GEORGETOWN WATER DEPARTMENT – PWS ID 3105000
CY2014 WATER QUALITY/CONSUMER CONFIDENCE REPORT

*This Consumer Confidence Report (**CCR**) has been prepared in accordance with Massachusetts Department of Environmental Protection (**DEP**) regulations. It includes important information about the safety and quality of your water, and simple ways for you to conserve water and save money.*

MISSION STATEMENT

The Georgetown Water Department (**GWD**) strives to operate and maintain the municipal water system cost-effectively and conservatively; while providing a safe, clean, and abundant water supply to residents and businesses for their daily needs and fire protection. Rates are established and reviewed regularly to ensure that anticipated operating costs, emergency system repairs, and necessary capital improvements can be funded with a fiscally-responsible approach.

WATER SYSTEM OVERVIEW

GWD utilizes three groundwater wells to supply water to the town. These wells include the William Marshall Well and the Ronald I. Marshall (Duffy's Landing) Well, both located off West Street behind the Water Treatment Plant (**WTP**), and the Commissioners Well, located off Bailey Lane near the bridge/culvert. These wells are shallow (40 to 60 feet deep), gravel pack wells that draw water from the Parker River aquifer. The water from all three wells is pH adjusted, filtered for iron and manganese removal, chlorinated for bacteria disinfection, and pumped into the distribution system. Additional water storage in the system is handled by three water storage tanks, located off Baldpate Road, to maintain a constant supply. In late-October 2013, GWD shut the elevated tank (next to the golf course) to promote greater use of the tanks on Baldpate Hill – thereby reducing the water age in the tanks and improving water quality in the distribution system.

WATER TREATMENT PROCESS

GWD utilizes a pressure filtration process at the WTP to remove iron and manganese. This process is enhanced by raising the pH level of the source water. The elevated pH also helps to control corrosion of the copper water services and plumbing systems in your homes. GWD completed a project in early 2012 to add pH adjustment capabilities to the William Marshall and Duffy's Landing Wells to match the Potassium Hydroxide feed system at Commissioners Well. The three wells are piped together before they enter the WTP. Two oxidants, Sodium Hypochlorite and Potassium Permanganate, are added to promote iron and manganese precipitation so the particulate form can be captured through pressure filtration. The finished water is chlorinated a second time for disinfection prior to entering the distribution system. Pressure filters are backwashed every 1-2 days to restore their filtering capacity. Filtered particulate iron and manganese are discharged in concentrated water to drying beds. Dried residuals are properly disposed in accordance with DEP regulations.

WATER QUALITY TESTING REQUIREMENTS

To protect public health, DEP and the U.S. Environmental Protection Agency (**EPA**) require GWD to continually perform water quality testing. Continuous testing is performed on the WTP finished water for pH, chlorine residual, and turbidity. Daily testing is performed on the WTP finished water for iron and manganese. Monthly testing is performed at the wells, the finished water, and eight distribution system locations for bacteria, pH, and chlorine residual. Quarterly testing is performed at six locations for trihalomethanes (**THMs**) and haloacetic acids (**HAA5**) (disinfection byproducts (**DBP**) from chlorination). Annual testing is performed at the three schools, plus 20 homes throughout the distribution system for lead and copper. Annual testing is performed at the wells and the distribution system for 20 additional parameters (including heavy metals, sodium and nitrate). DEP requires additional sampling at lesser frequencies at the wells for 60 volatile organic compounds (pesticides, industrial solvents, and fuel components), 14 inorganic compounds (including sodium, arsenic, mercury and cyanide), synthetic organic compounds, and nitrite. If GWD exceeds any safe drinking water standards, the public would be notified and steps would be taken to eliminate the problem by treating or removing the affected supply from service.

WATER QUALITY DATA AND ANALYSIS RESULTS

KEY TERMS AND DEFINITIONS

Maximum Contaminant Level Goal (MCLG): 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.

Maximum Contaminant Level (MCL): 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.

Maximum Residual Disinfectant Level Goal (MRDLG): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Maximum Residual Disinfectant Level (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

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

90th Percentile: Out of every 10 homes, 9 were at or below this level.

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)
NTU Nephelometric Turbidity Units (a measure of cloudiness in water)
pH Potential of Hydrogen Ion activity (a measure of how acidic, pH<7.0, or caustic, pH >7.0)
ND Not Detected **BDL** Below Detectable Limits **N/A** Not Applicable

TESTING SUMMARY

Source Water and Distribution System Bacteria Sampling – 72 bacteria samples were collected among three wells (untreated). Total Coliform was detected in 22 of these well samples. E. Coli was not present in any of these samples. 168 bacteria samples were collected from the treated water. This includes sampling the WTP twice/ month and 12 distribution system sites monthly. There was No Detection of Coliform or E. Coli in any of the finished water or distribution system samples. This confirms that the WTP chlorination process for disinfection functions properly.

Distribution System Lead & Copper (AL: Lead = 0.015 mg/L; Copper = 1.30 mg/L) – Samples were collected from 20 homes in August. The 90th Percentile Lead = 0.012 mg/L. The 90th Percentile Copper = 0.16 mg/L.

WTP Finished Water Nitrate Sampling (MCL = 10.0 mg/L) – Sample collected April 24th = 0.05 mg/L.

WTP Finished Water Nitrite Sampling (MCL = 1.0 mg/L) – Sample collected April 24th = ND

Distribution System THM Sampling (MCL = 80 ug/L) – Sample collected August 25th = 47.6 ug/L.

Distribution System HAA5 Sampling (MCL = 60 ug/L) – Sample collected August 25th = 13.2 ug/L.

Iron and Manganese Sampling – Annual averages from daily testing to monitor WTP efficiency.

Parameter	MCL or Range	Before Treatment	After Treatment
Iron	0.30 mg/L	5.70 mg/L	0.023 mg/L
Manganese	0.05 mg/L	0.97 mg/L	0.016 mg/L
pH	6.5 – 8.5	6.7	7.0

Refer to the GWD website for a complete list of testing results for all required parameters.

DEP-REQUIRED EDUCATIONAL INFORMATION

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.).

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).

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. GWD 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.

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, 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.

In order to ensure that tap water is safe to drink, DEP and EPA prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. U.S. 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."

COLOR, ODOR, AND TASTE ISSUES

For many years, Georgetown water has exhibited poor aesthetic qualities (color, odor, and taste) that have yielded problems in various areas of town. Complaints of staining have been received from customers throughout town. The color is the result of dissolved iron and manganese being oxidized by the chlorine added for bacteria disinfection. Once oxidized, the iron and manganese precipitates to a fine particulate that can attach to laundry, appliances, fixtures, etc. Color problems have also been associated with flow surges in the system from high volume water use or at the beginning of the filter backwash cycle at the WTP.

Odor complaints have been received from many areas of town, but appear to be more common in the north and east sides of town. The odors are more prevalent in the late summer when the temperature of the water in the distribution system rises. Order and taste can be controlled by maintaining a higher chlorine residual. Since excess chlorine is detrimental to the color problem, but beneficial to the odor and taste problem, GWD is constantly trying to balance these two competing issues. In addition, residual chlorine levels are also reduced over the longer travel times to the far ends of the distribution system. Lower water velocity and sediment buildup in the many dead end runs throughout town also contribute to reduced chlorine residuals. These areas also tend to have older water because they are further from the WTP, which is the source of the newest water entering the distribution system. Longer water age is an indicator of diminished water quality. Historically, GWD has flushed the entire distribution system semiannually, and problem areas more often. This has helped to remove much of the sediments from the water mains, and introduce newer water into areas with longer water age. While this effort provides some benefit, it has not eliminated the problems.

GWD has continued working with the DEP Northeast Regional Office and AECOM Engineers of Wakefield, MA to come up with solutions to these issues. Sampling has been performed within the distribution system to further define problem areas. Sampling at the wells, and within the WTP, has been performed to further refine the treatment processes. Some of the key findings include the following:

- Given that the WTP and storage tanks are located on the west side of Town, and the system has over 65 miles of water main, the far ends of the system are subject to long travel times and high water age.
- GWD has difficulty maintaining chlorine residual at the far ends of the system even when approaching the highest chlorination levels just short of discoloring the finished water. There will continue to be tradeoffs between limiting the discoloration of the water, along with associated staining complaints, and reducing odor and taste issues by maintaining higher chlorine residual levels.
- The WTP continues to operate at a very high removal efficiency (98.5-99.5%) despite iron and manganese concentrations in the source waters 2-5 times greater than when the WTP was built. Even at this efficiency, the WTP, at times, can still pass enough iron and manganese to create problems in the system.
- The source wells exhibit high levels of dissolved organics that react with chlorine in the treatment process. This reaction creates DBPs, which can increase cancer risk and other adverse health impacts. Increasing chlorine dosage for odor control will likely increase disinfection byproduct formation.
- Shorter filter runs between backwash cycles results in less chance for delivering poor quality water to the system, but is less efficient and more costly to the operation.

AECOM Engineers completed a Comprehensive Water System Evaluation Report in November 2013. The report included short-, medium-, and long-term improvements to the treatment process and distribution system aimed at improving the water quality. The first of seven short-term recommendations (i.e. taking the elevated tank offline) was implemented in late October 2013 – even as the report was in final draft stage.

In addition, GWD began constructing three other AECOM-designed short-term recommendations in the fall of CY2014. These improvements include the installation of mixers in the concrete water storage tanks on Baldpate Hill, and the modification and relocation of chemical feed systems at the WTP for improved treatment.

GWD personnel conduct monthly system-wide sampling to track water quality changes as improvements are made. This data helps GWD make better decisions on future operational and structural changes to the system.

WATER RESOURCE PROTECTION

Citizens of Georgetown have had the foresight to protect their natural resources, including water, by purchasing over 200 acres of undeveloped land under the control of GWD and the Town's Conservation Commission. Most of this land lies along the Parker River and Lufkin Brook, from Bailey Lane at Rock Pond to Andover Street near the VFW Hall. Georgetown has a Water Protection Bylaw to control the activities within the Zone II watershed area, as well as a bylaw for Water Use Restrictions during water emergencies. Emergency water supply is available from the Groveland, Rowley and Byfield water systems.

GWD personnel check on the land surrounding the wells routinely to identify and prevent activities that might adversely affect the underlying aquifers. GWD allows for passive recreational use of our land. However, MOTORIZED VEHICLES ARE NOT PERMITTED without authorization from the Department. We test quarterly samples of the run-off from the country club for pesticides, herbicides and nitrogen compounds. We have an arrangement with the US Department of the Interior to sample the groundwater every couple of years and test for 225 parameters, at concentrations that we could never afford to do, at no cost to us.

FINISHED WATER PROTECTION

Over the years, GWD has taken a number of steps to further safeguard the drinking water supply. Daily inspection of the pumping stations and treatment facilities are required. We have an active backflow prevention program to assure that contaminants are not drawn back into the system. Licensed GWD employees are available within minutes on a twenty-four hour emergency basis to deal with emergencies. Regular maintenance programs for cleaning the storage tanks, flushing the distribution system, exercising the gate valves, and checking the system for leaks helps ensure that the distribution system is sound.

GWD cleans and disinfects the water before it enters the distribution system. To make sure it stays that way, we have an active BACKFLOW prevention program. Each new commercial building has a Backflow device installed at the service entrance and Fire Sprinkler service to prevent any water that may become contaminated, from getting back into the distribution system. Any type of machinery that is connected directly to the potable water system with a potential to allow contaminants back into the drinking water, (i.e. boilers, dishwasher soap injectors, swimming pools or manufacturing equipment) must have a suitable backflow preventer. Depending on the type of device, these are tested once or twice each year. All irrigation systems and hose connections are required to have a backflow device to prevent contaminants from the lawn from coming back into the building. Each Irrigation system should be checked seasonally for proper backflow prevention to ensure the safety of the occupants of the building. For your safety and the protection of the entire system, all irrigation systems require a Permit from GWD.

To have your irrigation system checked, please call or stop by the GWD office to make an appointment.

WATER CONSERVATION AND COST SAVINGS

To promote water conservation, GWD changed the rate structure beginning with the July 2012 billing cycle. Because inefficient water use increases the cost of water supply for everyone, GWD water rates increase with usage. Those who conserve water pay at a lower rate than those who use a lot of water. With your water usage history now printed on the bottom of your bill, you can see how your current usage compares to previous usage. If you think your water bill is higher than it should be, here are some things to evaluate:

- Check the six digit reading on your water meter. The display looks similar to a mileage odometer on a car. The reading on the display should be higher than the one on your bill. If it is not, please call us.
- Consider your recent usage habits. If you have more people at home, returning college students, a new pool or irrigation system, etc., your water consumption will undoubtedly be higher than previous periods.
- Check for leaking fixtures. Dripping faucets (indoor and outdoor) can waste a lot of water over time. Leaking toilet tank flapper valves can also have a significant impact on water consumption. Check toilet tanks regularly. The water in the tank should be about one inch below the top of the overflow pipe. If not, adjust the float. Put a little food coloring into the tank and watch to see if it seeps into the bowl without flushing. If so, the flapper valve may need to be replaced.

To help reduce the cost of water, GWD strives to operate all facilities cost-effectively and conservatively. This includes using high efficiency motors at the wells, purchasing treatment chemicals through a multi-town consortium to get the lowest prices possible, and performing much of the repairs and maintenance with GWD staff.

Refer to the GWD website for information on our DROP 10% water conservation campaign.

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