Acton Water District

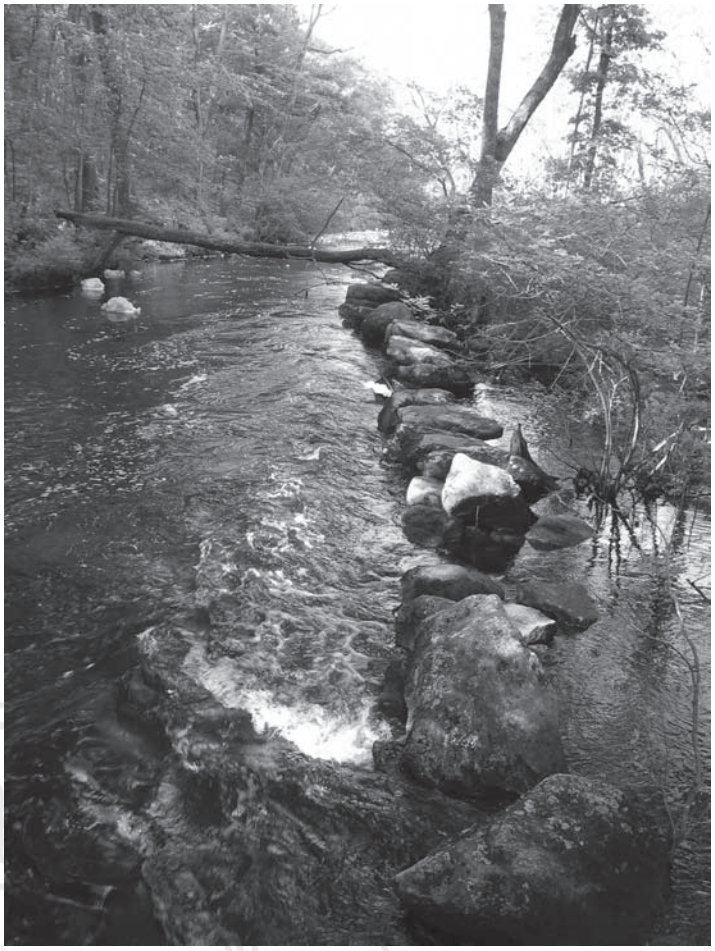
SUMMER 2006

Water Words Notice

DEAR CUSTOMER:

Following unusually wet periods, such as this past spring, customers often ask why we continue to stress water conservation. This is a very good question that I will try to explain in this letter.

The Acton Water District relies on 21 different relatively shallow wells (most of which are less than 42 feet deep) to supply the potable water needs of the community. In simplistic terms, what we are really doing when we pump water from these wells is drawing from the saturated sand and gravel deposits that exist on top of the bedrock. This water "collects" here as rain and snowmelt and slowly seeps into the ground. This water filters down until it reaches the level of the water in the ground, generally referred to as the "water table". It then slowly moves down gradient at speeds that are generally measured in terms of feet per year. Changes to the water table, both when it rises and when it falls, do not occur in a dramatic fashion. These changes occur gradually over extended periods of time. This is different from the very dramatic fluctuations that we see in bodies of surface water, particularly in our streams and rivers when we have a heavy rainfall event.



May 2006 provided Acton with well over a foot of rainfall—overflowing many local streams.

When we get a significant rain event, one where it rains several inches for relatively short periods of time, that water doesn't have time to filter down through the topsoil. In fact, the vast majority of it simply runs off, finding its way to catch basins, drain lines, brooks, streams, rivers, and eventually to the ocean. It provides limited recharge to the areas where we have our wells.

Obviously, that rainfall is still very beneficial in the short term as it decreases everyone's need to use water outdoors. However, 3 or 4 weeks from now if it turns hot and dry and the demand for water increases, the majority of the benefit seen from our most recent rainfall events will be gone.

Right now, we are in good shape. The water table is up and our overall demand for water to be used on lawns and gardens is down. However, it could easily turn hot and dry in the coming weeks and our need to conserve will be as great as ever. As always, we greatly appreciate your willingness to help us conserve!

James L. Deming
District Manager

Kennedy Treatment Plant Update

The Kennedy and Marshall Wellfields, the main sources of public water supply in North Acton, have been historically beset by aesthetic water quality problems—primarily organic color, manganese, and iron. In order to eliminate these problems, during the past two summers, the Acton Water District conducted pilot studies to determine the best treatment technology for these wells.

Five separate treatment technologies were tested on the water of the Kennedy and Marshall Wells. These technologies included several natural and a few "engineered" filtration media, ozonation, and membrane ultrafiltration. None of the pilot test technologies removed organic color and metals to the levels we had hoped. At this point, it appears that several treatment technologies will be needed, resulting in a major upgrade to the Kennedy treatment facility. We continue to investigate various technologies for use at Kennedy/Marshall, and will provide more information in upcoming Water Words Notices regarding the developing plans for a treatment plant in North Acton.

Free Conservation Devices Available

To help you to save water both outside your home and in, the Acton Water District has purchased many items for customers who agree to use them. These include:

- Low flow showerheads
- Low flow faucet aerators
- Faucet flip switches
- Toilet "tank banks" and leak detection tablets
- Outdoor water conservation kits
- Mechanical hose faucet timers
- Soil moisture meters
- Rain gauges

You may pick up one or more of these items, free of charge, at our office anytime between 7:30 AM and 4:00 PM.

Help the Environment and Education in Acton!

Did you know that some companies can recycle your old cell phones and printer cartridges and make them into useful products? The Acton Water District has a drop box in our front lobby (693 Massachusetts Avenue) where you can deposit these items for recycling. Besides the benefit to the environment, each item recycled provides a small donation to the McCarthy Towne Elementary School, a sponsor of this innovative project.

Dedication to Jane Olesin

The Acton Water District lost a good friend and collaborator when Jane Olesin died tragically in a car accident on April 17, 2006. Jane, past president of the Acton Garden Club and an active member of the Acton Garden Club / Acton Water District's collaborative "Water Wise Committee" had been working with the Acton Water District since 2000 on an active and ongoing campaign to help educate Acton residents about the importance of conserving water outdoors. Many residents may remember her conducting landscape conservation audits, presenting information at public forums, or assisting with the design and planting of the Water Wise demonstration garden in front of the Acton Water District headquarters.

Jane had secured two national grants as well as widespread recognition for the work done by the Water Wise Committee, and played a critical role in helping advance the cause of water conservation in Acton and throughout the region. In addition to all those accomplishments, she was a dear friend whose presence will be sorely missed!

Jane Olesin, third from left, meeting with the Water Wise Committee in 2004.

REMINDER

Watering Restrictions in Effect

The Acton Water District Water Use Restrictions go into effect every May 1–October 1, regardless of weather conditions:

- Even # addresses may use water outdoors: ***Tues., Thurs., & Sat.***
- Odd # addresses may use water outdoors: ***Wednes., Fri., & Sun.***
- No lawn watering between 7:00 AM and 7:00 PM (watering mid-day wastes water to evaporation)
- ***No outdoor use on Mondays***

Report on Water Quality

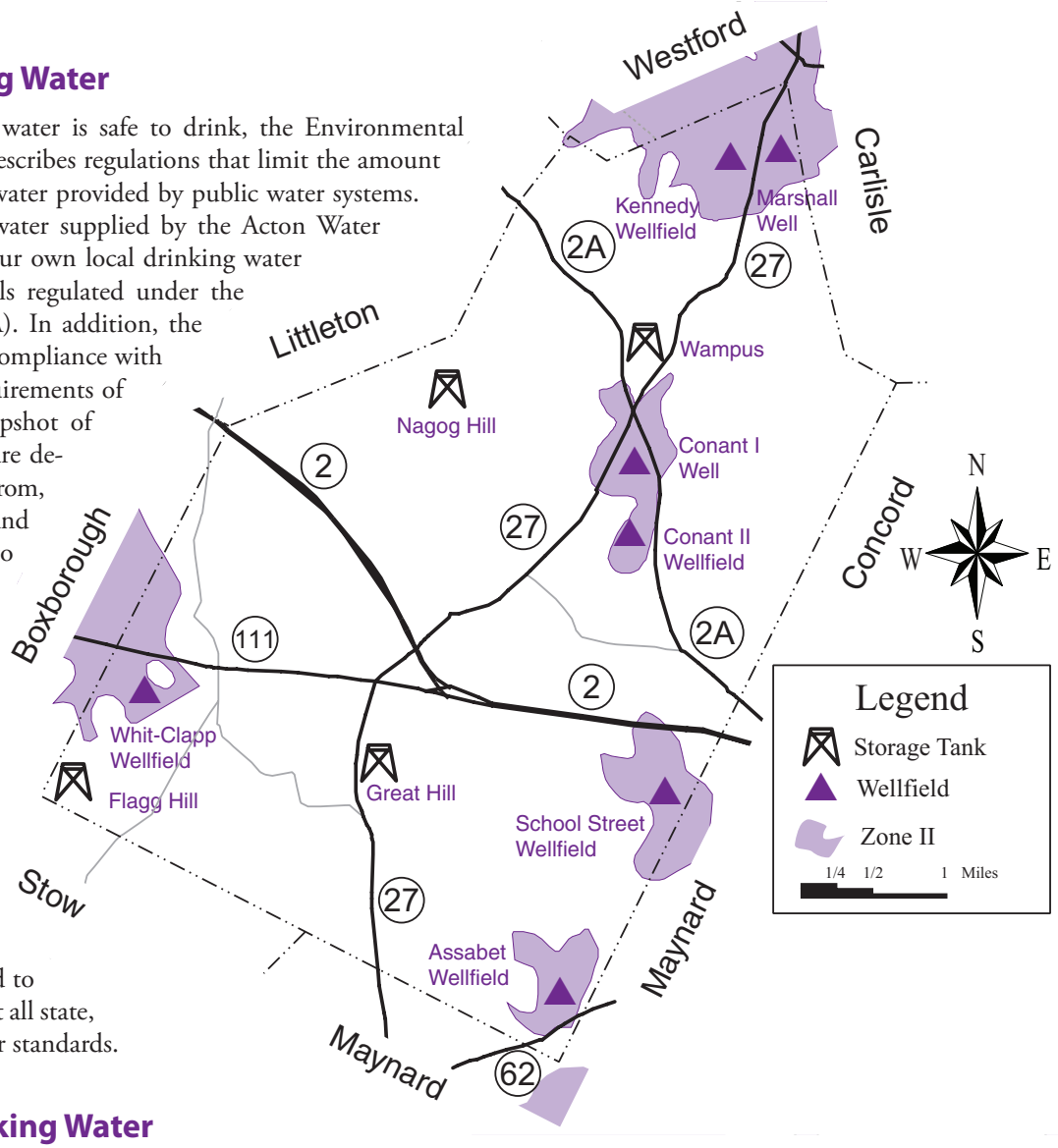
SUMMER 2006 PWS 2002000

Acton Water District

Testing for Your Drinking Water

In order to ensure that tap water is safe to drink, the Environmental Protection Agency (EPA) prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. In 2005, as in years past, water supplied by the Acton Water District met all EPA, state, and our own local drinking water health guidelines for all chemicals regulated under the Safe Drinking Water Act (SDWA). In addition, the Acton Water District was in full compliance with all monitoring and reporting requirements of the SDWA. This report is a snapshot of water quality in 2005. Included are details about where your water comes from, what it contains, how it is treated and distributed, and how it compares to standards set by the Environmental Protection Agency.

The Acton Water District vigilantly safeguards your water supplies by employing multiple barriers for protection, including source water protection, distribution system protection, ongoing monitoring, and treatment. Last year, we collected more than 600 samples and tested them for over 100 different potential drinking water contaminants. We are proud to report that in 2005 your water met all state, district, and federal drinking water standards.



The Source of Your Drinking Water

Your water comes from wells that tap the water held in the ground beneath the town of Acton. The District has twenty-one different wells that withdraw water from seven wellfields located in various parts of town. Water from each well is pumped to treatment facilities located in each of the various wellfields, and then into the distribution system (a network of 120 miles of water mains) where it blends together and is delivered to homes, businesses, schools, and other public users. The map below shows the various wellfields and the critical, protective radius (called Zone II) around each wellfield.

Protection for Your Drinking Water

The Acton Water District employs three important "barriers" to maintain the highest possible quality of drinking water:

- A protective area called Zone II surrounds each of Acton's wells. Land use activities that could adversely affect water quality are restricted within the Zone II area.
- Each of Acton's wells is treated in order to remove impurities and improve the taste of the water. Water treatment specifics are listed below.

- The system of pipes that delivers water to your home is protected by a program that works to minimize "cross connections" between potable (intended for human consumption) and non-potable water. An example of a cross connection is a point where a drinking water pipe might connect to a sprinkler system or to an outside irrigation system.

Why are Impurities in Your Drinking Water?

As water travels through the ground it dissolves naturally occurring minerals. It can also pick up substances resulting from animal or human activity. Contaminants that may be present in source water include:

- **Microbiological** contaminants (such as viruses and bacteria) that may come from septic systems, agriculture, and wildlife.
- **Inorganic** contaminants (such as salts and metals) may be naturally occurring or result from storm runoff, wastewater discharge, mining and farming.
- **Pesticides and herbicides** may come from a variety of sources such as agriculture, storm water runoff, and residential uses.
- **Organic chemical** contaminants are byproducts of industrial processes, 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.

All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some impurities. The presence of an impurity does not necessarily indicate that the water poses a health risk. The Acton Water District has compiled information on drinking water and health in our drinking water resource center. Please feel free to visit or call us for information, or call the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

Treatment for Your Water

To meet local, state, and federal requirements, and to improve taste and appearance, the Acton Water District treats all of its water before it is supplied to our customers. The table below shows the treatment provided at each wellfield.

Treatment	Conant Well	Conant II Wellfield	Marshall Well	School Street Wellfield	Assabet Wellfield	Kennedy Wellfield	Clapp/Whitcomb Wellfield
Aeration *VOC removal*		♦		♦	♦	♦	♦
Aqua Mag *Fe and Mn*	♦	♦		♦	♦	♦	
Chlorination *disinfection*	♦	♦		♦	♦	♦	♦
Fluoridation *tooth decay protection*	♦	♦	♦	♦	♦	♦	♦
pH Adjustment *corrosion control*	♦	♦	♦	♦	♦	♦	♦
Carbon Filtration *taste/color control*							♦

Acton Water District
Est. 1912

New Homeowners Water Conservation Package Available

Are you new to Acton? Are you confused about Acton's water conservation rules and regulations? We now have new residents packets designed to help you better understand the Acton Water District's water conservation rules, regulations and programs. These packets are also full of helpful tips for conserving water. Please stop by the Water District headquarters between 7:30 AM – 4 PM to pick up your informational packet.

Water Quality Data Table

The data presented in the table below are from calendar year 2005. Only compounds that were detected are reported. Because water from all wellfields is blended within the distribution system, these data represent the range of water quality in all wellfields.

Substance (units)	Range of Detects	Level Allowed (MCL)	Goal (MCLG)	Typical Source	Exceeds MCL?
Regulated Substances (MCL has been established)					
Total Coliform	0 -2 positive samples	< 2 samples positive/month	0	Naturally present in the environment	Monthly MCL violated June, July, August
Trihalomethanes (ppb)	2.0 - 5.7 average: 4.1	100	No MCLG	Formed when natural organic material present in the water reacts with chlorine added as a disinfectant	No
Nitrate (ppm)	0.08 - 3.2	10	10	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits	No
Fluoride (ppm)	0.84 - 1.16	4	4	Erosion of natural deposits, water treatment additive for dental health	No
Haloacetic Acids (ppb)	0.0 - 1.8 average: 0.36	60	0	Formed when natural organic material present in the water reacts with chlorine added as a disinfectant	No
1,1 Dichloroethylene (ppb)	0.0 - 5.0	7	7	Discharge from industrial chemical factories	No
Gross Alpha Activity (pCi/L)	0.0 - 4.7	15 pCi/L	0	Decay of natural deposits	No
Radium 228 (PCi/L)	0.1 - 0.7	5 pCi/L	0	Decay of natural deposits	No
Chlorine (ppm)	0.0 - 0.52 0.05: highest running annual average	4	No MCLG	Water additive used to control microbes	No
Unregulated Substances (MCL has not been established)					
Sodium (ppm)	13 - 110	No MCL	No MCLG	Erosion of natural deposits, road salting	Unregulated contaminants have no established MCL
MTBE (ppb)	0.0 - 2.0	No MCL	No MCLG	Gasoline additive	
Chloroform	0.0 - 0.9	No MCL	No MCLG	Formed when natural organic material present in the water reacts with chlorine added as a disinfectant	
Bromodichloromethane	0.0 - 0.6	No MCL	No MCLG	Formed when natural organic material present in the water reacts with chlorine added as a disinfectant	
Lead and Copper (30 sites sampled in September, 2004)					
Substance (units)	90th percentile	# sites above Action Level	Action Level	Typical Source	Exceeds AL?
Lead (ppb)	7.0	0	15	Corrosion of household plumbing systems; Erosion of natural deposits	No
Copper (ppm)	0.55	0	1.3	Erosion of natural deposits; Leaching; Corrosion of household plumbing systems; from wood preservatives	No

TERMS AND ABBREVIATIONS

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.

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.

AL: Action Level: The concentration of a contaminant, which if exceeded, triggers treatment or other requirements which a water system must follow.

pCi/L: picoCuries per liter

ppm: part per million by volume

ppb: part per billion by volume

90th Percentile: The concentration of a substance that falls at the top ninety percent of all values for that substance.

Discussion of Data Table Detections

DETECTION OF TOTAL COLIFORM: Coliform bacteria are naturally present in the environment and are generally not harmful themselves. They are tested as indicators of the presence of other, potentially harmful, bacteria which may cause symptoms including diarrhea, cramps and nausea and associated headaches and fatigue. During the months of June, July and August 2005, two of our distribution samples showed the presence of coliform bacteria. More than one sample positive for total coliform is considered a monthly MCL violation for total coliform. During each instance, the Water District increased the level of chlorination at the sites involved, conducted immediate resamples, and notified customers of a temporary violation in a notice printed in the *Beacon* newspaper and posted around town. Following each instance, resamples showed no coliform present, indicating that the problem had been abated.

SODIUM: Although sodium does not have a Maximum Contaminant Level, the Commonwealth of Massachusetts does have a guideline of 20 parts per million (ppm) for sensitive individuals, such as those on very salt-restricted diets. The Acton Water District notifies the Board of Health of all sodium results, and results of the most recent sodium tests are posted at: the Acton Public Health and Nursing Service offices; the Acton Water District Information Center and website; the Acton Public Library; and the Acton Senior Center. We have noticed an increasing level of sodium in a well closest to our main office garage. It appears that the increased sodium may be due to a soap used to wash district vehicles, so we have discontinued all onsite vehicle washing. Sodium levels in drinking water vary considerably from well to well and month to month. For the most accurate data on sodium levels at your home, an individual tap sample would be necessary.

SOCS: In 2003 the Acton Water District monitored all wells for all regulated synthetic organic chemicals (SOCs). These SOCs are primarily pesticides and herbicides, and are required to be monitored in all public water supplies at regular intervals. Because no SOCs were detected in this or previous cycles of testing, the Acton Water District has received a waiver from frequent monitoring from the Department of Environmental Protection.

MTBE: MTBE (methyl tertiary-butyl ether) is commonly used as a fuel additive to increase the octane rating of gasoline. Health effects (based upon animal studies) associated with MTBE include kidney problems and higher tumor incidence. Recent national surveys indicate that MTBE is being found with increasing prevalence in drinking water, most commonly due to leaks in above and below ground petroleum storage tanks and pipelines. The Acton Water District has detected a very low level of MTBE – well below the EPA Guideline – in the water leaving the Assabet treatment facility. Because treatment at this wellfield does not fully remove MTBE, we are currently discussing modifications to the current treatment facility to more effectively remove MTBE.

VOLUNTARY MONITORING: In addition to the monitoring required by the Safe Drinking Water Act, the Acton Water District voluntarily conducts dozens of additional tests each year to ensure high quality water. For more information on our voluntary monitoring, please contact us.

VULNERABILITY: Some people may be particularly vulnerable to impurities in drinking water. 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/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Water Drinking Hotline (800-426-4791).

Do You Want to Become More Involved?

The Board of Water Commissioners meetings are scheduled on the second and fourth Monday of each month at 7:30 PM, and all citizens of Acton are welcome to attend. If you wish to attend, please call us to confirm the next meeting date. Our Annual Meeting is held on the third Wednesday of March every year. All interested persons are welcome to attend. For more information please check the "Commissioner's Meetings" link on our website: **www.actonh2o.com**

For more information, additional copies, or comments on this report, contact:

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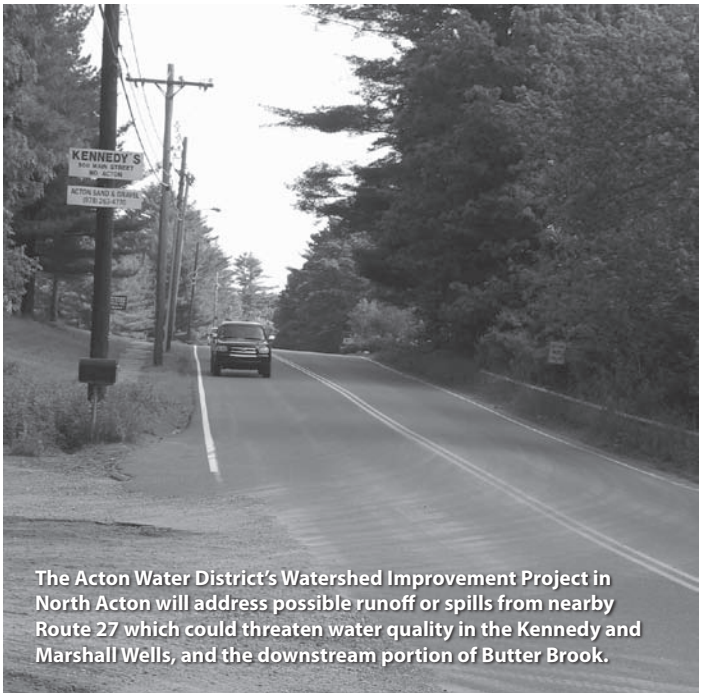
Acton Water District Awarded EOEA Watershed Improvement Grant

The Acton Water District was recently awarded a "Watershed Improvement Grant" from the Massachusetts Executive Office of Environmental Affairs (EOEA) to implement improvements within the Kennedy and Marshall wellhead protection areas. The Kennedy and Marshall Wellfields, located off Route 27 (Main Street) in the Nashoba Brook subbasin, are the only District wells in the rapidly-developing northern portion of Acton.

The Department of Environmental Protection's Source Water Assessment and Protection (SWAP) Report notes that Route 27 runs through both the Marshall and Kennedy wellhead protection areas. The report ranks both of these wellfields as "highly susceptible" to contamination. Additionally, these wellfields are located within the Nashoba Brook subbasin, which has been designated as the only highly stressed subbasin in the entire SuAsCo watershed, due to low flows measured in the Nashoba Brook in North Acton. The Watershed Improvement Project would help address *both* threats to contamination of groundwater and surface water in this area, as well as provide a means to "keep water local" within a stressed subbasin.

The Acton Water District's Watershed Improvement Project will implement two groundwater protection/storm water management technologies to intercept and treat road runoff, stormwater or spills prior to its discharge to groundwater and surface water near the Kennedy/Marshall wells. One technology to be utilized is a pre-cast bio-retention cell (Filterra basin) to allow for better filtration and recharge at the site. The other is an infiltrating water quality swale to intercept road runoff and any spill materials running along the grade of Route 27 towards the Kennedy Wellfield. These technologies will both serve to capture runoff headed from the road towards the wells, allowing for filtering of the suspended solids and a reduction in the velocity of water draining to the nearby brook and wetlands.



The Acton Water District's Watershed Improvement Project in North Acton will address possible runoff or spills from nearby Route 27 which could threaten water quality in the Kennedy and Marshall Wells, and the downstream portion of Butter Brook.

The Water District will be working closely with engineers and various town entities to implement this project. More information on this project will be provided in upcoming *Water Words Notices.*

Robbins Mill Estates Development Invests in Soil

Robbins Mill Estates is a large new residential development in North Acton just off Route 27 (Main Street). During the planning process, the Acton Water District worked with the developers to create ways to minimize water use for the entire development. As a way to ensure that the landscapes created at the Robbins Mill Estates are able to sustain themselves without supplemental watering, fertilizers and pesticides, the developers have mixed up a highly enriched organic soil, which is being laid down over the planned turf area at each residence. Because enriched organic soil has a much greater ability to retain water and provide important plant nutrients, the need for supplemental water and fertilizers on these lawns will be greatly reduced. Homeowners should be able to conserve more water outdoors and save on their water bills, while enjoying healthy turf and plants.

A new lawn area at the Robbins Mill Estates being spread with rich organic soil to help the turf naturally retain water.

Water Words Notice
is published twice a year
for all customers of the
Acton Water District

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David Gerratt
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NonProfitDesign.com

Printed on Recycled Paper

Acton Water District
P.O. Box 953
Acton, MA 01720

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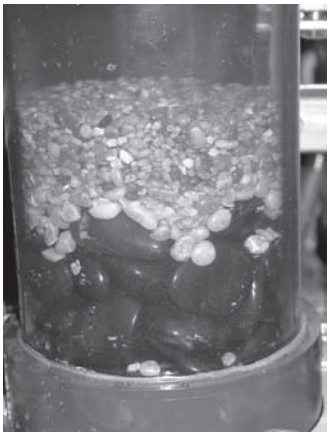
Acton, MA

What is it?

Please email your answers to *webgeek@actonh2o.com*. Winners (and the correct answer) will be posted in the next *Water Words Notice.*

What was it?



The mystery photo included in the Winter 2006 Water Words Notice showed the graded gravel layer that serves as a support to the filter media used at the pilot study for treating water at the Kennedy and Marshall wells. Various media have been tested for color and metals removal at the Kennedy Treatment Facility.

The following readers correctly identified the "mystery photo" of the filter: Mike Speciner, Catherine Meeks, KK Stuart, Paul Kebabian, Nancy Warner, Bob Kouré and Trudy Walther.

Source Water Assessment and Protection Report Available

The Source Water Assessment and Protection (SWAP) program requires states to assess the susceptibility of public water supplies to potential contamination. The Department of Environmental Protection (DEP) has completed its assessment on each of the Zone IIs for the Acton Water District's wells. A susceptibility ranking of "high" was assigned to each Zone II using the information compiled by the DEP. Copies of the SWAP report are available at the Acton Water District, Acton Public Library, Health Office, and online at *www.state.ma.us/dep/brp/dws*.

The Acton Water District has long recognized the susceptibility of its sources, and has worked closely with the town and state to maximize the protection of all of its Zone IIs. The Water District is fully in compliance with the DEP's Source Water Protection Regulations. For more information, please call Jane Ceraso at the Acton Water District (978) 263-9107.