2010 Consumer Confidence Report

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PERMIT No. 33

Resident
Postal Patron
Rural Route Patron

Town of Tewksbury Water Department

PWSID#3295000
Contact Names and/or Numbers:
Water Treatment Plant – Lewis Zediana – (978) 858-0345
Water Billing – (978) 640-4350
Water & Sewer – George DeRoche – (978) 640-4440 ext. 5

Backflow Questions: Tester/Surveyor – (978) 858-0345
Stormwater Questions: Michele Stein PE – (978) 640-4440 x239

Irrigation Meters are now available in Tewksbury. Please see our website for information.

During the past three years, we have been replacing and upgrading all residential and commercial water meters in Tewksbury. If you need your water meter upgraded, are interested in learning more about you water history, or would like to verify there is no leak in your home detected by our new metering system, please call Water Billing at (978) 640-4350.

Water is a Precious Resource. Please Conserve Water Whenever Possible.

The Town of Tewksbury Consumer Confidence Report for 2010

2010 Started wet, but ended dry, very dry….

Confluence of the Merrimack & Concord River.
(Looking upstream from Rte. 38)

2010 was a year where we had a wet beginning, but one of the longest and driest summers. The Town used a total of 950 million gallons of water with a peak usage of 5.4 million gallons in a 24 hour period. During a two week period of extremely hot weather, the plant operated at 75% capacity or 5.25 MGD. Using water from the Colonial Drive storage tank and our new control valve allowed the plant to run at this reasonable pace while other water systems were at or near capacity. This allowed the plant to process water at a uniform and consistent manner which is always best for any water filtration facility. The very low flows in the Merrimack River created challenging situations as the water quality would suddenly change, requiring the operators to quickly alter chemical dosages to maintain the treatment process. Finally the rains came in the fall and the river was back to its consistently good water quality. For the record, the July water volumes (126.4 million gallons) were 17.5% higher than the typical July average and only 7% less than the record monthly total of 136 million gallons.

The Merrimack River is mostly a peaceful meandering river. There are many idyllic sites to be seen such as the one to the right in Tyngsboro, MA. However, the slow stillness serves to help purify the river as natural biological processes remove organic material and the river acts like a clarifier to remove sand and sediment. There are many daily processes that actually allow the river to breathe. During the day, algae use photosynthesis to remove carbon dioxide and replace it with dissolved oxygen. The carbon dioxide is converted to simple sugars thus storing the solar energy. However, during the night when there is no sunlight the algae uses the stored sugars and the dissolved oxygen to produce carbon dioxide in order to survive through the darkness until the sun starts the whole cycle again. This dynamic process is like taking a large breath in during the day and exhaling at night.

The Merrimack River in Tyngsboro.
(Picture Supplied by the MRWC)

The Following Water and Sewer rates will be effective July 1, 2011 for any bills issued after that date:

Water Rates	Current Rate	New Rate		Irrigation Meter	Current Rate	New Rate
0-34,000	7.25 per 1,000	6.67 per 1,000		0-34,000	7.25 per 1,000	6.67 per 1,000
35,000-70,000	10.15 per 1,000	9.44 per 1,000		35,000-70,000	10.15 per 1,000	9.44 per 1,000
71,000-140,000	13.09 per 1,000	12.30 per 1,000		71,000-140,000	26.44 per 1,000	22.98 per 1,000
140,000 +	15.06 per 1,000	15.06 per 1,000		140,000 +	29.75 per 1,000	26.80 per 1,000
Sewer Rates	**Current Rate**	**New Rate**		**Sewer Rates Tax Exempt***	**Current Rate**	**New Rate**
0-34,000	8.66 per 1,000	6.06 per 1,000		0-34,000	8.66 per 1,000	13.42 per 1,000
35,000-70,000	10.41 per 1,000	7.81 per 1,000		35,000-70,000	10.41 per 1,000	16.66 per 1,000
71,000-140,000	13.35 per 1,000	10.68 per 1,000		71,000-140,000	13.35 per 1,000	21.36 per 1,000
140,000 +	14.69 per 1,000	12.49 per 1,000		140,000 +	14.69 per 1,000	23.50 per 1,000

	Current Rate	New Rate
Annual Flat Fee for Residences on sewer with private well:	935.28	909.06

*Tax Exempt: Properties in the town which are exempted from paying real estate taxes.

How Do They Do That? ……Water Treatment

When water is purified, it is cleaned using several types of processes designed specifically to remove certain contaminants or pollutants. Each process is called a unit process and is constantly monitored to ensure that each unit process is working correctly. The facility uses a multiple unit processes in purifying the water. Several of the unit processes can fail before water falls below acceptable discharge standards. But through careful operator control, unit process failure is very rare.

Intake Screens – There are two intake screens located under approximately 10-15 feet of water. Each screen has 1/8" slots cut into the surface to exclude debris and allow water to pass into the pumping system. Occasionally the screens become semi clogged and a large bubble of compressed air is used to clean the surface of the screens. When observed from the shore of the Merrimack River it looks like a small explosion of air on the surface. This system can actually break through 1-2 inches of ice.

Chlorine Dioxide and Sodium Hypochlorite – Both of these chemicals are used to oxidize and disinfect the water. Only one dosage of either of these chemicals is required to kill off all of the bacteria in the water. We actually use the Chlorine Dioxide once and the Sodium Hypochlorite twice. This triple threat ensures our 23 year record of no bacterial detects will stay intact.

Alum and Powered Activated Carbon ─ Alum (Aluminum Sulfate) is used to produce a gelatinous sticky floc that surrounds and captures all of the particles/ bacteria and organic matter and removes them from the water through a careful settling process called clarification. The Powered Activated Carbon is the same carbon used in home filters, but is ground to a consistency of talcum powder. It is added to help absorb taste and odor and reduce the formation of disinfection by-products such as Trihalomethanes (THM) and Haloacetic acids (HAA). Powered Activated Carbon also helps the Alum work better, by giving it a place to flocculate onto and acts like a weight, therefore helping the floc to settle faster. In actuality very clean and clear water is harder to purify through our process.

Alum Sludge (Also called Alum Residuals) ─ The leftover settled material is called sludge and because of the Powered Activated Carbon it is normally black to a light brown color. This dilute sludge is passed through our vacuum filters which uses Diatomaceous Earth to remove the solids and produce a clear filtrate that is then recycled back for re-treatment. The facility is very "green" allowing no more than 0.01% in water losses through the whole filtration process. The solids are then collected in a 30 yard container and recycled as top cover in a local landfill.

Granulated Activated Carbon (GAC) Filters ─ The plant has four automatic backwash filters. Each filter has a capacity of 1.8 MGD of filtration capacity. The facility typically filters an average of 2.4 MGD of water through the same four filters. The combination of the 3 feet of GAC and 12 inches of support sand produce water that has typically turbidities approaching that of distilled water (0.02-0.05 NTU). The GAC filters contain over 40,000 pounds of activated carbon, which is used to act as a physical filter to absorb organic materials, taste, and odor and help remove disinfection by-products.

Hydrofluorosilicic Acid (Fluoride) ─ This chemical is used to supply Fluoride to the finished water to prevent dental decay. It is added into the water at a dose between 0.9-1.1 mg/L. This is the required dose and this is the only chemical actually overseen by the State Board of Health (Office of Oral Health). The plant has received awards continuously for many years for our excellence in Fluoridation.

Corrosion Inhibitor ─ Zinc-ortho-Phosphate is used to provide a protective film on all metal surfaces to reduce the leaching of Lead and Copper. This has been very successful for many years as our lead and copper program has attested with passing every round of testing since the program was enacted.

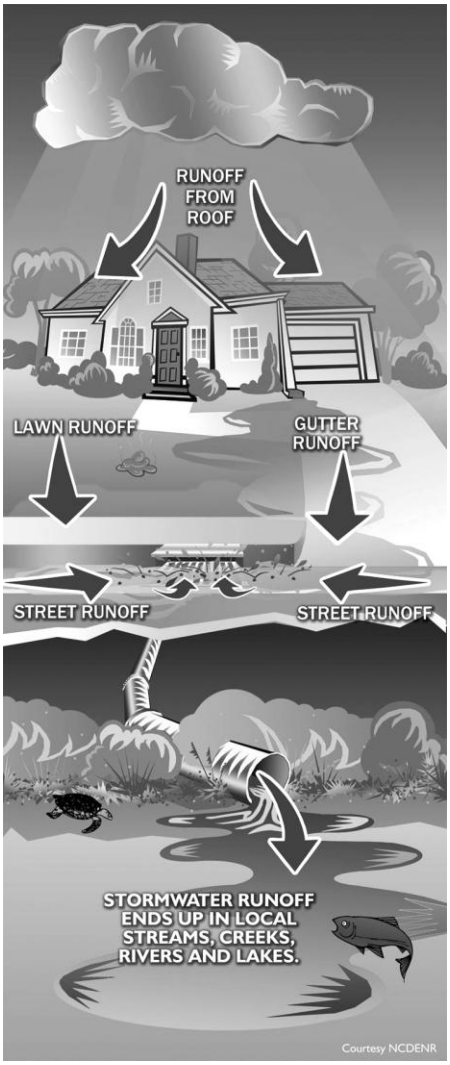
Sodium Hydroxide – Sodium Hydroxide is used to add alkalinity to the water in the pre-treatment system for the Alum to work properly and is also used in the final finished water to increase the final pH to a range of 7.2-7.6. This allows for minimal corrosion (Lead and Copper) and helps stabilize the Chlorine added to the finished water. Our Sodium values are typically in the 40 mg/L range and this equates to about 10 mg of Sodium per 8 oz. of water.

Yearly Compilation of Detected Contaminates and their Maximum Allowable Levels

Contaminant	Highest Level	Range Detected	Average Detect	MCL/ MRDL	MCLG/ MRDLG	Violation Y/N	Possible Source
Perchlorate (PPB)	0.486	N/A	0.486	2	0	N	Oxygen additive for solid fuel rockets & missiles; Industrial waste.
Fluoride (PPM)	1.1	N/A	1.0	4	4	N	Water additive which promotes strong teeth.
Sodium (PPM)	42.0	N/A	42.0	N/A	N/A	N	Natural Sources; runoff from salt used on roadways; by-product of treatment process
Nitrate (PPM)	0.32	N/A	0.32	10	10	N	Runoff from fertilizer use; leaching from septic tanks; erosion of natural deposits.
Turbidity (NTU)	0.10	0.02-0.10	0.04	0.30	<5% over 0.3 NTU	N	Soil runoff
Sulfates (PPM)	25.0	N/A	25.0	N/A	N/A	N	Soil runoff and detergents; by-product of treatment process
TTHM's (PPB)	85	20-85	47	80 Running ave.	N/A	N	By-product of drinking water chlorination
HAA'S (PPB)	21	2-21	11.2	60 Running ave.	N/A	N	By-product of drinking water chlorination
VOC's (PPB)	None Detected	None Detected	None Detected	Varies	0	N	Discharge from industrial chemical factories
Chlorite (PPM)	0.43	0.01-0.43	0.10	1	N/A	N	Disinfection by-product
Total Coliform	0	0	0	<5%	0	N	Naturally present in environment
Contaminant	90th percentile	# of sites exceeded	# of sites sampled	Action level	MCLG	Violation	Testing date: July 2008. Next testing date: July 2011
Lead (PPM)	0.004	0	31	0.015	0	N	Corrosion of household plumbing systems; erosion of natural deposits
Copper (PPM)	0.066	0	31	1.3	0	N	Corrosion of household plumbing; erosion of natural deposits; leaching from wood deposits

What does this information mean?

This table contains all of the detected compounds during the 2010 year. There are many more compounds that are analyzed for and not detected. A few of the compounds will always be found in the water because they are the result of the addition of processing chemicals. **Sulfate** is naturally found in water, but the plant uses Aluminum **Sulfate** as part of the treatment process. Therefore, sulfate will always be detected. **TTHM's** and **HAA's** are found due to the use of Sodium Hypochlorite (bleach). When bleach is added to natural waters, these disinfection by products are typically found. Maintaining theses compounds below the State limits is important and if the limit is exceeded all water users will be notified. Higher than normal levels does not imply that the water is not drinkable. It is our method of tracking the presence of these compounds and keeping them to a minimum. Sodium **Chlorite** is a disinfection by-product from the use of **Chlorine Dioxide.** Our facility is required to test on a daily basis for the presence of **Chlorite**. The notification is your right to know what is in your drinking water. Some compounds are on the table since we believe you, as the water user, would like to see the results; even if they are zero or not detectable. **VOC's** are an analysis of over 60 organic compounds. These compounds range from gasoline additives to other contaminants from industrial pollution. **Nitrates** are formed when naturally occurring nitrogen compounds are oxidized by the disinfectants we use. As you can see in the table, nitrates are typically very low as compared to the limit. **Perchlorate** is always included in our table since the incident many years ago. Even though our water system is no longer required to analyze for Perchlorate, it is sampled and check anyways. The value above is just barely above the method detection limit of about 0.2 parts per billion. **Fluoride** is added to the water to prevent tooth decay, so the value above is a typical target concentration for Fluoride. Finally **Turbidity** is used to measure how "cloudy" the water is. The plant typically produces very clear water with typical turbidity values lower than 0.05 NTU. Occasionally weather events or equipment issues may cause higher values. Turbidity is a process control value and does not cause any ill effects.

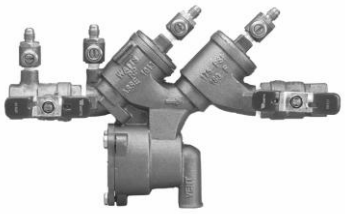


Stormwater Management

Stormwater runoff is generated when precipitation from rain and snowmelt events flows over land or impervious surfaces and does not percolate into the ground. As the runoff flows over the land or impervious surfaces (paved streets, parking lots, and building rooftops), it accumulates debris, chemicals, sediment, or other pollutants that could adversely affect water quality if the runoff is discharged untreated. Green infrastructure applications and approaches can reduce, capture, and treat stormwater runoff at its source before it can reach the sewer system or surface water. Site-specific practices, such as green roofs, downspout disconnections, rain harvesting/gardens, planter boxes, and permeable pavement are designed to mimic natural hydrologic functions and decrease the amount of impervious area and stormwater runoff from individual sites. Plantings that are able to reduce the speed of a Stormwater flow can trap sediment and other pollutants allowing natural degradation to help remove these pollutants. In addition to allowing Stormwater to percolate into the soil, this can also reduce the amount of water needed to maintain a healthy lawn and/or garden. For more information try this URL: http://cfpub.epa.gov/npdes/stormwater/swbasicinfo.cfm

Backflow Prevention

Vacuum Beaker Pressure Vacuum Breaker RPZ



What is a backflow preventer? Why do I need to have mine tested? Do I need to add one to my facility?

Many questions but we have answers!

What is a backflow preventer? A backflow preventer is a device that is used to prevent water from flowing in a backwards direction when low pressure or siphoning action is occurring. During times such as water main breaks or even when a simple hose end is left in a pool of water or a bucket of soap, a backflow can occur. A result of this siphoning effect can draw contaminants into the water line and either contaminates the interior plumbing of your house or even the water mains in the road. So there are some simple things you can do to prevent contamination from happening. All backflow devices are subject to wear and tear and eventually will fail. Sometimes simple sediment prevents the device from working properly, while other times the internal working parts either break or get jammed. Testing the device is usually performed by a licensed backflow device tester using special equipment. A backflow device in good working order will help to protect your home or facility and most especially the water system of the Town.

Do you need to add a device to your home or facility? In most cases homes with simple plumbing can protect themselves using common sense and a few small inexpensive devices. Never leave a hose in a pool or a bucket and install vacuum breakers on your house spigots. If your water heater safety valve is leaking it probably needs to be replaced. If you have an irrigation system, always install a pressure vacuum breaker to protect your house from siphoning mud, fertilizer, pesticides, or other debris into your household plumbing. In commercial and industrial facilities, a professional survey by a licensed backflow surveyor is required on a periodic basis. Starting in the summer our licensed surveyor will be inspecting facilities around town for proper backflow devices and determine if any new devices are warranted. Approximately 25% of all of the Town's commercial and/or industrial facilities shall be surveyed for possible cross connections and missing backflow devices.

1. **Maximum Contaminant Level (MCL)** – the highest level of a contaminant that is allowed in drinking water.
2. **Maximum Contaminant Level Goal (MCLG)** – the level of a contaminant in drinking water below which there is no known or expected risk to health.
3. **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.
4. **Maximum Residual Disinfectant Level Goal (MRDLG)** – The level of a drinking water disinfectant (chlorine, chloramines, chlorine dioxide) below which there is no known of expected risk to health. MRDLG's do not reflect the benefits of the use of disinfectants to control microbial contaminants.
5. **Treatment Technique (TT)** – A required process intended to reduce the level of a contaminant in drinking water.
6. **Action Level (AL)** – The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.
7. **PPB –** Parts per billion or micrograms per liter (μg/L).
8. **PPM** – Parts per million or milligrams per liter (mg/L).

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. It 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 plants, 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, or 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 storm-water runoff, and septic systems.

Radioactive contaminants – which can be naturally occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (EPA) prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water that must provide the same protection for public health. All 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 at 800.426.4791.

Important Information

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 some 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 and Prevention (CDC) guidelines on lowering the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at 800.426.4791.

Lead*:* 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 home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested and flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is available from the Safe Drinking Water Hotline at 800.426.4791.

THM: Some people who drink water containing Trihalomethanes in excess of the MCL over many years experience problems with their liver, kidneys, or central nervous systems, and may have increased risk of getting cancer.

Turbidity: Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease causing organisms. These organisms include bacteria, viruses and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

Do you want to know more? Try: www.EPA.gov & www.Mass.gov/DEP

Also try: www.Merrimack.org & www.Cleanriverproject.org

These organizations are volunteer supported and manned. If you want to help the Merrimack River, check out these websites.

Our website is: www.tewksbury-ma.gov CLICK on 'Departments' then the 'Water Treatment Plant'