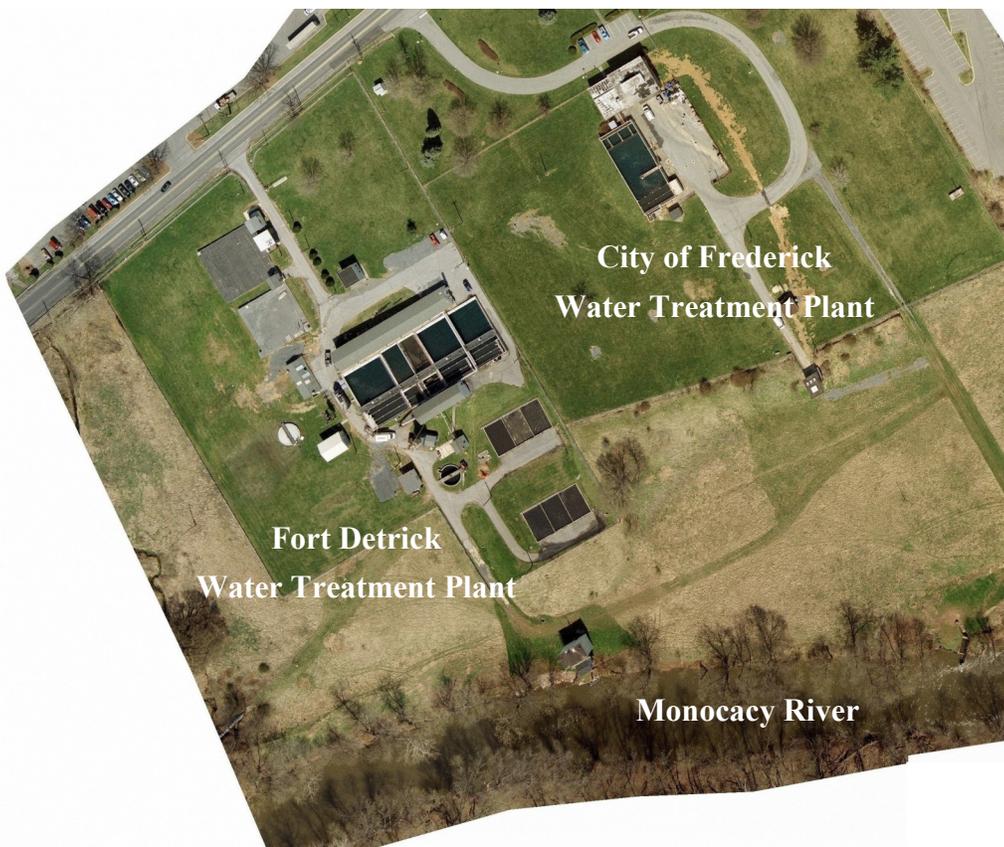




# Fort Detrick Drinking Water Quality Report

## Calendar Year 2011

We are pleased to provide the 2011 Annual Drinking Water Quality Report. The report is presented to inform the Fort Detrick community on the quality of drinking water delivered to our customers. The Fort Detrick Department of Public Works (DPW) and Environmental Management Office (EMO) are committed to providing our customers with safe and reliable drinking water. Drinking water provided to our customers has once again met or surpassed strict Environmental Protection Agency (EPA) and Maryland Department of the Environment (MDE) standards for safety and quality. Further, we take pride in returning clean water to the environment resulting from treatment of our sanitary wastes. As required by the "Consumer Confidence Reporting Rule" of the Safe Drinking Water Act (SDWA), community water systems are obligated to provide an annual report on the water quality to the consuming public. This report fulfills the SDWA requirements for the water produced and delivered by Fort Detrick. Presented in this report is information on the source of our water, its constituents and the health risks associated with any contaminants.



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**Prepared by:  
Environmental Management  
Office**

**For  
US Army Garrison**

# Fort Detrick Drinking Water Quality Report

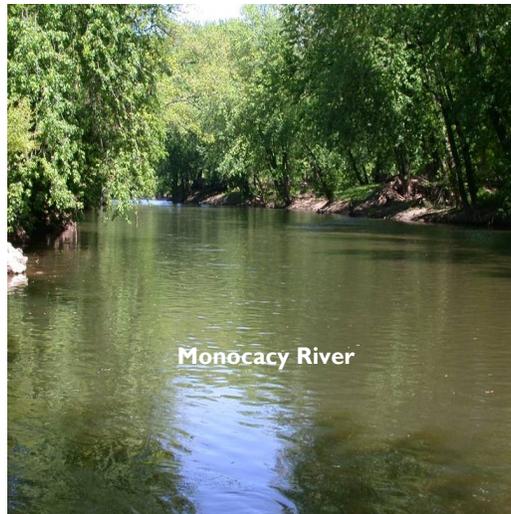
## Source of Your Drinking Water

Fort Detrick is permitted to withdraw water from local resources in accordance with permits regulated by the MDE. Source water is withdrawn from the Monocacy River and processed at the Fort Detrick Water Treatment Plant located approximately 1.5 miles east of Area A near the intersection of MD26 and MD355. The average water production during calendar year 2011 was 1.12 million gallons per day. In general, 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.

## What's in the Drinking Water?

All sources of drinking water, including bottled water, are subject to potential contamination by sources that are naturally occurring or man-made. Potential sources of contamination for the Monocacy River watershed include point and non-point sources, including transportation, agriculture, on-site septic systems and runoff from developed areas. A susceptibility analysis conducted by the MDE indicates that turbidity, disinfection by-product precursors, and pathogenic (capable of causing disease) microorganisms are the contaminants of most concern. Sampling for microorganisms in the Monocacy River indicates the high-

est concentrations were found during storm events. Nutrient enrichment, algal blooms and natural organic matter all contribute to the creation of disinfection by-product precursors. Decaying organic matter decreases the availability of oxygen in the river and algae growth increases the total organic car-



bon in the water. The reaction of organic carbon with disinfectants used in the water treatment process results in the production of disinfection by-products in the treated water. High turbidity levels are associated with erosion and transport of sediment during storm events. 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).

## Vulnerable Community Members

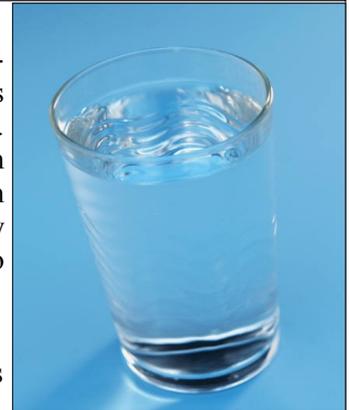
Some groups of people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as: persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. At risk people should seek advice about drinking water 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 EPA's Safe Drinking Water Hotline at 800-426-4791.

## Cryptosporidium (microbial pathogens)

*Cryptosporidium* is a microbial pathogen found in surface water throughout the U.S. Monitoring indicates the presence of these organisms in our source water. Although filtration removes *cryptosporidium*, filtration methods cannot guarantee 100 percent removal. Current test methods do not allow us to determine if the organisms are capable of causing disease. *Cryptosporidium* must be ingested to cause disease, and may be spread through means other than drinking water. There have been no known health concerns at Fort Detrick from microbial pathogen ingestion from drinking water.

## Monitoring of Your Drinking Water

We are proud to provide safe and dependable drinking water to the Fort Detrick community. In order to ensure that the tap water is safe to drink, the EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. As shown in the table: "Analyte/Contaminant Groups and Monitoring Frequency", we continually monitor the drinking water for contaminants to ensure quality. Tap water provided to our customers has met all EPA and MDE drinking water health and safety standards.



Our water system uses only EPA-approved laboratory methods to analyze your drinking water. Our personnel collect water samples from the distribution system. These samples are then shipped to an accredited laboratory where a full spectrum of water quality analyses is performed. At Fort Detrick, we monitor for the contaminant groups listed in the left column of the following table using EPA-approved methods. The right column of the table specifies the monitoring frequency for these contaminant groups.

### Analyte/Contaminant Groups and Monitoring Frequency Table

Analyte/Contaminant Group	Monitoring Frequency
Arsenic	Once yearly
Fluoride	Once yearly
Nitrate	Once yearly (1 <sup>st</sup> quarter)
Metals (Phase II/V)	Once yearly
Atrazine	Once yearly (2 <sup>nd</sup> quarter)
SOC (Phase II/V) <sup>1</sup>	Once yearly Samples taken by MDE.
SOC (Method 525)	Twice yearly (2 quarters yearly)
VOC <sup>2</sup>	Once yearly
Gross Alpha <sup>3</sup>	Every 9 years (Due in 2012) Samples taken by MDE.
Radium-228	Every 9 years (Due in 2012) Samples taken by MDE.
Total Haloacetic Acids	Four times yearly (4 quarters yearly)
Total Trihalomethanes	Four times yearly (4 quarters yearly)
Bacteriologic samples	8 per month
Total Organic Carbon	1 set per quarter
Lead	20 samples for triennial (3 yr) period taken between 1 Jun and 30 Sept. Sampling conducted in Sept. 2009 (Next sample event 2012)
Copper	20 samples for triennial (3 yr) period taken between 1 Jun and 30 Sept. Sampling conducted in Sept. 2009 (Next sample event 2012)

1 - Synthetic Organic Contaminants (SOC) include Carbofuran, Dalapon and 2,4-D.

2 - Volatile Organic Contaminants (VOC) include Benzene, Styrene and Toluene.

3 - Gross Alpha emitters.

## **Definitions of Key Terms/Acronyms Used in this Report**

**CDC** Centers for Disease Control and Prevention; serves as the National focus for developing and applying disease prevention and control, environmental health, and health promotion and education activities.

**EPA** Environmental Protection Agency; Federal governing agency for the regulation of drinking water quality.

**FDA** Food & Drug Administration; Federal governing agency which establishes limits for contaminants in food and bottled beverages.

**MCL** Maximum Contaminant Level; The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the maximum contaminant level goals (MCLGs) as feasible using the best available treatment technology.

**MCLG** Maximum Contaminant Level Goal; The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

**MDE** Maryland Department of the Environment; State governing agency for the regulation of drinking water quality.

**MGD** Million gallons per day.

**NTU** Nephelometric turbidity unit; a measure of turbidity in water

**ppb** parts per billion; a unit of measure equivalent to a single penny in \$10,000,000. Generally equivalent to micrograms per liter.

**ppm** parts per million; a unit of measure equivalent to a single penny in \$10,000. Generally equivalent to milligrams per liter.

**SDWA** Safe Drinking Water Act; Federal law which sets forth drinking water regulations.

**Total Haloacetic Acids (HAA)** Byproducts of drinking water disinfection. Includes monochloroacetic acid, monobromoacetic acid, dichloroacetic acid, trichloroacetic acid, bromochloroacetic acid and dibromoacetic acid.

**Total Trihalomethanes (TTHMs)** Byproducts of drinking water chlorination. Includes chloroform, bromodichloromethane, dibromochloromethane, and bromoform.

**Treatment Technique (TT)** A required process intended to reduce the level of a contaminant in drinking water.

**Turbidity** A measure of the cloudiness of water. It is used to indicate water quality and filtration effectiveness (e.g., whether disease-causing organisms are present).

## **Notices of Violations**

In 2011, Fort Detrick received four (4) separate violations from the MDE associated with the monitoring of synthetic organic compounds (SOCs). These were technical violations and at no time did these occurrences compromise the integrity or quality of the drinking water or safety of our customers. Four (4) contaminants within the SOC series were omitted from one of the quarterly analytical reports due to laboratory error. These parameters were included in an alternate reporting period and were within regulatory limits. All monitoring results throughout 2011 were within regulatory limits and at no time was the drinking water compromised.

## **Public Involvement**

For additional information concerning the Fort Detrick Consumer Confidence Report, please contact the Fort Detrick Environmental Management Office at 301-619-3136 or the Environmental Hotline at 301-619-0044.

## **Water Conservation**

It is the responsibility of all Fort Detrick residents and work force to conserve water. Saving water is saving money and a very valuable natural resource. Two water conservation facts sheets are attached. In the event of a drought, the Installation Commander may direct strict water conservation measures for Fort Detrick water customers.

## Monitoring Results

The following table presents sampling results for the 2011 reporting period. **In addition to required sampling tabulated below, Fort Detrick tests for over one hundred other regulated and unregulated contaminants.** None of these additional contaminants were detected in our samples.

### Results Table - Detected Contaminants

Contaminant	MCL <sup>1</sup>	MCLG	Level Found	Range	Sample Date	Within Standards
Nitrate	10 ppm	10 ppm	2.5 ppm	N/A	9 March 2011	Yes
Barium	2.0 ppm	2.0 ppm	0.028 ppm	N/A	9 March 2011	Yes
Total Haloacetic Acids	60 ppb <sup>2</sup>	90 ppb	28.3 ppb <sup>2</sup>	6.3-44.2 ppb	22 March 2011 7 June 2011 26 August 2011 6 December 2011	Yes
Total Trihalomethanes	80 ppb <sup>2</sup>	130 ppb	47.6 ppb <sup>2</sup>	21.7-82.6 ppb	22 March 2011 7 June 2011 26 August 2011 6 December 2011	Yes
Turbidity	See footnote 3	NA	<0.3 NTU <sup>3</sup> (95% of measurements)	0.016-0.947 NTU <sup>3</sup>	Highest reading - 4 November 2011	Yes

1 Applicable State, Local, or Federal MCL, TT, or AL value.

2 Disinfection By-Products cannot exceed running annual average of 60 ppb for total haloacetic acids and 80 ppb for total trihalomethanes. The "Level Found" column indicates the maximum running annual average for 2010. The "range" column indicates individual concentrations used to calculate the running annual average.

3 The turbidity level of representative samples of our system's filtered water must be less than or equal to 0.3 NTU in at least 95 percent of the measurements taken each month. Turbidity levels cannot exceed a maximum limit of 1.0 NTU at any time.

## Prescription Drug Disposal

A prescription drug disposal fact sheet has been attached to inform the public of the environmental impacts of prescription drugs in our water ways and disposal recommendations.

## Bottled vs. Tap Water

Bottled water comes in glass and plastic containers. If not recycled, these containers are disposed in landfills throughout the world. It takes approximately 1,000 years for one plastic bottle to decompose. It is just as easy, more economical and much more environmentally friendly to buy a reusable water bottle and refill it using tap water.

# Fort Detrick Drinking Water Quality Report

## Common Sources of Contaminants and Potential Health Effects

Contaminant	Potential Health Effects	Common Sources of Contaminant
Nitrate	Infants below the age of six months who drink water containing nitrate in excess of MCL could become seriously ill. Symptoms include shortness of breath and blue-baby syndrome.	Runoff from fertilizer use, leaching from septic tanks, sewage; erosion of natural deposits.
Barium	Barium in excess of MCL can cause an increase in blood pressure.	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits.
Total Haloacetic Acids	Total Haloacetic Acids in excess of MCL can cause an increased risk of cancer.	By-product of drinking water disinfection.
Total Trihalomethanes	Total Trihalomethanes in excess of MCL can cause an increase in liver, kidney or central nervous system problems; increased risk of cancer.	By-product of drinking water chlorination.
Turbidity	Higher turbidity levels are often associated with higher levels of disease-causing microorganisms such as viruses, parasites and some bacteria. These organisms can cause symptoms such as nausea, cramps, diarrhea, and headaches.	Soil runoff.
Lead	Delays in physical or mental development in infants and children; children could show slight deficits in attention span and learning abilities. Kidney problems and high blood pressure in adults.	Corrosion of household plumbing systems; erosion of natural deposits.
Copper	Short term exposure can cause gastrointestinal distress. Long term exposure can cause liver and kidney damage.	Corrosion of household plumbing systems; erosion of natural deposits.

## Lead and Copper Rule

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. The Fort Detrick Water Treatment Plant 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 in your pipes and fixtures 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 drinking 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 EPA Safe Drinking Water Hotline at 1-800-426-4791 or at <http://www.epa.gov/safewater/lead>.

## Plumbing Problems and Repairs

Fort Detrick residents should contact Balfour Beatty Communities at 240-379-6518 for plumbing repairs. Authorized personnel at administrative and industrial facilities should contact the DPW Trouble Desk at 301-619-2726 for plumbing repairs.

## Drinking Water Treatment Process

**Source Water Withdrawal** Fort Detrick is permitted to withdraw a daily average of 2.0 million gallons a day (MGD) on a yearly basis and a maximum daily withdrawal of 2.6 million gallons from the Monocacy River. The average water production during calendar year 2011 at Fort Detrick was 1.12 million gallons per day.

**Coagulation** Coagulants such as aluminum sulfate (alum) are rapidly mixed with the water. This process neutralizes the small particles allowing them to attach to each other to form larger particles.

**Flocculation** After coagulants are added, the water is gently mixed to cause sediment particles to combine and grow large enough to settle.

**Sedimentation** Water flows very slowly through sedimentation basins allowing the particles to settle to the bottom.

**Filtration** Water flows through filter beds made of layers of coal (anthracite) and sand. The filter beds trap any particles remaining in the water.

**Disinfection** The addition of chlorine to the water kills virtually all recognized pathogenic microorganisms but not necessarily all microbial life. Primary disinfection initially kills all bacteria and viruses. Secondary disinfection maintains a disinfectant residual that prevents regrowth of microorganisms in the water distribution system.

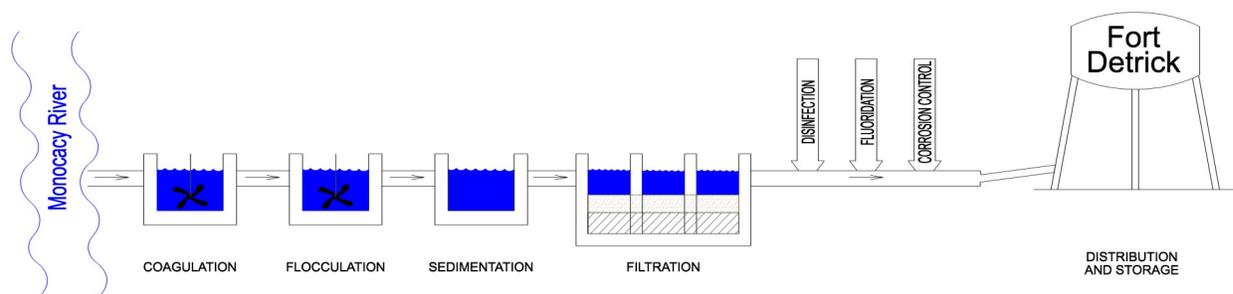
**Fluoridation** Fluoridation of the drinking water is conducted as a preventive measure to enhance community health by strengthening tooth enamel and decreasing tooth decay. Fort Detrick began fluoridating drinking water distributed to the community in March 2005, similar to what is occurring with the drinking water supplied by the City of Frederick.

**Corrosion Control** Calcium hydroxide (lime) is added to the water to control corrosion in distribution piping and consumer plumbing. This also keeps substances like lead and copper from leaching out of plumbing into the drinking water.

**Distribution and Storage** The distribution system consists of miles of piping used for the conveyance of drinking water to our customers. The distribution system further consists of three (3) drinking water storage tanks with a total capacity of 1.3 million gallons. The drinking water tanks are used to maintain adequate storage and water pressure for our customers and fire fighting purposes.

**Water Treatment Plant and Storage Upgrades** Engineering design for upgrading the existing Water Treatment Plant was initiated in 2010. Plant upgrade construction is anticipated to begin in 2013. The plant will be upgraded with current technologies for improved treatment capabilities. A new 2 million gallon ground level drinking water tank is scheduled to be constructed for improved potable water and firefighting capabilities.

### SCHEMATIC OF TREATMENT PLANT

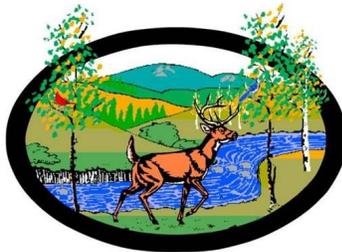


**Prepared by:  
Environmental Management Office**

**For  
US Army Garrison  
Fort Detrick, Maryland**

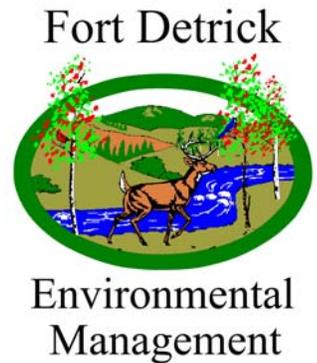


**Fort Detrick  
Environmental Management Office  
Water Quality Program Manager 301-619-3136  
Environmental Hotline 301-619-0044**



# WATER CONSERVATION

## O U T S I D E S C O O P



- ◆ Water in the early morning so that you do not lose your water to evaporation during the hot mid-day sun.
- ◆ Keep grass at least 2 inches high to shade roots and hold in moisture.
- ◆ Aerate lawns at least once a year. Use mulch around plants to reduce evaporation. Saves 750-1500 gallons per month.
- ◆ Water only when grass or plants need it. How do you know? Step on the grass, if it springs back up, you do not need to water. If it stays flat, it is time to water again in the morning. Remember the earlier the better!
- ◆ Plant drought-resistant trees and plants. Ask your local garden center for advice in choosing the right types of trees and plants. Use native plants.
- ◆ Use soaker hoses instead of sprinklers. Water plants only.
- ◆ Do not leave sprinklers or hoses unattended. Your garden hose can pour out 600 gallons or more in only a few hours, so do not leave the sprinkler running all day. Use a kitchen timer to remind yourself to turn it off.
- ◆ Do not water your street, driveway or sidewalk. Position your sprinklers so that your water lands on the lawn and shrubs, not the paved areas.
- ◆ Do not over water your lawn. As a general rule, lawns only need watering every 5 to 7 days in the summer. A hearty rain eliminates the need for watering for as long as two weeks.
- ◆ Group plants with the same watering needs together to avoid over watering some while under watering others.
- ◆ Bathe your pets outdoors in an area of your lawn that needs water.
- ◆ When the kids want to cool off, use the sprinkler in an area where your lawn needs it the most.
- ◆ Avoid recreational water toys that require a constant flow of water.
- ◆ Use a broom instead of a hose to clean driveways, walks and patios.
- ◆ Check for leaks in pipes, hoses, faucets, and couplings. Keep them drip-free.
- ◆ The self service auto wash located at the Auto Shop is the only approved location on Fort Detrick for washing privately owned vehicles. POV's may NOT be washed in the housing areas.
- ◆ When you save water, you save money on your utility bills too. Saving water is easy for everyone to do.
- ◆ Share water conservation tips with friends and neighbors.

- 
- ◆ In the event of a drought, the Fort Detrick Commander may implement additional water conservation measures for Fort Detrick water customers.

*Prepared by the Fort Detrick Environmental Management Office. For more information please contact 301-619-0044*

# WATER CONSERVATION

Fort Detrick



Environmental  
Management

## I N S I D E   S C O O P

- ◆ Check for leaks. Dripping faucets and leaky toilets are the leading culprits in home water waste. All housing residents should contact Balfour Beatty Communities at 240-379-6518 for plumbing repairs. Authorized personnel at administrative and industrial facilities should contact the DIS trouble desk at 301-619-2726 for plumbing repairs. One faucet repair can save up to 300 gallons a month.
  - ◆ Take short showers, even a one or two minute reduction can save up to 700 gallons per month. Install water-saving showerheads or flow restrictors. This will save 500-800 gallons per month.
  - ◆ Stop using the toilet as an ashtray or wastebasket. Every time you flush a cigarette butt, facial tissue, insects, or other small bits of trash, you waste 5-7 gallons of water.
  - ◆ Put food coloring in your toilet tank. If it seeps into the toilet bowl without flushing, you have a leak. Fixing it can save up to 1,000 gallons a month.
  - ◆ Turn off the running water while brushing your teeth and save 25 gallons a month.
  - ◆ Rinse the razor in the sink. Fill the bottom of the sink with a few inches of warm water. Turn off the water while you shave and save up to 300 gallons a month.
  - ◆ When washing dishes by hand, don't let the water run while rinsing. Fill one sink or tub with wash water and the other with rinse water. This will save 200-500 gallons a month.
  - ◆ Put a pitcher of water for drinking in the refrigerator instead of running the tap until it is cool. This can save 200 to 300 gallons a month and the water will even taste better!
  - ◆ Rinse vegetables and fruit in a pan of clean water, this will save 150 to 250 gallons a month, then **reuse the water** from the pan to water your houseplants.
  - ◆ Run your washing machine and dishwasher only with full loads. You can save up to 1,000 gallons a month.
  - ◆ When cleaning out fish tanks, reuse the nutrient-rich water to water your plants.
  - ◆ Designate one glass for your drinking water each day or refill a water bottle. This will cut down on the number of glasses to be washed.
  - ◆ Don't use running water to thaw food. Defrost food in the refrigerator for water efficiency and food safety or in the microwave if appropriate. This will save 50-150 gallons a month.
  - ◆ Bathe your pets outdoors in an area of your lawn that needs water.
  - ◆ When you save water, you save money on your utility bills too. Saving water is easy for everyone to do.
- 
- ◆ In the event of a drought, the Installation Commander may direct strict water conservation measures for Fort Detrick water customers.

*Prepared by the Fort Detrick Environmental Management Office. For more information please contact 301-619-0044*



## Proper Disposal of Prescription Drugs

It was once a common practice to dispose of medications down the toilet or drain. We now know that some of these substances are bad for our environment. Here are a few ways to dispose of unused, unneeded or expired prescription drugs and why we should take the time to do this.

### Federal Guidelines

- Take unused, unneeded, or expired prescription drugs out of their original containers and throw the containers in the trash.
- Mixing prescription drugs with an undesirable substance, such as used coffee grounds or kitty litter, and putting them in impermeable, non-descript containers, such as empty cans or sealable bags, will further ensure the drugs are not diverted into the wastestream.
- Flush prescription drugs down the toilet **ONLY** if the label or accompanying patient information specifically instructs doing so.
- Take advantage of community pharmaceutical take-back programs that allow the public to bring unused drugs to a central location for proper disposal. Call your local pharmacy for more details.

*Source: Office of National Drug Control Policy*

### Facts About Prescription Drug Disposal

- Prescription drugs can be scavenged and illegally sold, or could poison children and animals.
- Unused medications improperly disposed of can harm you and the environment.
- When prescription drugs are flushed, they may not be broken down by the sewage treatment facilities and septic tank systems and they can enter the soil, surface water and ground water.
- Research studies have shown that exposure to drugs found in waterways is having a serious, negative impact on fish and other aquatic life.
- Pollution prevention and the elimination or minimization of the pollution source is preferable for cleaning up the environment. This minimizes both public cost and human and ecological exposure.

*Source: Arizona Department of Environmental Quality*