

# FREEDOM DISTRICT

PWSID # 0060002

Community Water System • Carroll County, Maryland



## 2007 Annual Water Quality Report

This is an annual report on the quality of water delivered by the Carroll County Bureau of Utilities, Department of Public Works. This report meets the Federal Safe Drinking Water Act (SDWA) requirement for "Consumer Confidence Reports" and contains information on the source of the water, its constituents, and the health risks associated with

any contaminants. Safe water is vital to the community. Please read this report carefully and, if you have questions, call the Bureau of Utilities at 410-386-2164.

Since 1969, water quality has been the primary commitment of Freedom District Water Treatment Plant #1 and Plant #2, since May of 2001 and Plant #3 since May 2007.

Freedom District 2007 Annual Water Quality Report

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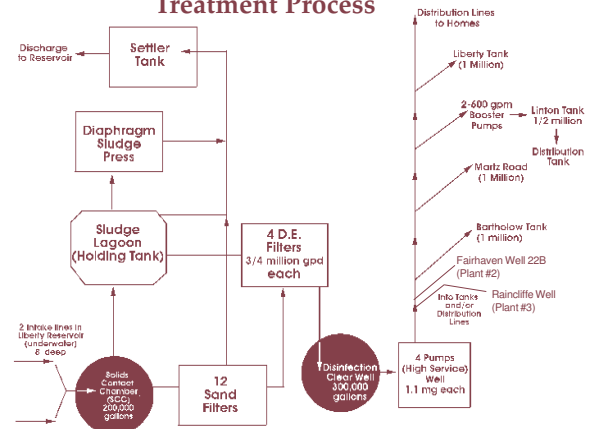
### Where Does Your Water Come From?

The Freedom District Water Treatment Plan #1 is located on the shores of the Liberty Reservoir within the Sykesville formation. This plant draws all of its surface water from the reservoir owned by the City of Baltimore. Under agreement, Carroll County purchases its raw surface water from this source. This plant has a capacity of 3 mgd (million gallons per day). This plant processes and treats surface water for consumer use though 120 miles of distribution lines or into the four storage tanks. The collective capacity of the four tanks total 3.5 million gallons. The storage tanks are utilized for fire protection and reserve until demanded by over 24,000 customers served within the system.

Fairhaven Well 22B, is located within the Piney Run watershed, and is also know as Freedom District Water Treatment Plant #2. This is our first groundwater source to supplement plant #1, coming on line in 2001. The source water, which is a 600 foot well, is treated with Sodium Hypochlorite for disinfection and fluoride for dental protection. This plant added a daily average flow of 75,353 gallons and a maximum daily flow of 273,333 gallons in 2007.

Raincliffe Well RC1, is located .5 mile south from Fairhaven well, and is known as Freedom District Water treatment plant #3. This is our second groundwater source to supplement plant #1, coming on line in 2007. The source water, which is a 500 foot well, is treated with Sodium Hypochlorite before entering 3 packaged Iron & Manganese pressure filters. The filtered water then enters a Carbon Adsorbtion pressure filter. The filtered water is treated with Sodium Hypochlorite for disinfection, Caustic Soda for pH adjustment and fluoride for dental protection. This plant added a daily average flow of 89,814 gallons and a maximum daily flow of 204,596 gallons in 2007.

### Freedom District Water Treatment Plants' Treatment Process



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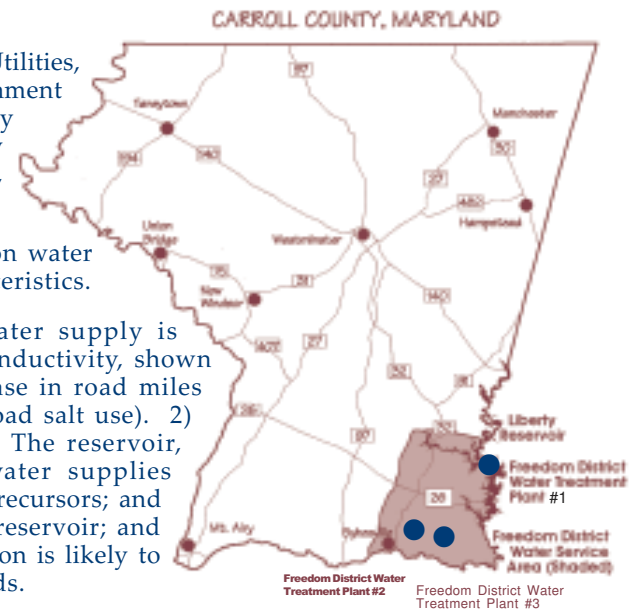
## Source Water Assessment and Its Availability

A source water assessment was completed for the Carroll County Bureau of Utilities, Department of Public Works in 2003 by Maryland Department of the Environment for the Freedom District Water Treatment Plant #1. Copies are available by stopping by, calling or writing the Bureau of Utilities, Carroll County Government, 225 North Center Street, Room 218, Westminster, MD 21157, 410-386-2164.

The susceptibility analysis of the Freedom District's water supply is based on water quality data from Freedom District, in the reservoir and watershed characteristics.

The State Drinking Water Program has determined that Freedom's water supply is susceptible to: 1) An increasing trend of dissolved solids, chlorides at conductivity, shown through data analysis by the City of Baltimore to correlate with an increase in road miles within the tributaries watersheds (and therefore deduced to be related to road salt use). 2) Protozoas, viruses and bacteria and turbidity as are all surface sources. The reservoir, however, significantly reduces the susceptibility in comparison to water supplies withdrawn directly from free flowing streams. 3) Disinfection byproduct precursors; and 4) Nutrients, (particularly phosphorus) which are a primary threat to the reservoir; and 5) Spills in the tributaries feeding the reservoir. The intake, due to its location is likely to be more susceptible to spills in Morgan or Little Morgan Run subwatersheds.

The water supply is not susceptible to volatile organic compounds, synthetic organic compounds or metals. (All of the sections in Chapter 8 other than 8.10.2 and 8.10.3 apply to the Freedom District intake.)



## How is the Water Treated?

Raw water is pumped from Liberty Reservoir via intake lines located in this reservoir. The water then travels into Plant #1's solids contact clarifier where a coagulant is added to make small particles attach to one another and other suspended matter, making them heavy enough to settle in the clarifier. The settled water is then gravity-fed to sand filters in order to filter out large leftover particles. The filtered water from the sand filters is pumped through diatomaceous earth filters to remove any remaining fine particles. The water is then chlorinated to kill harmful bacteria and viruses. Fluoride is added for dental protection. Caustic soda is used to raise the pH, causing the water to be less aggressive to piping and fixtures. Plant #1's equipment has the potential to feed potassium permanganate, lime, and polymer to handle various mineral and organic compounds that are present in the reservoir at different times of the year. The treated water from Plant #1 then enters the distribution system, along with Plant #2 & #3 and into your home or business. (See Treatment Process illustration.) Beginning July 1, 2000, zinc orthophosphate was added to the treatment process at Plant #1 as a corrosion inhibitor. On May 18, 2001, the corrosion inhibitor was changed to poly orthophosphate.

## Important Health Information

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects may be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791).

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 activity. Contaminants that may be present in source water include: (A) **Microbial Contaminants**, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife. (B) **Inorganic Contaminants**, such as salts and metals, which can be naturally-occurring or result from urban stormwater run-off, industrial or domestic wastewater discharges, oil and gas production, mining, or farming. (C) **Pesticides and Herbicides**, which may come from a variety of sources such as agriculture, urban stormwater run-off, and residential uses. (D) **Organic Chemical Contaminants**, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater run-off, and septic systems. (E) **Radioactive Contaminants**, which can be naturally-occurring or the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, 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 that must provide the same protection for public health.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons (such as those with cancer undergoing chemotherapy, those who have undergone organ transplants, people with HIV/AIDS or other immune system disorders), some elderly individuals, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The EPA /Centers for Disease Control. (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 (800-426-4791).

## Giardia/Cryptosporidium and Radon Information

On November 27, 2001, the Bureau of Utilities, Department of Public Works tested for and did not detect *Giardia/Cryptosporidium*. *Giardia/Cryptosporidium* are microbial pathogens found in surface water throughout the U.S. Although filtration removes these pathogens, the most commonly used filtration methods cannot guarantee 100 percent removal. Current test methods do not allow us to determine if the organisms are dead or if they are capable of causing disease. Ingestion of *Giardia* or *Cryptosporidium* may cause giardiasis or cryptosporidiosis, abdominal infections. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals can overcome these diseases within a few weeks. Immuno-compromised people are at greater risk of developing a life-threatening illness. We encourage immuno-compromised individuals to consult their doctor regarding appropriate precautions to take to avoid infection. *Giardia* and *Cryptosporidium* must be ingested to cause disease and it may be spread through means other than drinking water.

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# Water Quality Table

Inorganic Contaminants		FDWTP (Plant # 1)		Fairhaven Well (Plant # 2)		Raincliffe Well (Plant # 3)		Major Sources	Potential health effects from ingestion of water	
Substance	MCL	MCLG	Test Date	HLD	Test Date	HLD	Test Date	HLD		
Copper <sup>1</sup>	AL=1.3	1.3ppm	12/31/05	.042ppm	--	--	--	--	Corrosion of household plumbing systems; erosion of natural deposits	Short term exposure: Gastrointestinal distress Long term exposure: Liver or kidney damage
Fluoride	4ppm	4ppm	2007	1.3ppm	2007	1.66ppm	2007	1.38ppm	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories	Exceeding the MCL can cause mottling of teeth
Lead <sup>2</sup>	AL-15ppb	0	12/31/05	0	--	--	--	--	Corrosion of household plumbing systems, erosion of natural deposits	Infants & children: Delays in physical or mental development, children could show slight deficits in attention span & learning disabilities. Adults: Kidney problems & high blood pressure.
Nitrate <sup>3</sup>	10ppm	10ppm	2007	2.3ppm	9/25/07	4.5ppm	4/2/07	<1.0ppm	Run off from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits.	Infants below the age of six months who drink water exceeding the MCL, could become seriously ill & if untreated could die. Symptoms include shortness of breath & blue baby syndrome
Selenium	0.05ppm	0.05ppm	8/1/06	<.002ppm	10/9/07	<.005ppm	--	--	Discharge from petroleum refineries; erosion of natural deposits; discharge from mines	Hair or fingernail loss; numbness in fingers or toes; circulatory problems.

Microbiological Contaminants		FDWTP (Plant # 1)		Fairhaven Well (Plant # 2)		Raincliffe Well (Plant # 3)		Major Sources	Potential health effects from ingestion of water	
Substance	MCL	MCLG	Test Date	HLD	Test Date	HLD	Test Date	HLD		
Turbidity <sup>4</sup>		na	2007	0.32NTU	--	--	--	--	Soil Run-off	Used to indicate water quality & filtration effectiveness. Higher levels are associated with disease causing micro-organisms, such as viruses, parasites, & some bacteria. These can cause symptoms such as nausea, cramps, diarrhea & headaches
Total Organic Carbon (TOC)	TT	na	2006	1.8	--	--	--	--	Naturally present in the environment	No known health effect

Disinfectants & Disinfection By-Products		FDWTP (Plant # 1)		Fairhaven Well (Plant # 2)		Raincliffe Well (Plant # 3)		Major Sources	Potential health effects from ingestion of water	
Substance	MCL	MCLG	Test Date	HLD	Test Date	HLD	Test Date	HLD		
Chlorine <sup>5</sup> (as CL <sub>2</sub> )	MRDL=4	MRDLG=4	2007	2.68ppm	2007	2.14ppm	2007	2.2ppm	Water additive used to control microbes	Eye/nose irritation; stomach discomfort
TTHMs <sup>6</sup>	80ppb	na	2007	56.3ppb	3/31/04	29.7ppb	4/30/07	7.1ppb	By-product of drinking water disinfection	Liver, kidney or central nervous system problems; increased risk of cancer
Haloacetic Acids (HAA5) <sup>6</sup>	60ppb	na	2007	29.2ppb	--	--	--	--	By-product of drinking water disinfection	Increased risk of cancer

Synthetic Organic Contaminants		FDWTP (Plant # 1)		Fairhaven Well (Plant # 2)		Raincliffe Well (Plant # 3)		Major Sources	Potential health effects from ingestion of water	
Substance	MCL	MCLG	Test Date	HLD	Test Date	HLD	Test Date	HLD		
Di(2-ethylhexyl) phthalate	6.0ppb	0	6/2/05	0.70ppb	10/31/05	.7ppb	--	--	Discharge from rubber and chemical factories	Reproductive difficulties; liver problems; increased risk of cancer
Benzo(a)pyrene	0.2ppb	0	6/2/05	<.1ppb	10/31/05	0.1ppb	--	--	Leaching from linings of water storage tanks & distribution lines	Reproductive difficulties; increased risk of cancer
2, 4-D	70.0ppb	70.0ppb	6/2/05	<.1ppb	10/31/05	<.1ppb	--	--	Run off from herbicide used on row crops	Kidney, liver or adrenal gland problems

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The Bureau of Utilities tested for Radon in 2003 at Plant # 1 (Freedom Water Treatment Plant). The water showed a Radon quarterly annual average of 956 picocuries per liter (pCi/L). The County tested for Radon in 2004 at Plant # 2 (Fairhaven Well); the annual average was 2,055 pCi/L. Radon is a radioactive gas that you cannot see, taste, or smell. It is throughout the United States and can move up through the ground and into a home through cracks and holes in the foundation. Radon can build up to high levels in all types of homes. Radon can also get into indoor air when released from tap water from showering, washing dishes, and other household activities. Compared to radon entering the home through soil, radon entering the home through tap water will in most cases be a small source of radon in indoor air. Radon is a known human carcinogen. Breathing air containing radon can lead to lung cancer. Drinking water containing radon may also cause increased risk of stomach cancer. If you are concerned about radon in your home, test the air in your home. Testing is inexpensive and easy. Fix your home if the level of radon in your air is four picocuries per liter of air (pCi/L) or higher. There are simple ways to fix a radon problem that aren't too costly. For additional information, call your State radon program or call EPA's Radon Hotline @ (800 - SOS-RADON).

### Key to Table

AL = Action Level

MCL = Maximum Contaminant Level

SMCL = Secondary Maximum Contaminant Level

MRDL = Maximum Residual Disinfectant Level

MRDLG = Maximum Residual Disinfectant Level Goal

MCLG = Maximum Contaminant Level Goal

ppm = parts per million, or milligrams per liter (mg/L)

ppb = parts per billion, or micrograms per liter ( $\mu\text{g/L}$ )

ppt = parts per trillion, or nanograms per liter

NTU = Nephelometric Turbidity Units

HLD = Highest Level Detected

TT = Treatment Technique

nd = none detected

na - not applicable

\* Indicates SMCL

## An Explanation of the Water Quality Data Table

Our water is tested to assure that it is safe and healthy. The table in this report provides representative analytical results of water samples, collected in 2007 from our system. Please note the following definitions:

### Important Drinking Water 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 using the best available treatment technology, and taking cost into consideration.

**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, and are nonenforceable public health goals.

**Detected Level:** The highest level detected of a contaminant for comparison against the acceptance levels for each parameter. These levels could be the highest single measurement, or an average of values depending on the contaminant.

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

**Range:** The lowest to the highest values for all samples tested for each contaminant. If only one sample is tested, or no range is required for this report, then no range is listed for that contaminant in the table.

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

### Water Quality Table Footnotes

<sup>1</sup> None of the samples tested for copper exceeded the current Action Level of 1.3 ppm.

<sup>2</sup> None of the samples tested for lead exceeded the current Action Level of 15 ppb.

<sup>3</sup> Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant, you should ask for advice from your health care provider.

<sup>4</sup> 100% of the samples tested were below the treatment technique level of 0.5 NTU. Turbidity is a measurement of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system.

<sup>5</sup> 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 contaminants.

<sup>6</sup> Although there is no collective MCLG for this contaminant group, there are individual MCLGs for some of the individual contaminants:

- Haloacetic acids: dichloroacetic acid (zero); trichloroacetic acid (0.3 mg/L)
- Trihalomethanes: bromodichloromethane (zero); bromoform (zero); dibromochloromethane (0.06 mg/L)

For additional information, contact Mr. Gregory Wantz, Water Treatment Plant Superintendent, Bureau of Utilities, Department of Public Works, at 410-386-2164; or consult our web site at [ccgov.carr.org/utility](http://ccgov.carr.org/utility). For further information, see U.S. Environmental Protection Agency (EPA) water information at [www.epa.gov/safewater/ccr1.html](http://www.epa.gov/safewater/ccr1.html). and [www.waterdata.com](http://www.waterdata.com), for water quality data on other community water systems throughout the United States, or by calling EPA's Safe Drinking Water Hotline at 1-800-426-4791.

For billing information, call 410-386-2000 and for Operation and Maintenance inquiries, call 410-386-2164, Monday through Friday from 8:00 a.m. until 5:00 p.m. An answering machine is available after hours.

The Board of Carroll County Commissioners meets regularly with Department staff. The Carroll County Commissioners' weekly agenda is available on the Internet at [ccgov.carr.org/meetings/index/html](http://ccgov.carr.org/meetings/index/html). or by calling the Commissioners' Office at 410-386-2043. The Carroll County Commissioners welcome and encourage public participation.

