HARWICH WATER DEPARTMENT

2017 Consumer Confidence Report

Drinking Water Quality Issue 21 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.

2017 IN REVIEW

- The Lothrop Ave. ground level storage tank & pumping station was put online in May
- Completed the installation of the new Supervisory & Data Acquisition (SCADA) system
- Cleaned, redeveloped, and replaced pumps & motors in 3 wells located at the Chatham Road wellfield
- Replaced the failed submersible pump at Well 6 with a more reliable vertical turbine pump & motor
- Completed preparatory work in Harwich Port to begin 2" water main replacement in 2018
- Implemented a uni-directional flushing program to increase water quality throughout the community
- Continued facility upgrades, including but not limited to, replacing older wooden trim with PVC board, replacing lighting fixtures with LEDs, replacement of deteriorating exterior fiberglass enclosures with stainless steel enclosures, replace RTU storage shed at Rt. 39 tank, replaced older propane heaters in remote wells with new electric unit heaters
- Pressure washed & applied an anti-fungal coating to the exterior of the two elevated storage tanks
- Installed mobile radio system in all department vehicles
- Renovated "Building C" at the Chatham Rd. wellfield to provide for indoor storage of waterworks materials & function as an indoor workshop.
- Switched from Sodium Hydroxide (Naoh) to Potassium Hydroxide (Koh) for pH adjustment. Potassium Hydroxide is a more stable chemical and can handle temperature fluctuation without freezing.
- Replaced 2 vehicles in the departments fleet
- Implemented a program for large meter replacement which includes all meters in the distribution system larger than 1 ½"
- Began engineering for water main improvements on Lower County Rd.

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 the 2017 Public Water Systems Award for outstanding performance and achievement.

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 **699,220,784** million gallons of water in 2017. 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 Potassium Hydroxide (KOH) and Sodium Hypochlorite (Chlorine). KOH 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 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
Nitrite as N (ppm)	2/27/2017	1	1	0	0 ppm	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits	No
Nitrate as N (ppm)	2/28/2017	10	10	2.1	ND-2.1 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	----	0	5%	0	Naturally present in environment	No
Fecal Coliform or *E. Coli*	Weekly	----	0	*	0	Human and animal fecal waste	No
* Compliance with the fecal coliform/E.coli 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)	2/28/2017 3/9/2017 5/17/2017 8/10/2017 12/21/2017	20-40	70	1.6	ND-1.6	Fuel additive; leads and spills from gasoline storage tanks.	No
Dibromochloromethane (ppb)		---	---	4.5	ND-4.5	Trihalomethanes; byproduct of drinking water chlorination.	No
Bromoform (ppb)		---	---	2.8	ND-2.8	Trihalomethanes; byproduct of drinking water chlorination.	No
Bromodichloromethane (ppb)		---	---	0.77	ND-0.77	Trihalomethanes; byproduct of drinking water chlorination.	No
Chloroform (ppb)		---	---	2.8	ND-2.8	Byproduct of drinking water chlorination (regulated collectively with total TTHM's; in non-chlorinated sources, chloroform may naturally occurring	No
Chlorodibromomethane (ppb)		---	---	0.95	ND-0.95	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 2017	0.26	0.03-0.90	4	4	Water additive used to control microbes	No
Total Trihalomethanes (THHMs) (ppb)	8/10/2017	6.9	1.4-12	80	---	Byproduct of drinking water chlorination	No
Haloacetic Acids (HAA5) (ppb)	8/10/2017	1.975	0.64-3.5	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**
Manganese (ppb)	Jan, May, Aug, Dec	ND-440	33.8	50	300*	Erosion of natural deposits

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**

***Manganese**: The Department is required by MassDEP to conduct Manganese sampling at entry points to the distribution system. The average of all entry points was 31 ppb which is below the SMCL. In addition to the mandated Manganese sampling the department also voluntarily conducted secondary contaminant testing of various points throughout the distribution system. The Secondary Contaminant samples are tested for a wide variety of analytes, one of which is Manganese. While it is not mandated to publish voluntary sample results, it is the Departments opinion that transparency is paramount in maintaining public trust. It was within the Departments voluntary Secondary Contaminant testing in December where one of the distribution sample results came back showing 440 ppb Manganese. We believe this result is not truly representative of the water in the distribution system as the average of the 13 other distribution system samples was 4 ppb. It should also be noted that the weighted (by pumping capacity) average manganese levels entering the water system from our wells is 10 ppb which is what makes this appear to be either an isolated anomaly or lab error. The department is currently investigating this isolated result by re-sampling and will advise the public should their be any reason for concern. Drinking water may naturally have manganese and, when concentrations are greater than 50 µg/L(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 µg/L(ppb) and over the short term, EPA recommends that people limit their consumption of water with levels over 1000 ug/L(ppb), 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(ppb), nor should formula for infants be made with that water for longer than 10 days.*