

# Dennis Water District

Town of Dennis

## 2006 Annual Water Quality Report

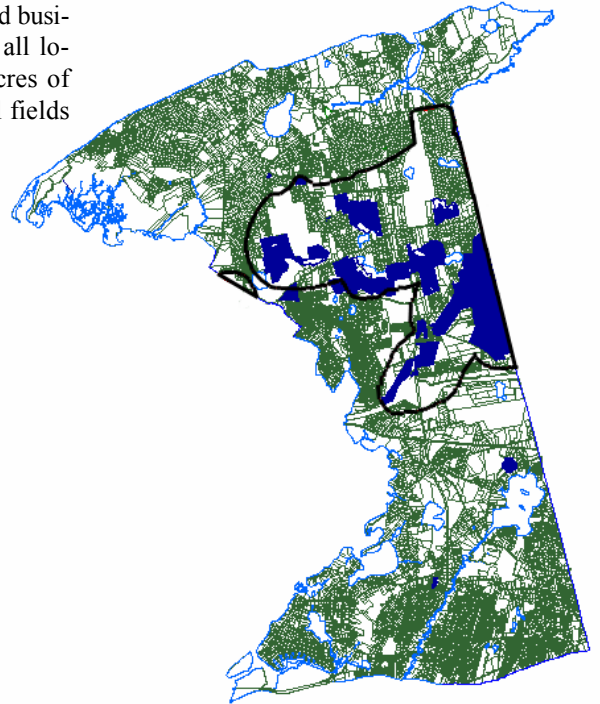
MA Public Water Supplier ID # 4075000

**Dear Customer:** We are pleased to provide you with our latest water quality summary covering the past year. The Safe Drinking Water Act (SDWA) requires that utilities issue an annual "Consumer Confidence Report" to customers in addition to other notices that may be required by law. This report details our sources of water, what it contains, and the problems and risks our testing and treatments are designed to prevent. The Dennis Water District is committed to providing you with the safest and most reliable water supply possible. Informed consumers are our best allies in maintaining safe drinking water.

**Our water supply meets all state and federal water quality standards.** We encourage public interest and participation in our community's decisions affecting drinking water. The Board of Water Commissioners meets regularly on the first Thursday of each month at 4 p.m. at 80 Old Bass River Road, S Dennis. Meetings are subject to change, so please call ahead to confirm the date and time (508-398-3351). The public is welcome. You are also invited to express your comments or concerns by mailing a letter or sending an email. Please visit our website at [www.denniswater.org](http://www.denniswater.org).

**Water Sources** In 2006, the Dennis Water District supplied the residents and businesses of the town with 972,000,000 gallons of groundwater pumped from 22 wells all located north of the Mid-Cape Highway. Our wells are situated on more than 1028 acres of watershed property owned or protected by the District. The following is a list of well fields including the wells that operate in those fields.

Wells 1, 2, 3, 12, 23	Old Chatham Road	2,100 GPM
Wells 4, 6, 11, 22	Old Bass River Road	1,600 GPM
Well 5	Route 134	500 GPM
Wells 7, 8, 10	Airline Road	1,300 GPM
Well 9	Grassy Pond Road	600 GPM
Wells 14, 15	Bakers Pond Road	1150 GPM
Well 16	Timber Lane	450 GPM
Well 18	Hokum Rock Road	700 GPM
Wells 19, 20	Setucket Road	1,400 GPM
Main Station	80 Old Bass River Road	700 GPM
Well 21	Route 134	700 GPM



Emergency backup supplies would come from surrounding towns if mutual aid was needed. We have three interconnections with the Town of Yarmouth, three with the Town of Harwich and one with the Town of Brewster. Mutual backup was supplied to Harwich due to a water main break in 2006.

During the year, the District continued its purchase of property for water supply protection by acquiring 6.7 acres on Hokum Rock Road (a/k/a Dennis Drive-In). This will provide additional protection for Well #18, which is located in a commercially zoned area. The District also purchased two permanent conservation restriction easements in the Town of Brewster. The easements will prevent development of approximately 60 acres of land within the Zone II for a number of District wells.

**New Water Source** In 2006, the District finalized the work on Well #23, our newest water supply. It was placed into service shortly after the summer season. This new source expands our network of withdrawal points enabling greater pumping rotation to be distributed over a wider area. The addition of new wells over the past several years has significantly improved our ability to continue providing water as needed, even in the event of a major failure, such as a mechanical problem. Our ability to serve the town without interruption has never been greater.

**Dennis Source Water Assessment** This assessment was completed by DEP to delineate the boundaries of those areas providing source water to our public water supply wells and identify, to the extent practicable, the origins of any future contaminants in the delineated area. No areas of contamination were found. The conclusions of the report found that the District has done a good job protecting its sources by acquiring or permanently restricting 1028 acres of watershed, working with the Board of Health to update our Wellhead Protection District and sponsoring yearly Household Hazardous Waste Collection Days. The report recommends that the District continue to educate consumers, through its newsletters, about source protection and to work with local businesses to ensure proper storage and handling of hazardous materials. The zones of contributions to our wells are outlined on the map above. A larger more detailed map is available at the District office and the Town of Dennis Board of Health office. Additional information about the Source Water Assessment can be obtained from the Massachusetts Department of Environmental Protection at <http://www.state.ma.us/dep/brp/dws>.

**Memberships** The District is a member of the following organizations: American Water Works Association, Massachusetts Water Works Association, New England Water Works Association, Plymouth County Water Works Association and Barnstable County Water Utilities Association.

**Our Goal** *The District has provided water and water related services to consumers within the Town of Dennis for more than sixty years. We are committed to supplying our current and future customers with a safe and adequate water supply for fire protection and domestic use at a reasonable cost. We will take all practical measures to protect the water system's assets.*

**How To Read This Table** The table on the adjacent page shows the results of our water quality analyses. Every regulated contaminant that we detected in the water, even the most minute traces, is listed here. The table contains the name of each substance, the highest level allowed by regulation (MCL), the ideal goals for public health (MCLG), the highest level actually detected, the highest to the lowest ranges detected from all our wells, the usual sources of such contamination, footnotes explaining our findings, and a key to units of measurement. Definitions of MCL and MCLG are important.

**(MCL) Maximum Contaminant Level:** 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.

**(MCLG) Maximum Contaminant Level Goal:** 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.

**(MRDL) Maximum Residual Disinfectant Level:** The highest level of disinfectant (chlorine) allowed in drinking water.

**(MRDLG) Maximum Residual Disinfectant Level Goal:** The level of a drinking water disinfectant below which there is no known expected risk to health.

**(SMCL) Secondary Maximum Contaminant Level** These levels of a contaminant are developed to protect against the aesthetic qualities of drinking water and are not health based

**Water-Quality Table Notes** Lead and copper are elements that occur naturally in the environment. When these two elements are found in our drinking water, it is most often the result of water interacting with materials found in plumbing, not from the water source. Since 1993, the water has been treated with potassium hydroxide to raise the pH from 5.5 to 7.0. The reason for this is to minimize the corrosion of plumbing and the consumer's exposure to lead and copper. Due to the effectiveness of this treatment, the District has been placed on a reduced monitoring program. Since treatment began, we continue to meet the requirements of the Safe Drinking Water Act.

<sup>1</sup> Because of our treatment success with lead and copper the District is required to test for these elements every three years and these results are from the latest set of samples taken as indicated in the date in the table.

<sup>2</sup> Chloroform occurs naturally here on Cape Cod. Future studies by DEP are planned to determine the reasons for this.

<sup>3</sup> Sodium can occur naturally and can also be attributed to road runoff.

<sup>4</sup> The aesthetic limits for iron and manganese are .3 ppm and .05 ppm respectively.

\* Data present is from the most recent testing done in accordance with regulations. Most of the data in this table is from this reporting year, however monitoring for some contaminants is less than once a year. The last dates these contaminants were tested for are in the table.

While some of our wells exceed the levels for iron and manganese, the limits were established for aesthetic reasons and *not* for health concerns. Levels above the recommended limits have been known to cause discoloration, taste and odor problems. They have been present in our water system as long as the District has been pumping water. We continue to monitor the iron and manganese in our wells. Various treatment and funding options are currently being discussed. Fifty thousand dollars was appropriated in the FY 2007 budget to study iron and manganese removal.

**Unregulated Contaminants** 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.

**Total Coliform Violation** The Total Coliform Rule requires systems to test for bacteria on a regular monthly schedule based on the population served. During routine sampling this past year, the District had a detection of total coliforms. Coliforms are bacteria that are naturally present in the environment and are not harmful themselves; however, their presence can be an indicator that other potentially harmful bacteria may also be present. Routine samples at a number of locations showed coliforms. Upon notification of the sample results, the District began a light chlorination and flushing of the system while repeat samples were tested. The Hokum Rock Tank was suspected as a possible source of the problem and was chlorinated while on line. We believe the most likely cause was the seasonal temperature change in the water and a biofilm growth in the tank system. The District has all the necessary tools to address these problems when they occur. We have made changes in the system and will continue to implement modifications with the goal of eliminating any re-occurrence. An earlier study of the District's water supply identified the existence of a biofilm in the distribution system. It is common to all water systems. Generally, biofilm is harmless, but needs to be controlled so that it does not become a water quality concern. This is accomplished by routine maintenance of the distribution and storage systems. Flushing of the water mains is the most affective cure to eliminate biofilm.

**Lead & Copper** During 2005, the District tested for Lead & Copper by taking samples from 60 homes. Lead was detected in 6 samples above the action level. We believe these results were due to improper sampling techniques. Repeat samples showed good results. A complete list of all the contaminants tested by the District in 2005 is available upon request or by visiting the District office during regular business hours: Monday through Friday 8 a.m. to 4 p.m. **The following is mandatory language required under the regulations.**

*"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 homes plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested. Flush your tap for 30 seconds to 2 minutes before using tap water to reduce lead content. Additional information is available from the Safe Drinking Water Hotline, 1.800.426.4791."*

**Radionuclides Monitoring Regulations** The purpose of this 2003 regulation is to reduce the exposure to radionuclides in drinking water and in turn reduce the risk of cancer. The state allowed an initial round of samples to be taken for Gross Alpha Particle, Radium 226 and 228. Our sample results, along with the MCL or limits, are included in the table on the adjacent page.

**What does this all mean?** *Our water supply is safe!* As you can see in our table, the District experienced no violations during 2006. The District takes more than 1,000 samples for various contaminants each year as required by EPA and DEP. Some detections are made at low levels yet all were within required limits. It is not possible to include all the contaminants that we test for in the space provided; nor, is it required. A complete list can be obtained on request by contacting the District or by visiting our website.

Contaminant	Date Tested	Unit	MCL	MCLG	Highest Detected Level	Range Lowest to Highest	Major Sources	Violation
<b>Inorganic Contaminants</b>								
Nitrate	01/23/06	ppm	10	10	2.7	.1 - 2.7	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits	NO
Sodium <sup>3</sup>	02/14/06	ppm	NA	NA	100	9 - 100	Run off from use of salt on roads	NO
Fluoride	02/14/06	ppm	4	4	0.08	ND - .08	erosion of natural deposits	NO
<b>Radioactive Contaminants</b>								
Alpha Emitters*	07/23/02	pCi/L	15	0	1	.9 - 1.3	Erosion of natural deposits	NO
Gross Alpha Activity*	08/27/03	pCi/L	15	0	1.7	0 - 1.7	Erosion of natural deposits	NO
Radium 226*	08/27/03	Pci/L	5	0	0.2	0 - 0.2	Erosion of natural deposits	NO
Radium 228*	01/21/05 & 08/27/03	Pci/L	5	0	1.3	0 - 1.3	Erosion of natural deposits	NO
<b>Volatile Organic Contaminants</b>								
HAA5 Haloacetic Acids	Jan - Dec 2006	ppb	60	NA	4.4	ND - 4.4	By-product of drinking water chlorination	NO
THHM Trihalomethanes	Jan - Dec 2006	ppb	100	NA	14	ND - 14	By-product of drinking water chlorination	NO
<b>Unregulated Contaminants</b>								
Chloroform <sup>2</sup>	04/20/06	ppb	NA	NA	4.7	ND - 4.7	By-product of drinking water chlorination	NO
MTBE Methyl Tertiary Butyl Ether	04/20/06	ppb	70	NA	0.58	ND - .58	Fuel additive; leaks and spills from gasoline storage tanks	NO
Radon*	03/19/01	pCi/L	NA	NA	210	180 - 210	See Radon statement	NO
Contaminant	Date Tested	Unit	MRDL	MRDLG	Highest Detected Level	Range Lowest to Highest	Sources	Violation
Free Chlorine	Jan - Dec 2006	ppm	4	NA	0.24	.0-.24	Product of drinking water chlorination	NO
<b>Secondary Contaminants</b>								
Contaminant	Date Tested	Unit	SMCL	SMCLG	Highest Detected Level	Range Lowest to Highest	Major Sources	Violation
Manganese <sup>4</sup>	01/23/06	ppm	NA	0.05	0.29	.01-.29	Naturally present in the environment	NO
Iron <sup>4</sup>	01/23/06	ppm	NA	0.3	1.2	.1 - 1.2	Naturally present in the environment	NO
<b>Lead &amp; Copper</b>								
Contaminant	Date Tested	90th Percentile	# of Sites Exceeded Action Level	# of Sites Sampled	MCL (Action Level)	MCLG	Major Sources	Violation
Lead <sup>1*</sup>	Jun - Sep 2005	9	6	60	15	0	Corrosion of household plumbing Erosion of natural deposits	NO
Copper <sup>1*</sup>	Jun - Sep 2005	0.58	0	60	1.3	1.3	Corrosion of household plumbing Erosion of natural deposits and leaching of wood preservatives	NO
<b>Microbiological Contaminants</b>								
Contaminant	Date	Highest # positive samples taken in a month	Highest % Positive in a Month	MCL	MCLG	Major Sources	Violation	
Total Coliform Bacteria	December 2006	8 of 80	10%	5%	0	Naturally present in the environment	YES	

### Key to Table

AL = Action Level

MCL = Maximum Contaminant Level

MCLG = Maximum Contaminant Level Goal

MFL = Million Fibers per Liter

MRDL = Maximum Residual Disinfectant Level

pCi/l = picocuries per liter (a measure of radioactivity)

ppm = parts per million or milligrams per liter (mg/l)

ppb = parts per billion, or micrograms per liter (µg/l)

ppt = parts per trillion, or nanograms per liter

**Radon** Radon is a radioactive gas that you cannot see, taste or smell. It is a known carcinogen and is found throughout the United States. It can move up through the ground entering homes, of all types, through cracks and holes in the foundation and accumulate to high levels. Radon can also be found in indoor air when released from running tap water associated with showering, washing dishes and other household activities. Radon entering the air from the ground is a more prevalent source than that which may enter the home from running tap water. Breathing air that contains radon can lead to lung cancer. Drinking water containing radon may cause an increased risk of stomach cancer. If you are concerned about radon in your home, you can have the air tested. Testing is inexpensive and easy. If radon is detected in your home at a level of 4 picocuries per liter of air (pCi/L) or greater, you should take steps to reduce the level. Most remedies are simple and affordable. For additional information, call our state radon program or the EPA's Radon Hotline at 800-SOS-RADON or visit the EPA website at <http://www.epa.gov/iaq/radon/pubs/index.html>.

## **Water Treatment Techniques**

**Corrosion Control through pH Adjustment** Many drinking water sources in New England are naturally corrosive (i.e. they have a pH of less than 7.0). The water they supply has a tendency to corrode and dissolve the metal piping it flows through. This not only damages pipes but can also add harmful metals, such as lead and copper, to the water. For this reason it is beneficial to add chemicals that make the water neutral or slightly alkaline. This is done by adding any one, or a combination of several, approved chemicals. The Dennis Water District adds potassium hydroxide to its water. This adjusts the water to a non-corrosive pH. Testing throughout the water system has shown that this treatment has been effective at reducing lead and copper concentrations.

**Sequestration (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, treatment is often desirable. Treatment consists of adding sodium hexametaphosphate to the water. This results in a chemical reaction, known as sequestration, which prevents the iron and manganese from forming nuisance particles. Treatment at various sources has been temporarily discontinued in order to evaluate its effectiveness.

**Disinfection** The District uses sodium hypochlorite or chlorine in the distribution system during our flushing program in the spring and fall each year. Chlorine is added at a rate of .5 ppm as a preventative measure to eliminate any microorganisms. This same process can be activated in the event of bacteria being present in the system.

All chemicals used by the District are approved for water treatment by one of the following organizations; National Sanitation Foundation International or United Laboratories, both accredited by the American National Standards Institute. Chemicals also meet performance standards established by the American Water Works Association.

**Mandatory EPA Health Statement** To ensure that tap water is safe to drink, the Massachusetts Department of Environmental Protection and the Environmental Protection Agency (EPA) prescribe limits on the amount of certain contaminants in water provided by public water systems. The Federal Food and Drug Administration and the Massachusetts Department of Public Health regulations establish limits for contaminants in bottled water.

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 the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791) or by visiting their general website at <http://www.epa.gov>

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 radioactive material, and can absorb substances resulting from the presence of animals or human activity. Contaminants that may be present in source water include:

- (A) Microbial contaminants such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- (B) Inorganic contaminants, such as salts and metals, can be naturally occurring or result from urban storm runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- (C) Pesticides and herbicides, which may come from a variety of sources such as agriculture, storm water runoff, and residential uses.
- (D) Organic chemical contaminants, including synthetic and volatile organics, which are by-products of industrial processes and petroleum production, can also come from gas stations, urban storm water runoff and septic systems.
- (E) Radioactive contaminants can be naturally occurring or the result of oil and gas production and mining activities.

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, persons 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).

**How Will You Be Notified In An Emergency** In the event of a non-acute violation, the District must submit notices within 14 days for publication in local newspapers explaining the violation. The notices will contain important information for consumers and what actions are being taken by the District to achieve compliance.

In the event of an acute violation or an immediate emergency, the District must issue a public notice for release through electronic media (radio, television, etc.) within 24 hours. The notice must explain the situation, including actions or precautions consumers may need to take. The notice will also describe the actions being taken by the District to resolve the problem. While regulations require a 24-hour public notice, our goal is to release the information as soon as possible.

*This report was prepared by David Larkowski, Superintendent of the Dennis Water District. For more information call 508-398-3351.*