2016 4/14/2016 8/10/2016 11/8/2016	20-40	70	1.6	ND-1.6	Fuel additive; leads and spills from gasoline storage tanks.	No
Bromochloromethane (ppb)		---	---	1.2	ND-1.2	Byproduct of drinking water chlorination	No
Chloroform (ppb)		---	---	2.5	ND-2.5	Byproduct of drinking water chlorination (regulated collectively with total THM's; in non-chlorinated sources, chloroform may naturally occurring)	No
Chlorodibromomethane (ppb)		---	---	1.2	ND-1.2	Trihalomethanes; byproduct of drinking water chlorination.	No
Radioactive Contaminants							
Gross Alpha Activity (pCi/l)	7/26/2012	15	---	0.4	0.13-1.4	Erosion of natural deposits	No
Radium - 226 & 228 (pCi/l)	7/26/2012	5	---	0.5	0.03-0.85	Erosion of natural deposits	No
Disinfectants and Disinfectant By-products							
Contaminant (Units)	Date Collected	Highest Quarterly Running Annual Average	Range Detected	MCL	MRDLG	Possible Source(s) of Contamination	Violation Y/N
Chlorine (Free) (ppm)	Monthly in 2016	0.24	0.16-0.39	4	4	Water additive used to control microbes	No
Total Trihalomethanes (THHMs) (ppb)	8/24/2016	6.02	4.2-13	80	---	Byproduct of drinking water chlorination	No
Haloacetic Acids (HAA5) (ppb)	8/24/2016	1.01	0.54-1.6	60	---	Byproduct of drinking water disinfection	No

Lead & Copper								
Contaminant (Units)	Date Collected	90th Percentile	Action Level	MCLG	# Of Sites Sampled	# Of Sites Above Action Level	Possible Source(s) of Contamination	Violation Y/N
Lead (ppb)	7/29/2015	1.5	15	0	31	0	Corrosion of household plumbing systems; Erosion of natural deposits	No
Copper (ppm)	7/29/2015	0.57	1.3	1.3	31	0	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives	No
Secondary Contaminants								
Contaminant (Units)	Date Collected	Range Detected	Average Detected	SMCL	OSRG	Possible Source(s) of Contamination		Violation Y/N
Chloride (ppm)	11/8/16 - 12/12/16	14.0-35.0	26.16	250	---	Runoff from road de-icing, use of inorganic fertilizers, landfill leachates, septic tank effluents, animal feeds, industrial effluents, irrigation drainage, and seawater intrusion in coastal areas		No
Color (C.U.)	11/8/16 - 12/12/16	4.00-6.00	4.75	15	---	Naturally occurring organic material		No
Iron (ppm)	11/8/16 - 12/12/16	ND	ND	0.3	---	Naturally occurring, corrosion of cast iron pipes		No
Manganese (ppm)	11/8/16 - 12/12/16	ND-0.0078	0.003	0.05	---	Erosion of natural deposits		No
pH	11/8/16 - 12/12/16	7.6-8.0	7.7	7.6-8.0	---			No
Sulfate (ppm)	11/8/16 - 12/12/16	7.2-11.00	9.058	250	---	Natural sources		No

Unregulated Contaminant Monitoring Rule 3			
Contaminant (Units)	Year Sampled	Highest Level Detected	Range Detected
Chromium-6	2015	20.0 µg/L	.06 - 20.0
Strontium	2015	49.0 µg/L	22.0 - 49.0
Chlorate	2015	180.0 µg/L	34 - 180
Molybdenum	2015	2.1 µg/L	ND - 2.1
Vanadium	2015	1.1 µg/L	ND - 1.1

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

TABLE DEFINITIONS	TABLE MEASURES
Lead and Copper 90th Percentile - Out of every 10 homes sampled, 9 were at or below this level.	Nephelometric Turbidity Unit (NTU): A measure of the clarity (or cloudiness) of water.
Action Level - The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.	Treatment Technique (TT): a required process intended to reduce the level of a contaminant in drinking water.
Massachusetts Office of Research and Standards Guidelines (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, with a margin of safety. If exceeded, it serves as an indicator of the potential need for further action.	Maximum Residual Disinfectant Level Goal (MRDLG): The level of 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.
Maximum Contaminant Level Goal or MCLG: The level of contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.	Secondary Maximum Contaminant Level (SMCL): These standards are developed to protect the aesthetic qualities of drinking water and are not health based.
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.	ppm = parts per million, or milligrams per liter (mg/l) ppb = parts per billion, or micrograms per liter (ug/l) pCi/l = picoCuries per liter (a measure of radioactivity) ND = Not Detected --- = Not Applicable
Maximum Contaminant Level or MCL: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MGLGs as feasible using the best available treatment technology.	C.U. = Color Units