2017 Annual Drinking Water Quality Report

Fort Drum Public Works
Fort Drum, New York 13602
Public Water Supply ID #2212214

April 2018

OVERVIEW

Fort Drum is proud to provide you this copy of its 2017 Annual Drinking Water Quality Report. We publish this report annually to comply with state and federal regulations and to provide our consumers with detailed information on the water they drink.

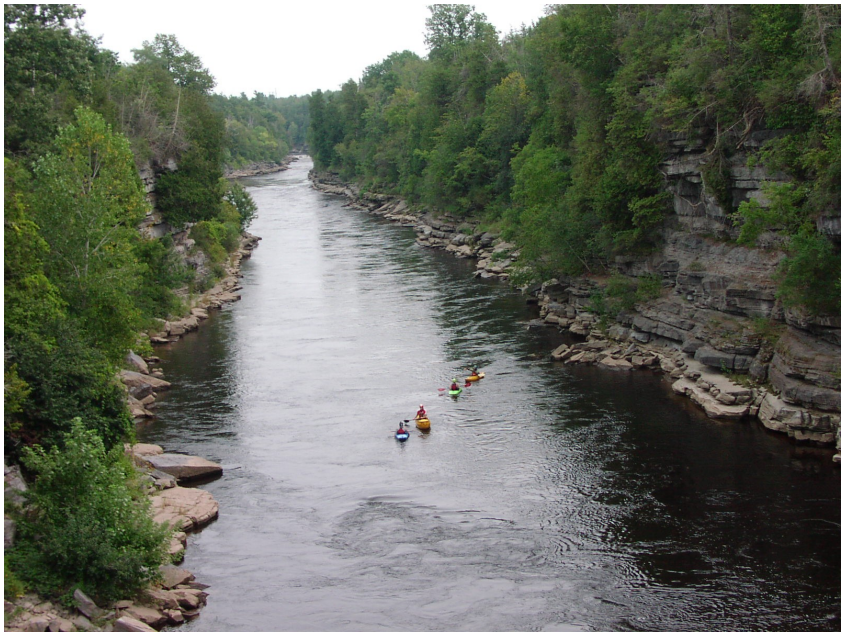
In summary, Fort Drum monitors its water for contaminants throughout the year. In 2017, **our water system met all water quality standards except for total trihalomethanes (TTHM).** Included are details about where our water comes from, what it contains, and how it compares to state and federal standards.

We want you to be informed about your drinking water. If you have any questions about this report or concerning your drinking water please contact Thomas P. Hudon, chief water plant operator, at (315) 774-0249 or Diane Covell, Water and Wastewater Program manager, at (315) 772-0218.

HOW DO I KNOW MY WATER IS SAFE?

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. In order to ensure that tap water is safe to drink, the state and the Environmental Protection Agency prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Similarly, the New York State Department of Health and the Food and Drug Administration have established limits for contaminants in bottled water, providing for equal protection of public health.

Fort Drum routinely tests for contaminants that may be present in source water to include: microbial contaminants, inorganic contaminants, pesticides and herbicides, organic chemical contaminants, and radioactive contaminants.



Kayakers on the Black River in Brownville, New York.

FORT DRUM'S WATER SUPPLY

Our Fort Drum drinking water system serves approximately 40,000 people. This population constantly fluctuates due to frequent military reassignments. This figure includes both Fort Drum residents and employees living in nearby communities.

Fort Drum obtains its water from two sources: groundwater wells located near the airfield and from the City of Watertown, which draws water from the Black River.

Fort Drum's water plant pumped and treated 311 million gallons in 2017. Our peak production was 1.9 million gallons. Fort Drum also purchased 203 million gallons of water from the city. Watertown's total plant output for 2017 was 1.76 billion gallons. The daily average was 4.9 million gallons. The highest single day was 6.3 million gallons.

Under a purchase agreement, Fort Drum receives approximately 800,000 gallons per day from the Development Authority of the North Country (DANC). DANC purchases water from the City of Watertown and delivers it to Fort Drum through its pumping and piping systems.

The City of Watertown's water source is the Black River, a surface water source, which originates in the Adirondack Mountains and runs through the center of the city and westerly to Black River Bay. During 2017, the system did not experience any water source restrictions. Flows of the Black River are regulated by the Hudson-Black River Regulating District and are controlled by a series of hydro-electric power dams stretching from its headwaters in the Adirondacks to its mouth in Lake Ontario.

The City of Watertown's 15 Million Gallon Per Day water treatment plant utilizes 2.3% of the minimum flow of the Black River. The water is treated within modern facilities prior to distribution. Liquid alum and a nonionic polymer are added to the water to coagulate and settle out dirt and organic matter through a dosing station upstream of the water plant. The settled water is then pumped to the processing complex at 1707 Huntington Street. Polyaluminum chloride and nonionic or cationic polymer are added prior to filtering. Carbon may be added to combat taste and odor.

The filtered water is disinfected with chlorine to kill bacteria, viruses, and other microorganisms. The water is then treated with sodium silicate for corrosion control and with fluoride to help fight tooth decay. The finished product, high quality potable water, is pumped to the city's distribution system and through the DANC line to Fort Drum.

Fort Drum's groundwater source historically consisted of 12 drilled groundwater wells located to the east of the cantonment area. All wells were shut down in 2006 as a precautionary measure following discovery of a JP-8 fuel release at the Wheeler-Sack Army Airfield. Six groundwater wells were returned to service in December 2008 after assessment and concurrence from New York State Department of Health (NYSDOH) and New York State Department of Environmental Conservation

(NYSDEC). Four of the six wells were voluntarily taken out of service in 2010. The remaining two wells were shut down in March 2016 as a precautionary measure following detection of very low levels of perfluorinated chemicals.

In August 2016, five new groundwater wells were approved for operation by DOH and DEC with a maximum water withdrawal of 2.2 million gallons per day. Raw groundwater is treated at Fort Drum Water Treatment Plant with ultraviolet (UV) light and then chlorine to kill bacteria and viruses. Fluoride is added to help fight tooth decay. Then the treated drinking water is pumped into the distribution system where it mixes with purchased drinking water from the City of Watertown.

In January 2017, New York State Water Quality Rapid Response Team tested our drinking water for perfluorinated chemicals. All results were less than detectable, and the most recent data is included in Table 2.

SOURCE WATER ASSESSMENT

The NYSDOH evaluated the City of Watertown's PWS's (Public Water Supply's) susceptibility to contamination under the Source Water Assessment Program (SWAP).

The City of Watertown’s water supply is most susceptible to sediment, turbidity, bacteria, Cryptosporidium oocysts, Giardia cysts and permitted discharges within the watershed. During 2017, Black River source water samples were positive for both Cryptosporidium and Giardia.

Fort Drum’s groundwater supply wells are most susceptible to inorganic contaminants from runway deicing and volatile organics from fuel spills.

Both the City of Watertown and Fort Drum provide regular monitoring and treatment to ensure drinking water meets all applicable standards.

ARE THERE CONTAMINANTS IN FORT DRUM'S DRINKING WATER?

Fort Drum and the City of Watertown routinely monitor and test your drinking water for contaminants. These contaminants include: coliform, turbidity, inorganic compounds, nitrate, lead, copper, organic compounds, total trihalomethanes, haloacetic acids, Giardia, Cryptosporidium, Gross Alpha, Radium 226 and 228, and synthetic organic compounds. Both tested List 1 contaminants under EPA's unregulated contaminant monitoring rule 3 (UCMR3). Watertown also tested List 2, which includes pharmaceutical hormones. Results with detections are shown on pages 8 through 14.

Table 1 shows the contaminants that Fort Drum detected in its water supply as compared to Maximum Contaminant Level (MCL).

Table 2 shows Fort Drum's detections of contaminants for which there is presently no MCL. The Environmental Protection Agency has asked water suppliers to monitor these substances to determine if additional regulation of them is needed.

Table 3 shows contaminants detected by the City of Watertown, to include substances with and without MCLs.

New York state allows us to test for some contaminants less than once per year because the concentrations of these contaminants do not change frequently; therefore, some of the data may be more than one year old.

Please note that all drinking water, including bottled drinking 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 (800-426-4791) or the NYSDOH District Office at (315) 785-2277.

DEFINITIONS:

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLG (goal) as feasible.

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 (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.

Nanograms per liter (ng/L): Corresponds to one part of liquid in one trillion parts of liquid (parts per trillion - ppt).

Not Applicable (NA): Limits do not apply.

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 NTUs 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).

Million Fibers per Liter (MFL): A measure of the presence of asbestos fibers that are longer than 10 micrometers.

Picocuries per liter (pCi/L): A measure of the radioactivity in water.

Table 1: Fort Drum Table of Detected Contaminants						
Contaminant	**Violation Yes/No**	**Sample Date Mon/Year**	**Level Detected Avg/Max (Range)**	**Regulatory Limit (MCL,TT,AL)**	**Unit of Measure**	**Likely Source of Contamination**
Total Coliform[1]	No	June 2017	Four positive coliform samples	TT =>5% of all samples positive	Not Applicable	Naturally present in the environment
Turbidity	No	2017	0.05 (0.03-0.13)	TT=<5NTUs	NTU	Particles from water mains
Fluoride	No	2017	0.70 (0.6-.0.8)	MCL=2.2	mg/L (ppm)	Added to prevent tooth decay
Copper[2]	No	2016	0.061 (ND-0.187)	AL= 1.3	mg/L (ppm)	Corrosion of household plumbing
Lead[2]	No	2016	1.23 (ND-3.21)	AL=15	ug/L (ppb)	Corrosion of household plumbing
Nitrate	No	2,5,8,11/ 2017	0.59 (0.14 - 1.14)	MCL=10	mg/L (ppm)	Natural deposits or fertilizer

Total Trihalome-thanes[3]	Yes	2,5,8,11/ 2017	90.2, 83.1 (8.2 -129.8)	MCL=80	ug/L (ppb)	Byproducts of drinking water chlorination
Haloacetic Acid[3]	No	2,5,8,11/ 2017	49 (0.0 - 42.2)	MCL=60	ug/L (ppb)	Byproducts of drinking water chlorination

1. *In June 2017, total coliforms were detected in 4 out of 40 routine monthly compliance samples collected in our system. This triggered a Level 1 Assessment (>5%. Positive coliform samples). Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking waster distribution system. Twelve additional samples were collected, and total coliforms were not detected.*

2. *The level presented represents the 90th percentile of the 30 sites tested. All 30 samples were less than the action level. One half of our drinking water comes from the City of Watertown. High lead levels reported by the City of Watertown are attributed to household plumbing, which will not affect Fort Drum water.*

3. *This level represents the highest locational running annual average of all the sites sampled and the range of all samples collected. One site exceeded the MCL for the first and second quarter. TTHMs are formed when source water contains organic matter. Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system and may have an increased risk of getting cancer.*

Table 2: Fort Drum Table of Detected Contaminants: Unregulated Contaminants Monitoring Program Rule[4]						
Contaminant	**Viola-tion Yes/No**	**Sample Date Mon/ Year**	**Level Detect-ed Avg/Max (Range)**	**Regulatory Limit (MCL,TT,AL)**	**Unit of Measure**	**Likely Source of Contamination**
Total Chromium[5]	No	3,6 2015	0.1 (ND-0.3)	NA	ug/L (ppb)	Naturally occurring
Hexavalent Chromium[5]	No	3,6 2015	0.14 (0.03 - 0.29)	NA	ug/L (ppb)	Naturally occurring
Strontium[5]	No	3,6 2015	596 (47-1700)	HRL	1500 ug/L (ppb)	Naturally occurring
Vanadium[5]	No	3,6 2015	0.04 (ND-0.2)	NA	ug/L (ppb)	Naturally occurring
Chlorate[5]	No	3,6 2015	13 (ND-38)	NA	ug/L (ppb)	Byproduct of disinfection process
Perfluoro-heptanoic Acid (PFHpA)[6]	No	1 2017	Not Detected	NA	ng/L (ppt)	Manmade compound
Perfluoro-hexane Sulfonic Acid (PFHxS)[6]	No	1 2017	Not Detected	NA	ng/L (ppt)	Manmade compound

(PFHxS)						
Perfluor-octanoic Acid (PFOA)[6]	No	1 2017	Not Detected	NA	ng/L (ppt)	Manmade compound
Perfluoro-butanesulfonic Acid (PFBS)[6]	No	1 2017	Not Detected	NA	ng/L (ppt)	Manmade compound
Perfluoro-clanesulfonic Acid (PFOS)[6]	No	1 2017	Not Detected	NA	ng/L (ppt)	Manmade compound
Perfluoro-nanoic Acid (PFNA)[6]	No	1 2017	Not Detected	NA	ng/L (ppt)	Manmade compound

4. All detectable unregulated contaminant results are listed. Most unregulated contaminants do not have an MCL and are being monitored to determine future regulations.

5. Drinking water wells from which these samples were collected (7+11) are no longer in use; therefore the 2015 UCMR results are not representative of our 2017 drinking water. EPA issued a non-cancer health reportable level (HRL) of 1500 ug/L for Strontium 10/2014.

6. EPA issued a health advisory (HA) for the combined total concentration of PFOA and PFOS of 70 ppt May 2016. 2017 sampling results from New York State Water Quality Rapid Response Team are included for your information.

Fort Drum drinking water is well below all health advisories. You may obtain all of the monitoring results by calling Diane Covell at (315) 772-0218.

Table 3: City of Watertown Table of Detected Contaminants						
Contaminant	**Viola-tion Yes/No**	**Sample Date Mon/Year**	**Level Detected Avg/Max (Range)**	**Regulatory Limit (MCL, TT, AL)**	**Unit of Measure**	**Likely Source of Contamination**
Total Coliform[1]	No	2017	None Detected	MCL=>5% of all samples positive	NA	Naturally present in the environment
Turbidity Distribution[2]	No	4 2017	0.16 (0.13 - 0.21)	TT=<5NTU	NTU	Particles from water mains
Turbidity[2a] Composite Filter Effluent	No	6 2017	0.25 (0.07 - 0.25)	TT=95% of samples <0.3 NTU	NTU	Particles too fine to filter completely
Fluoride	No	2017	0.70 (0.47 - 0.91)	MCL=2.2	mg/L (ppm)	Added to prevent tooth decay
Copper[3]	No	2017 12/16-3/17 9/17-10/17	0.62 (0.015 - 1.2) 0.29 (0.0042-0.4)	AL=1.3	mg/L (ppm)	Corrosion of household plumbing
Lead[3]	No	2017 12/16-3/17 9/17-10/17	14 (ND - 160) 10 (ND-38)	AL=15	ug/L (ppb)	Corrosion of household plumbing

			(ND-38)			
Total Organic Carbon Raw Water	No	2017	4.6 (.2.6 - 6.5)	TT	mg/L (ppm)	Naturally present in the environment
Total Organic Carbon Filtered Water	No	2017	1.9 (1.4 - 2.8)	TT	mg/L (ppm)	Naturally present in the environment
Total Trihalomethanes[4]	Yes	3,6,9,12 2017	90.5 (19.4 - 122.9)	MCL=80	ug/L (ppb)	Byproducts of drinking water chlorination
Haloacetic Acid[4]	Yes	9,12 2017	66.6 60.6 (25.2 -82.7)	MCL=60	ug/L (ppb)	Byproducts of drinking water chlorination
Unregulated Contaminate Monitoring Rule 3 [5]						
Hexavalent Chromium	No	2,5,8,11 2014	0.04 (ND-0.102)	NA	ug/L (ppb)	Naturally occurring
Strontium	No	2,5,8,11 2014	71.49 (45.0-120.4)	NA	ug/L (ppb)	Naturally occurring
Vanadium	No	2,5,8,11 2014	0.44 (ND-0.78)	NA	ug/L (ppb)	Naturally occurring
Androstene	No	2,5,8,11 2014	0.35 (ND-0.64)	NA	ng/L (ppt)	Naturally produced hormone
Testosterone	No	2,5,8,11 2014	0.1 (ND-0.25)	NA	ng/L (ppt)	Naturally produced hormone

City of Watertown Table Footnotes:

1. Coliform are naturally occurring bacteria that are used as an indicator of the possibility that potentially harmful bacteria could be present.

2. Turbidity is a measure of the cloudiness of the water. We test it because it is a good indicator of the effectiveness of our filtration system. The highest average distribution turbidity measurement for the year was 0.21, which occurred in April 2017. State regulations require that the monthly average turbidity must always be below 5 NTUs.

2a. The regulations require that 95% of the combined filter effluent turbidity levels recorded have measurements below 0.3 NTU. The maximum combined filter effluent recorded at the plant in 2017 was 0.25 NTU, which occurred in June 2017. 100% of the combined filter effluent turbidities were below the MCL.

3. The levels presented represent the 90^{th} percentile of the 60 sites tested six months apart.

4. This level represents the highest locational running annual average of all the sites sampled and range of all collected samples. The city has one location exceeding the TTHM 80.0 MCL for 1st, 2nd, 3rd, and 4th quarters of 2017. The city had two locations exceeding the HAA5 60.0 MCL during the 3rd and 4th quarters of 2017.

5. All detectable unregulated contaminate results are listed, and their presence does not indicate a health concern. Unregulated contaminates do not have an MCL and are being monitored to determine future regulations. You may obtain all of the monitoring results by calling Aaron Harvill at (315) 785-7845.

WHAT DOES THIS INFORMATION MEAN?

During 2017 our system met all water quality standards except for total trihalomethanes (TTHM). TTHMs are a group of chemicals that include chloroform, bromoform, bromodichloromethane and chlorodibromomethane. They are formed in drinking water when chlorine reacts with organics (tree leaves, algae, or aquatic plants) present in river or lake water. Our distribution system consists of two sources: purchased water from City of Watertown treatment plant (source Black River) with finished water organic levels between 1.4 and 2.8 mg/L, and our Fort Drum Water Treatment Plant (source groundwater) with organics averaging 0.1 mg/L. Our distribution system is a mix of these two sources; therefore, organic concentrations can vary based on operations. The amount of TTHMs formed is depending on the ratio of the two sources and factors such as temperature and contact time of the chlorine disinfectant with the organic material.

Fort Drum monitors four different locations for TTHMs determined by NYSDOH. Each location uses a locational running annual average (LRAA) based on quarterly samples taken during a 12-month period. Only the sampling location at the corner of Nash Boulevard and Eighth Street exceeded the MCL of 80 ug/L in February 2017 with an LRAA of 90.2 ug/L. This area has very little water movement in the underground piping, creating long detention/contact times. DPW installed automatic flushing equipment to decrease chlorine contact time with the organics and this has corrected the issue.

The same location had a second MCL violation of 83.1 ug/L in May 2017 even though the sample collected had an actual result of 23.1 ug/L. This was due to the previous three quarters still being in the average. The May actual result was a decrease of 80% from the previous quarter. DPW will continue the use of Hydroguard automatic hydrant flushing equipment at strategic locations when weather permits and when organic concentrations are highest to ensure TTHMs do not have time to develop in the distribution system. Additional information on TTHMs can be found on the EPA website (https://safewater.zendesk.com/hc/en-us/sections/202346187).

DO I NEED TO TAKE SPECIAL PRECAUTIONS?

There is no need to boil your water or take other corrective action. Some studies suggest that people who drink water containing elevated levels of TTHMs for long periods of time may have an increased risk for certain health effects. Studies of people who drank chlorinated drinking water for 20 to 30 years show that long-term exposure to elevated TTHMs is associated with an increased risk for certain types of cancer.

A few studies of women who drank water containing elevated TTHMs during pregnancy show an associated small increased risk for low birth weights, miscarriages and birth defects. However, in each of the studies, how long and how frequently people actually drank the water, as well as how much TTHMs the water contained is not known. Therefore, we do not know for sure if the observed increases in risk for cancer and other health effects are due to TTHMs or some other factor.

Laboratory animals exposed to high levels of the individual chemicals: chloroform, bromodichloromethane and dibromchloromethane experienced cancer over their lifetimes. The specific health effects on laboratory animals are primarily on the liver, kidney, and nervous and reproductive systems. Chemicals that cause adverse health effects in laboratory animals after high exposure may pose a risk for adverse health effects in humans exposed to lower levels over long periods of time. For more information on the health effects of TTHM, go to: www.epa.gov/safewater/.

Lead: Table 1 shows that lead was detected at levels well below New York State Action Levels. 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 in your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. Fort Drum Public Works 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 two 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 www.epa.gov/safewater/lead.

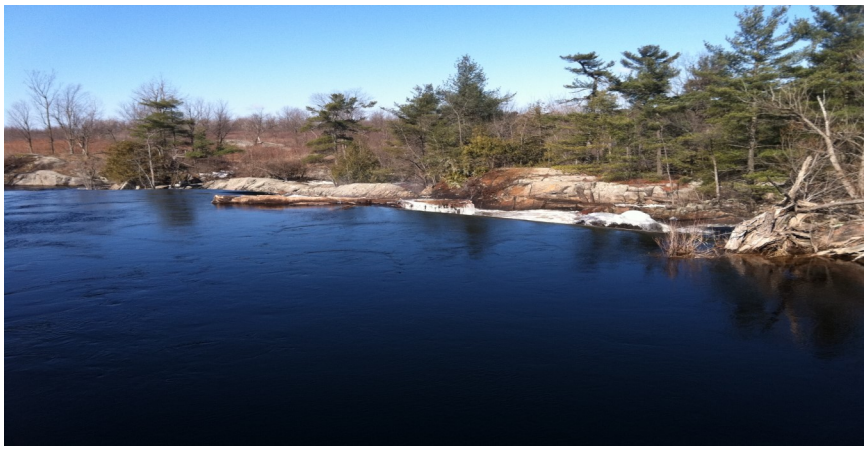
Biofilm: Testing and control program has been in place since May 1996. Biofilm is a non-hazardous bacteria that can grow on the inside of storage tanks and transmission lines. Increased bacteriological monitoring consists of weekly coliform and heterotrophic plate counts at eight locations in the distribution system (32 samples/month). Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful bacteria may be present. Fort Drum monitors residual chlorine in our water storage tanks and distribution system and flushes directionally to control biofilm formation.

UNREGULATED CONTAMINANTS MONITORING RULE (UCMR) Contaminant monitoring provides EPA with valid data on the occurrence of contaminants in drinking water. EPA can estimate the number of people potentially being exposed and provide an estimate of the levels of exposure. This data set is one of the primary sources of occurrence and exposure information the EPA uses to develop regulatory decisions for contaminates of concern. For more information, please contact Diane Covell at (315) 772-0218 or diane.h.covell.civ@mail.mil.

INFORMATION ON FLUORIDE ADDITION

Our system is one of many drinking water systems in New York state that provides drinking water with a controlled, low level of fluoride for consumer dental health protection. According to the U.S. Centers for Disease Control and Prevention, fluoride is very effective in preventing cavities when present in drinking water. To ensure that the fluoride supplement in your water provides optimal dental protection, the NYSDOH requires that we monitor fluoride levels on a daily basis.

Our New York state target for fluoride is 0.7 mg/L. During 2017, continuous and distribution system monitoring showed fluoride levels in your water in the optimal range 100% of the time. None of the monitoring results showed levels that approach the 2.2 mg/l MCL for fluoride.



Indian River at Carr Road on Fort Drum

SYSTEM IMPROVEMENTS

Fort Drum 2017 improvements include:

- Demolition of 8000 and 8400 housing areas with removal of all old water lines. New housing with new HDPE piping is almost complete.
- New high-density polyethylene water lines to support the new NCO Academy.
- Use of automatic flushometers to improve water quality in the distribution system.

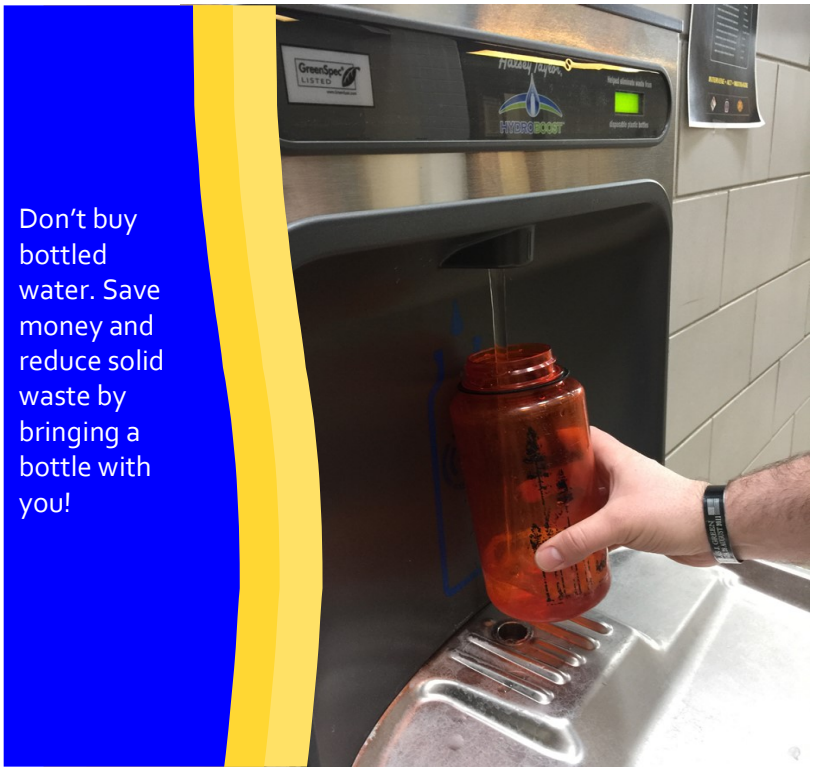
Planned 2018 improvements include:

- Ongoing replacement of old piping with new HDPE piping.
- Upgrading process control equipment.
- Study locations for additional groundwater wells.

HELP SAVE WATER — AND MONEY!

Although our system has adequate water to meet present and future demands, water conservation remains important. Using less water reduces both energy consumption and maintenance costs. Should there be a drought, Fort Drum will be better positioned to meet essential needs.

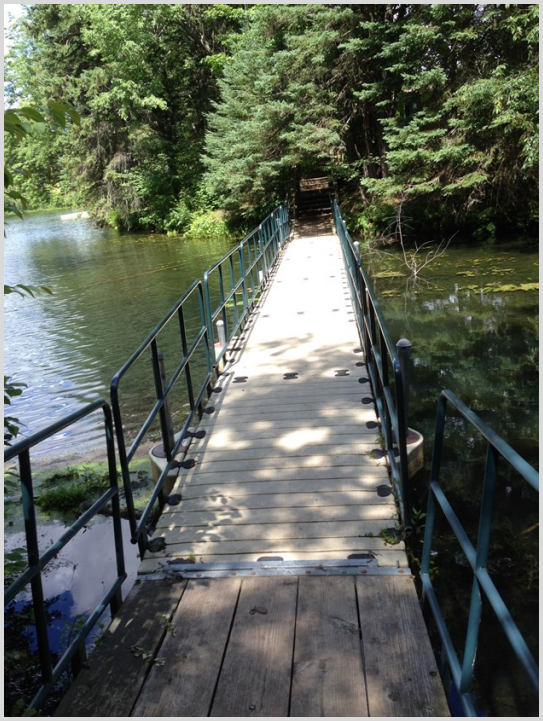
You can play a role in conserving water by becoming conscious of the amount of water your household is using and by looking for ways to use less whenever you can. It is not hard to conserve water. Conservation tips include loading dishwashers fully, turning off the tap while brushing your teeth, showering more quickly, watering plants only when needed, and checking the faucets in your home for leaks.



Remington Pond Recreation Area is a recharge area for the Pleasant Creek Watershed. This area controls sediment from stormwater runoff, filters pollutants, and provides a healthy habitat for fish, plants, and animals.

Help us to protect our water supply by:

- *Fixing leaking automobiles.*
- *Picking up trash*
- *Applying pesticides and herbicides conservatively*
- *Disposing of chemicals properly.*



Thank you for allowing us to continue to provide quality drinking water for you and your family. We ask that all of our customers help us protect our water sources, which are the heart of our community.

Questions? Please call our office at (315) 772-0218 or email diane.h.covell.civ@mail.mil.