Annual Drinking Water Quality Report for 2012
Village of Warwick
77 Main Street
Warwick, N.Y. 10990
(Public Water Supply ID# 3503561)

INFORMATION FOR NON-ENGLISH SPEAKING RESIDENTS

Spanish

Este informe contiene información muy importante sobre su agua beber. Tradúzcalo ó hable con alguien que lo entienda bien.

INTRODUCTION

To comply with State and Federal regulations, the Village of Warwick annually issues a report describing the quality of your drinking water. The purpose of this report is to raise your understanding and awareness of the need to protect our drinking water sources. This report provides an overview of last year's water quality results. Included are details about where your water comes from, what it contains, and how it compares to state and federal standards.
If you have any questions regarding your drinking water or this report, please consult the Village website www.villageofwarwick.org. If you need further information contact the Village Hall office at (845) 986-2031 ext. 105, between the hours of 8:30 am and 4:00 p.m. Monday through Friday. We want you to be informed about your drinking water. If you want to learn more, please attend any of the regularly scheduled Village Board meetings. These meetings are held on the first and third Monday of each month.

WHERE DOES OUR WATER COME FROM?

In general, 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, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activities. Contaminants that may be present in source water include microbial contaminants; inorganic contaminants; pesticides and herbicides; organic chemical contaminants; and radioactive contaminants. In order to ensure that tap water is safe to drink, the State and the EPA prescribe regulations, which limit the amount of certain contaminants in water provided by public water systems. The State Health Department's and the FDA's regulations establish limits for contaminants in bottled water which are required to provide the same protection for public health.

Reservoir Filtration Plant

Our main surface water source is the Village of Warwick's three reservoirs located on Village owned property south of Black Rock Road in the Town of Warwick. The water from these reservoirs is gravity fed into the Reservoir Filtration Plant where it is treated with potassium permanganate for taste and odor control, treated with a coagulant then filtered to remove particulate matter; it is then chlorinated to destroy microorganisms prior to distribution. During 2010, our system experienced a temporary, mandatory restriction on water usage due to a leak that was discovered in the pipe that passes beneath the dam from the Lower Reservoir (#1) to the plant. As a result the Lower Reservoir was taken offline and water was drawn from the Middle Reservoir (#2). The Village is currently working on a solution to repair this leak and anticipates correction of the problem in 2013.

During 2011 our reservoir system experienced violent flooding caused by Hurricane Irene, which was then immediately followed by Tropical Storm Lee. The flooding from these storms caused an overflow of our highest elevation Reservoir (#3) which in turn washed a large quantity of earth from that dam into Reservoir (#2), this compromised Reservoir #3's dam integrity and made the middle Reservoir's water very difficult to treat. F.E.M.A. and specialized dam engineers were contacted promptly and emergency measures were put into place to ensure the public's safety and the safety of the water supply. Substantial work on these reservoirs has been completed and the remaining work on these reservoirs is ongoing and expected to be completed in early 2013. The Village is also served by three groundwater wells. Wells # 2 and # 3 served as sources for the Village's drinking water during 2012.

In 2012 a system was installed at the plant to inject Orthophosphate into the treated water to provide sequestering of iron and manganese which are naturally occurring in the water and can cause discoloration of the water without this treatment

Well #1

Well #1 is located in Memorial Park and is a small supply source that has not been in service for many years primarily because of its close proximity to Well #2.

Well #2 / Microfiltration Plant

Well # 2 is a substantial supply, this well supplies the new Microfiltration Plant, both of which are located in Memorial Park. This facility is the most substantial improvement made to our water system in recent years; this plant is a very complex, state of the art membrane filter system capable of treating 1,000,000 gallons per day. This facility is complete and went into service in April 2012. The plant is producing water of outstanding quality from a source that previously had no filtration and was determined to be Groundwater Under Direct Influence (G.W.U.D.I.) of a surface water. Chlorine for disinfection and Ortho Phosphate for sequestering are the only chemicals added to the water at this plant.

Well # 3

Well #3 is a backup supply, and is located off Route17A at the east end of the Village. The water from Well #3 has been determined to be G.W.U.D.I. Because of this determination, this supply is only used in a very limited fashion generally under emergency situations. Well #3 has been off line since May 2nd, 2012, it was able to be taken off line in in conjunction with the Microfiltration Facility going on line on April 30th, 2012 and having proved its ability to meet system demands. When Well #3 is used, the water is disinfected with chlorine to destroy microorganisms prior to entering the distribution system. The Village is investigating an enhanced treatment system for this source which will meet Federal requirements.

SOURCE WATER ASSESSMENT PROGRAM SUMMARY

The NYS DOH has evaluated this Public Drinking Water Sources (PWS)'s susceptibility to contamination under the Source Water Assessment Program (SWAP), and their findings are summarized in the paragraph below. It is important to stress that these assessments were created using available information and only estimate the potential for source water contamination. Elevated susceptibility ratings do not mean that source water contamination has or will occur for the PWS. This PWS provides treatment and regular monitoring to ensure the water delivered to consumers meets all applicable standards.

The assessment area for this drinking water source contains no discrete Potential Contaminant Sources (PCS)'s, and the amount of pastureland in the watershed results in this reservoir system having a high susceptibility to protozoa. However, the high mobility of microbial contaminants in reservoirs results in this drinking water intake also having medium-high susceptibility ratings for enteric bacteria and viruses. Furthermore, reservoirs are highly susceptible to water quality problems caused by phosphorus additions. A copy of this assessment, including a map of assessment area, can be obtained by contacting the Village of Warwick.

FACTS AND FIGURES

Our water system serves approximately 6,800 people and numerous businesses through 2,503 service connections. The total water produced in 2012 was 223,742,000 gallons. The daily average of water treated and pumped into the distribution system was 612,992 gallons per day. Our highest single day was 1,075,000 gallons, which occurred on June 26th, 2012. The total amount of metered water delivered to our customers during 2012 was 181,893,000 gallons. The total amount of village owned metered and unmetered water usage was 6,015,000 gallons. The grand total of accountable water is 187,908,000 gallons. The daily average of accountable water was 514,816 gallons per day. The difference of metered (accountable) water and non-metered (unaccountable) water usage accounts for a total of 35,834,000 gallons. The average daily difference was 98,175 gallons per day. The difference is 16% of the total amount of water produced. This can be attributed to undetected leaks, water main breaks, hydrant flushing, tank flushing, fire use, non-metered water usage in village owned buildings and parks and normal losses through failed meters. There was also water loss attributed to the manual operation of pumping stations which at times overflowed the storage system.

During 2012, all in-village water customers are charged $3.73 per 1,000 gallons of water used for the first 100,000 gallons. Over 100,000 gallons they are charged $6.43 per 1,000 gallons. Village commercial and industrial customers were charged $7.01 per 1,000 gallons used. In addition the village customers pay a land tax based fee. Non-village residential customers were charged $12.63 per 1,000 gallons used with no land based tax fee. Non-village commercial and industrial customers were charged $14.04 per 1,000 gallons.

ARE THERE CONTAMINANTS IN OUR DRINKING WATER?

As the State regulations require, we routinely test your drinking water for numerous contaminants. These contaminants include: total coliform, turbidity, inorganic compounds, nitrate, nitrite, lead and copper, volatile organic compounds, total trihalomethanes, haloacetic acids, radiological and synthetic organic compounds. The table presented below depicts the results of that testing. The State allows us to test for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of our data, though representative, is more than one year old. It should be noted that all drinking water, including bottled drinking water, might be reasonably expected to contain 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 (800-426-4791) or the Orange County Health Department at (845-291-2331).

Table of Detected Contaminants

Contaminant	Violation Yes/No	Date of Sample	Level Detected	Unit Measure-ment	MCLG	Regulatory Limit (MCL, TT or AL)	Likely Source of Contamination
Barium	No	4/17/2012	.0166	mg/l	2.0	MCL = 2.0	Erosion of natural deposits.
Nickel	No	2/01/2012	.0014	mg/l	N/A	MCL = 100	Erosion of natural deposits
Arsenic	No	4/17/2012	.8	ug/l	N/A	MCL = 10	Erosion of natural deposits.
Zinc	No	11/28/2012	.014	mg/l	N/A	MCL = 5.0	Naturally occurring; Mining waste.
Nitrate	No	4/17/2012	1.68	mg/l	10	MCL = 10	Runoff from fertilizer use.
Manganese	No	Quarterly	3	ug/l	N/A	MCL = 300	Naturally occurring; Indicative of landfill contamination.
HAA-5	No	Quarterly	25.2	ug/l	N/A	MCL = 60	By-product of drinking water disinfection needed to kill harmful organisms.
TTHM	No	Quarterly	59	ug/l	N/A	MCL = 80	By-product of drinking water chlorination needed to kill harmful organisms. TTHMs are formed when source water contains large amounts of organic matter.
Copper (see note 1)	No	6/15/2011 + 6/16/2011	90^{th}=.168 Range = 0.0683-0.6800	mg/l	1.3	AL=1.3	Corrosion of household plumbing
Lead (see note 2)	No	6/15/2011 + 6/16/2011	90^{th}= 7.7 Range = .5-14.6	ug/l	0	AL=15	Corrosion of household plumbing
Gross Alpha	No	Quarterly	1.67 Range = ND – 1.67	pCi/l	0	MCL=15	Erosion of natural deposits
Turbidity	No	4/5/2012	.264	NTU	N/A	TT=<1.0 NTU	Soil Runoff
Turbidity	No	2012	100%	NTU	N/A	TT=95% of samples< 0.3 NTU	Soil Runoff

1. The level presented represents the 90^{th} percentile of the 20 customer locations tested. A percentile is a value on a scale of 100 that indicates the percent of a distribution that is equal to or below it. The 90^{th} percentile is equal to or greater than 90% of the copper values detected at your water system. In this case, 20 samples were collected at your water system and the 90^{th} percentile value was the seventeenth highest value, 0.1680 mg/l with a range of .0683 - .6800 mg/l. The action level for copper was not exceeded at any of the sites tested.

2. The level presented represents the 90^{th} percentile of the 20 customer samples collected. The Action level for lead was not exceeded at any of the 20 sites tested. If present, elevated levels of lead can cause serious health problems, especially for pregnant women, infants, and young children. 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 customers plumbing components. The Village of Warwick is responsible for providing high quality drinking water, but cannot control the variety of materials used in a customer's 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 (1-800-426-4791) or at http://www.epa.gov/safewater/lead.

Definitions:

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.

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 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.
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 contamination.
Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water.
Non-Detects (ND): Laboratory analysis indicates that the constituent is not present.
Nephelometric Turbidity Unit (NTU): A measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.
Milligrams per liter (mg/l): Corresponds to one part of liquid in one million parts of liquid (parts per million - ppm).
Micrograms per liter (ug/l): Corresponds to one part of liquid in one billion parts of liquid (parts per billion - ppb).
Picocuries per liter (pCi/L): A measure of the radioactivity in water.

WHAT DOES THIS INFORMATION MEAN?

As you can see by the table, our system had no violations. We have learned through our testing that some contaminants have been detected; however, these contaminants were detected below the level allowed by the State.

IS OUR WATER SYSTEM MEETING OTHER RULES THAT GOVERN OPERATIONS?

Treatment Technique Filtration and Disinfection Violations

The Village of Warwick is in violation of the Surface Water Treatment Rule, in relation to Well #3 for not providing filtration, or developing a new source of water within 18 months of being declared a G.W.U.D.I. source (ground water under direct influence of surface water). This deadline was to be met by May 30th, 2010. It was necessary to continue to use Well #3 while Well #2 was offline for the construction of the Microfiltration Plant and therefore was not able to meet the deadline. As a result the village is required to include the following statement in this report:
"Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites, which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches." The Village is in the process of seeking funding and is investigating options to comply with the Surface Water Treatment Rule.

This source was removed from service on May 2nd, 2012 when the new Well #2 Microfiltration Plant construction was completed. It is important to understand that the water quality from Well #3 hasn't changed since it was first put into service in 1957, only the water quality standards and levels of required testing have changed. The Village has addressed a similar situation with Well #2 by constructing a state of the art micro-filtration plant. Well #3 has been re-categorized as an "Emergency Source", this means that only a severe emergency or loss of supply from our other sources would force this supply back into service, this action would also be accompanied with a public notification.

DO I NEED TO TAKE SPECIAL PRECAUTIONS?

Some people may be more vulnerable to disease causing microorganisms or pathogens 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 provider about their drinking water. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium, Giardia and other microbial pathogens are available from the Safe Drinking Water Hotline (800-426-4791). Please note that after May 2,2012 all water delivered to customers was treated to remove these microorganisms.

WHY SAVE WATER AND HOW TO AVOID WASTING IT?

Although the Village's system has an adequate amount of water to meet present and future demands, there are a number of reasons why it is important to conserve water:

- Saving water saves energy and some of the costs associated with both of these necessities of life;
- Saving water reduces the cost of energy required to pump water and the need to construct costly new wells, pumping systems and water towers; and
- Saving water lessens the strain on the water system during a dry spell or drought, helping to avoid severe water use restrictions so that essential fire fighting needs are met.
- You can play a role in conserving water by becoming conscious of the amount of water your household is using, and by looking for ways to use less whenever you can. It is not hard to conserve water. Conservation tips include:

- Automatic dishwashers use 15 gallons for every cycle, regardless of how many dishes are loaded. So get a run for your money and load it to capacity.
- Turn off the tap when brushing your teeth.
- Check every faucet in your home for leaks. Just a slow drip can waste 15 to 20 gallons a day. Fix it and you can save almost 6,000 gallons per year.
- Check your toilets for leaks by putting a few drops of food coloring in the tank, watch for a few minutes to see if the color shows up in the bowl. It is not uncommon to lose up to 100 gallons a day from one of these otherwise invisible toilet leaks. Fix it and you save more than 30,000 gallons a year.
- Use your water meter to detect hidden leaks. Simply turn off all taps and water using appliances, then check the meter after 15 minutes. If it moved, you have a leak.

SYSTEM IMPROVEMENTS

The Village of Warwick during 2012 has made a substantial investment into its overall water system through multiple improvements and upgrades.

Ortho Phosphate addition

During 2012, many residents throughout the village had experienced water discoloration issues that required action due to the severity and prolonged inconvenience. These ranged from taste and odor complaints to reddish brown colored water. These issues were the result of bringing online the new Microfiltration Plant. It is important to understand that the bad water didn't come from either of the production facilities. It was quite simply a twofold problem that came from water being pushed from one side of the village toward the other and then reversing several times per day creating a "scouring action" within the pipe network which caused the buildup of iron and manganese in the pipes to break loose and become part of the water delivered to customers. This coupled with the two different supplies having very different chemistry and the resulting reactions when they would mix together in the system made for a very difficult situation for all involved. Specialized engineering support was brought in to assess and evaluate the problem and an initial hard flushing was recommended and performed. This wasn't enough, and a new chemical was recommended that would "sequester" the iron and manganese in the water. This was accepted and applications with a design were submitted to the New York State Department of Health. Upon approval new equipment was installed at the Reservoir Filtration Plant and the Well #2 Microfiltration Plant. The chemical addition began on August 10th, 2012. Shortly thereafter improvement was dramatic, and continued until the water in the system cleared. A final hard flushing was performed and since that time there have been no further problems with the water quality and aesthetics throughout the Village.

Reservoir Filtration Plant

Along with the addition of Ortho-phosphate for corrosion control and sequestering to improve our water at the tap, plans are currently being developed to incorporate the filtered waste product into the Village's wastewater treatment facility. Doing this would allow the Village to treat the waste "in-house" and would reduce waste treatment costs; this connection is scheduled to take place in the spring of 2013.

Also underway to be installed in the spring of 2013 is a S.C.A.D.A. (Supervisory Control And Data Acquisition) system. This is a system of monitoring that goes beyond the current alarm activations. This system will be monitoring and harvesting water quality data from various operating and sampling equipment 24/7 as well as allowing an operator to interactively make adjustments and changes to the plant's operation by remote means on a real time basis without having to be present at the plant. It allows an operator to be onsite instantly via an internet connection rather than having time elapse as an operator drives to the facility in response to an activated alarm.

New tanks and pumps were installed in the plant that allows the Village to purchase treatment chemicals in bulk resulting in cost savings.

Reservoirs

Work on the maintenance of the reservoirs this year included tree removal and the exercising of the emergency drain valves on all three reservoirs. Hurricane Irene, in 2011, caused significant damage to the reservoirs. Flow into the Upper Reservoir exceeded the capacity of the spillway to release it and caused the water to flow over the top of the dam and erode soil from the face of the dam. The concrete core was not damaged but the water level had to be lowered until repairs were completed. The storm also damaged the Inlet Stilling Basin, the Inlet and the Spillway. Repairs to the dam face which commenced in 2011 were substantially completed in 2012 and work on the remaining damage is ongoing into 2013.

Pump Stations and Storage Tanks

During Hurricane Sandy the Village was able to provide water to customers without interruption. To do so required the use of stationary and rented portable auxiliary power. This event demonstrated the importance of auxiliary power and the Village will consider the installation of additional stationary supplemental power systems at critical facilities.

Improvements were made to the following:

A significant number of trees were blown down around the Main Storage Tank during Hurricane Sandy, cleanup around the tank will be performed in 2013.

Three separate storage tanks had exclusionary devices installed to help improve the security of the structures.

Galloway Pump Station received two new larger pumps, this improvement has increased our pumping capacity approximately eight times that of the original single pump system.

New upgraded control panels were installed at Southern Lane and Chelsea Gardens Pump Stations. Replaced storage tank controls at Ridgefield Pump Station.

Distribution

Our Village Water Department is responsible for maintaining approximately 45 miles of water main, much of it originally installed during the early 1900's, understanding the volume of pipe maintained and age it becomes easy to see why breaks occur from time to time.

Below is a brief listing of the work completed by this Department during 2012:

- The Park Lane bridge project completion allowed the water main to be reconnected, improving both flow capacity and water quality.
- 9 new hydrants were installed to replace existing hydrants that could not be repaired.
- 11 hydrants were repaired / serviced.
- 1 new hydrant valve installed.
- 6 water main leaks were repaired.
- 13 service line leaks were repaired.
- 20 new service lines were installed.
- 45 valve boxes were repaired.
- 30 main valve boxes were repaired / raised to surface.
- 12 valve boxes were located.
- 279 service calls were made.
- 155 utility mark outs for excavation were made.
- 39 shut offs for non payment were made.
- 105 final readings were performed.
- 3 separate pressure reducing station valves were serviced.
- 30 meters were upgraded to radio read with approximately 145 remaining to be upgraded.
- System-wide flushing was performed in May, August and October.
- Inventory program continues.
- Compliance with "no-lead law" continues.
- Grounds maintenance of 5 water storage tanks and 2 well sites.

General

The Village in 2010 procured the services of a contract operator to operate the filtration plants, pump stations and storage tanks. Village employees continue to manage the distribution system.
In 2012 a Water System Assessment was completed. This report provides the Village with a comprehensive guide for the management and maintenance of the water system.

CLOSING

Thank you for allowing us to continue to provide your family with quality drinking water this year. We ask that all our customers help us protect our water sources, which are the heart of our community. Please call our office at the Village Hall (845) 986-2031 ext. 105 if you have any questions.