

# REPORT ON WATER QUALITY



## Norfolk DPW - Water Division 2011

PWS ID: #2208000

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The Norfolk Department of Public Works (DPW) is pleased to provide you with this 2011 Report on Water Quality. The Norfolk DPW continuously strives to produce the highest quality water possible to meet or surpass everyday water quality standards. We are committed to supplying our customers with a safe and adequate water supply at reasonable cost.

In order to ensure that tap water is safe to drink, the Department of Environmental Protection (DEP) and the Environmental Protection Agency (EPA) prescribe regulations that limit the amount of certain contaminants in water provided by Public Water Systems (PWS). The standards we operate under were enacted by the U.S. Congress as the Safe Drinking Water Act (DWA) of 1974, and were amended in 1986 and 1996. The Food and Drug Administration (FDA) and the Massachusetts Department of Public Health (MDPH) regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

We encourage public interest and participation in our community's decisions affecting drinking water. Meeting dates for the Board of Selectmen are posted at the Town Hall and published on the town's website, [www.virtualnorfolk.org](http://www.virtualnorfolk.org). The Norfolk DPW is located at 33 Medway Branch, off of Boardman Street. If you would like to know more about the Norfolk water supply, or if you are interested in participating the decision making process, please contact us at (508) 528-4990 with questions, comments or concerns.

The Water Division continues to work closely with our consultants to locate additional leaks. The town has continuously brought in leak detection experts and is working diligently to have the leaks repaired. At this time the town has realized an overall improvement in unaccounted for water and has seen significant decreases in UAW since 2009. The town side leaks are being repaired within two weeks of being discovered and we continue to work with residents who have leaks on their side of the water service. The pump stations in 2009 were operating on average about 20 hours per day, now they operate on average about 12 hours per day during peak times. For the first time in several years we conducted our system wide flushing program and did not have to rely on assistance from our neighboring towns to supply additional water during this time.

During the past year we resumed our system wide flushing program. This work is done to ensure that the water mains are clean and water quality is maintained in the distribution system. We will continue this and other programs in an effort to lift the required chlorination of the system by MassDEP. We have been working closely with MassDEP and completing tasks required by the department in order for them to consider lifting the chlorination requirement. The Water Division will look into additional system wide improvements in order to comply with MassDEP over the next year.

The Water Division continues to work closely with our consultants to locate additional water supplies to improve the redundancy and overall reliability of the water system. We have been meeting with the surrounding towns to discuss improvements and possible changes to interconnection to ensure the Town of Norfolk has adequate, quality water for its residents. Finally in order to insure that there is sufficient water supply in the case of an emergency, we are working with the Town of Franklin to install another emergency interconnection. We will work closely with the town over the next year in an attempt to get this connection installed and operational.

Please keep in mind that during the long hot summer months all residents should do their best to conserve water. The Town of Norfolk Water Division is currently in a water ban. All information regarding this ban can be found on the town's website or by calling our office at 508-528-4990. We thank everyone in advance for your continued adherence.

### Water Source & Treatment

Norfolk's water is supplied from four gravel-packed wells that draw from the Charles River Watershed. Gold Street Wells, 2208000-01G and 2208000-01AG, which are located near the intersection of Medway Street and Myrtle Street; and the Spruce Road Wells, 2208000-02G and 2208000-04G, located at the intersection of Mirror Lake Avenue and Spruce Road.

Your water is delivered to your home through 57 miles of water main and stored in two 1.0 million gallon storage tanks. The Pondville Tank is located off Sharon Avenue, and the Weeber Tank is located off Meetinghouse Road behind Town Hall.

In addition, the Town of Norfolk maintains permanent interconnections with the Town of Wrentham, the Wrentham Development Center, the Town of Franklin, and MCI Norfolk. Additional emergency interconnections are maintained with the towns of Walpole and Medfield.

In order to meet state and federal requirements for public drinking water, our source water receives treatment before it is supplied to our customers. The pH of the water at both well locations is increased with sodium hydroxide to reduce its corrosiveness in household plumbing and a polyphosphate is added to sequester iron and manganese, as well as to coat the water mains to assist with corrosion control. At Spruce Road, aeration removes dissolved CO<sub>2</sub>, thus raising pH and reducing radon, and is disinfected with a state-of-the-art UV (ultraviolet) light system. Testing throughout the water system has shown that this treatment has been effective at reducing lead and copper concentrations. Emergency chlorination systems are also available at all locations. All chemicals are approved for water treatment by one or more of the following organizations: National Sanitation Foundation International (NSF), or UL, both accredited by the American National Standards Institute (ANSI). Chemicals also have to meet performance standards established by the American Water Works Association.

## NORFOLK WATER DEPARTMENT 2011 CCR TABLES

**WATER QUALITY SUMMARY:** Although we ran hundreds of tests, we only list the substances that were at or above minimum detection limits. Unless otherwise noted, sample dates are for the year 2011 or within 5 years if we tested negative, or were not required to test in 2011 for previously detected contaminants.

Regulated Inorganic Contaminants	Date(s) Collected	MCL	MCLG	Highest Result	Detected Range	Major Sources	Violation (Y/N)
Nitrate (ppm)	4/12/11 4/19/11 6/21/11	10	10	2.7	0.18 - 2.7	Runoff from fertilizer use; leaching from septic tanks; natural deposits	N
Barium (ppm)	4/12/11 4/19/11 6/21/11	2	2	0.034	0.018 – 0.034	Erosion of natural deposits	N
Fluoride (ppm)	4/12/11 4/19/11 6/21/11	4	4	0.12	0.09 – 0.12	Erosion of natural deposits	N
Perchlorate (ppb)	4/12/11 9/7/11 9/20/11	2	--	0.22	0.18 – 0.22	Rocket propellants, fireworks, munitions, flares, blasting agents	N

Radioactive Contaminants	Date(s) Collected	MCL	MCLG	Highest Result	Detected Range	Major Sources	Violation (Y/N)
Gross Alpha (pCi/l)	3/1/11 4/12/11	15	0	2.69	0.0 – 2.69	Erosion of natural deposits	N
Radium 226 & 228 (pCi/l)	9/28/10 11/30/10	5	0	0.92	0.0 – 0.92	Decay of natural and manmade deposits	N
Beta Particles (pCi/l)	11/30/10	50*	0	2.17	--	Decay of natural and manmade deposits	N

\* The MCL for beta particles is 4 mrem/yr. EPA considers 50 pCi/l to be the level of concern for beta particles.

Lead and Copper*	DATE COLLECTED	90 <sup>th</sup> PERCENTILE	Action Level (AL)	MCL G	# SITES TESTED	# SITES ABOVE AL	TYPICAL SOURCE OF CONTAMINATION	Exceeds AL (Y/N)
Lead (ppb)	11/15 – 11/22/10	2.0	15	0	41	0	Corrosion of household plumbing systems	N
Copper (ppm)	11/15 – 11/22/10	0.5	1.3	1.3	41	0	Corrosion of household plumbing systems	N

\*Lead and copper compliance is based on the 90<sup>th</sup> percentile value, which is the highest level found in 9 out of every 10 homes sampled. This number is compared to the action level for each contaminant.

Unregulated and Secondary Inorganic Contaminants	Date Collected	Highest Detection	Average	SMCL	ORSG	Possible Sources
Sulfate (ppm)	4/12/11 4/19/11 6/21/11	16	14.3	250	--	Natural sources
Sodium* (ppm)	4/12/11 4/19/11 6/21/11	60	49	--	20	Natural sources; runoff from road salt
Manganese **(ppm)	4/5/11 4/19/11	344	231.2	50	--	Erosion of natural deposits
Radon*** (pCi/l)	9/28/10	250	--	--	10,000	Natural sources

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

\*\*EPA has established a lifetime health advisory (HA) of 300 ppb for manganese to protect against concerns of potential neurological effects, and a one day and 10 day HA of 1,000 ppb for acute exposure.

\*\*\*Radon is an odorless, tasteless gas that occurs naturally from the breakdown of uranium in soil. Radon can enter a home through cracks in the foundation. Radon can also get into indoor air when released from tap water. The current guidance for radon in drinking water in Massachusetts is 10,000 picocuries per liter (pCi/l). Typically this would result in an increase of 1 pCi/l to the air inside the home. EPA currently advises people to take action if the total level of radon in their household air is above 4 pCi/l. Breathing in radon gas over a long period of time can increase your risk of getting lung cancer. Drinking tap water containing high amounts of radon may increase your chances of developing stomach cancer. For more information about radon, contact the EPA at 1-800-SOS-RADON.

# NORFOLK WATER DEPARTMENT

## 2011 CCR TABLES

(continued)

Regulated Organic Contaminants	Date(s) Collected	MCL	MCLG	Highest RAA*	Detected Range	Major Sources	Violation (Y/N)
Total Trihalomethanes (ppm)	8/30/11	80	0	N/A	31.9 – 50.3	Byproduct of drinking water chlorination.	N
Haloacetic Acids (ppm)	8/30/11	60	0	N/A	2.0 – 6.7	Byproduct of drinking water chlorination.	N

\*RAA – Running Annual Average – not required to test regularly; results are for one quarter only.

Regulated Disinfection Byproducts	Date(s) Collected	MCL	MCLG	Highest RAA	Detected Range	Major Sources	Violation (Y/N)
Free Chlorine (ppm)	Monthly July-December	4	4	0.20	0.0 – 0.68	Water additive used to control microbes.	N

Bacteria	Highest # of Positive Samples in a Month	MCL	MCLG	Possible Sources	Violation (Y/N)
Total Coliform (TC) Bacteria	2	1	0	Naturally present in the environment	Y
E.coli	0	*	0	Human and animal fecal waste	N

\*Compliance with the E. coli MCL is determined upon additional repeat testing.

On June 21, 2011, TC bacteria was detected at a routine sample site in town. In response to that detection, repeat samples were taken, and a second detection prompted immediate chlorination of the system. All samples taken since chlorination have been negative for TC and E.Coli. This violation was reported to our customers through a Public Notice, a copy of which is available for review on our website. We continue to closely monitor the system for coliforms, and are currently looking into ways to install a permanent disinfection system.

### Terms and Abbreviations used in the Table:

**AL** = Action Level – The concentration of a contaminant that, if exceeded, triggers treatment or other requirements, which a water system must follow.  
**MCL** = Maximum Contaminant Level – The highest level of a contaminant in drinking water. MCLs are set as close to the MCLGs (see below) as feasible using the best available treatment technology.  
**MCLG** = Maximum Contaminant Level Goal – The level of a contaminant in drinking water below, which there is no known expected risk to health. MCLGs allow for a margin of safety.  
**Total Coliform** = A bacteria that indicates other potentially harmful bacteria may be present.  
**Unregulated contaminants** – These are substances without MCLs for which EPA requires monitoring. For some of these substances, the Massachusetts Office of Research and Standards (ORS) has developed state guidelines or secondary MCLs.

**SMCL** = Secondary Maximum Contaminant Level – Standards are developed to protect the aesthetic qualities of drinking water and are not health based.  
**ORSG** = Massachusetts Office of Research and Standards Guideline – This is the concentration of a chemical in drinking water, at or below which, adverse, non-cancer health effects are likely 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 (measure of radioactivity)  
**ppm** = Parts per million, or milligrams per liter (mg/l)  
**ppb** = Parts per billion, or micrograms per liter (ug/l)  
**mrem/yr** = millirems per year (a measure of radiation absorbed by the body)  
**90<sup>th</sup> Percentile** = The highest value found out of 90 percent of the samples taken in a representative group. Nine out of every 10 homes sampled were at or below this level.

### Sources of Drinking Water and Drinking Water Contaminants:

The sources of drinking water in the United States (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, may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- **Inorganic contaminants**, such as salts and metals can be naturally-occurring or result from urban storm water runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, and farming.
- **Pesticides and herbicides**, may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses.
- **Organic chemical contaminants**, include synthetic and volatile organic chemicals that 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** can be naturally occurring or be the result of oil and gas production, and mining activities.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contamination. 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) or the Massachusetts Department of Environmental Protection (DEP) 617-292-5885. [www.state.ma.us/dep](http://www.state.ma.us/dep)

**Contamination from Cross Connection:**

Cross-connections that could contaminate drinking water distribution lines are a major concern. A cross-connection is any point where a drinking water line connects to equipment (boilers), systems containing chemicals (air conditioning systems, fire sprinkler systems, irrigation systems) or water sources of questionable quality. Cross-connection contamination can occur when the pressure in the equipment or system is greater than the pressure inside the drinking water line (backpressure). Contamination can also occur when the pressure in the drinking water line drops due to fairly routine occurrences (main breaks, heavy water demand), causing contaminants to be sucked out from the equipment and into the drinking water line (backsiphonage).

Outside water taps and garden hoses tend to be the most common sources of cross-connection contamination at home. The garden hose creates a hazard when submerged in a swimming pool or when attached to a chemical sprayer for weed killing; garden hoses that lay on the ground may be contaminated by fertilizers, cesspools or garden chemicals. We recommend the installation of hose bibb type vacuum breakers on all outside spigots. This will protect you, the homeowner, against the potential cross connection contamination of your outside garden hose.

Community water supplies are continually jeopardized by cross-connection unless appropriate valves, know as backflow prevention devices, are installed and maintained. The Town of Norfolk has an active cross connection control program. We survey all industrial, commercial and institutional facilities in the service area to insure that all potential cross-connections are identified and eliminated or protected by a backflow preventer, and test all backflow devices as required by Mass DEP and the Cross Connection Control Section (310 CMR 22.22) of the Commonwealth of Massachusetts Drinking Water Regulations that they are providing maximum protection.

**Is Our Water Safe for Everyone?**

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 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 (1-800-426-4791).

**SWAP (Source Water Assessment and Protection):**

The Massachusetts DEP has prepared a Source Water Assessment Program (SWAP) Report for Norfolk DPW. The report assesses the susceptibility of public water supplies to contamination and makes recommendations. This report is available from WhiteWater, Inc. located at 253B Worcester Road, Charlton, MA, Norfolk DPW, Board of Health and also at the DEP website: [www.state.ma.us/dep/water/drinking/swapreps.htm](http://www.state.ma.us/dep/water/drinking/swapreps.htm).

A susceptibility ranking of **high** was assigned to both wells in our system by the DEP due to the absence of hydro-geologic barriers (i.e. clay). Both Spruce Road and Gold Street wells are gravel-packed and presently meet all US Environmental Protection Agency (EPA) and MA DEP drinking water quality standards.

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius (400 ft) and a Zone II protection area. Zone I is owned and controlled by the Norfolk DPW and limited to only water supply activities. Zone II is defined as the primary recharge area for each well. To ensure wellhead protection, all construction plans in Norfolk are reviewed by the DPW with emphasis given to those in close proximity to Zone II.

In concert with its certified operator, WhiteWater, Inc., the Norfolk DPW is addressing the concerns as stated in the SWAP Report and welcomes your input to our planning. If you have any questions please contact Robert J. McGhee, Director of Public Works, at (508) 528-4990.

**Department of Public Works Contact Information:**

The Norfolk water system is operated and maintained by the Department of Public Works, Water Division. If you have any questions about this report, please contact: Robert J. McGhee, Director of Public Works at 508-528-4990.

Department of Public Works, 33 Medway Branch Road, Norfolk, MA 02056; office hours are Monday through Friday; 8:00 am to 3:30 pm; 508-528-4990. For water problems outside of normal hours, please contact the Norfolk Police Department at 508-528-3206 and one of our representatives will contact you immediately.

TOWN OF NORFOLK  
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