The Metropolitan District
Water Quality Report 2012

The Metropolitan District
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OVERVIEW

The MDC's Water Quality Report, required by federal and state regulations provides a summary of water quality for 2012 and includes information on how the MDC collects, treats and delivers quality drinking water. In 2012, the MDC's state-licensed Water Analysis Laboratory, located at Reservoir 6 in Bloomfield, conducted more than 100,000 physical, chemical and bacteriological tests. These tests determine the levels, if any, of over 130 potential water contaminants at the MDC's reservoirs, treatment plants and the 47 state approved sampling sites throughout the13 town service area. These tests and others conducted at various consulting laboratories confirmed that the potable water supplied by the MDC met all State of Connecticut Public Health Code and Federal Environmental Protection Agency standards for water quality.

Last year, the MDC distributed an average of 48.68 million gallons of water per day to a population of approximately 400,000. In order to continue to deliver the highest quality water and protect the MDC facilities, the following are some of the major advancements that have been undertaken:

- Continued security patrols of the facilities and watershed areas
- Water quality testing going well beyond regulatory requirements
- Began work on at the Reservoir #2 Dam Rehabilitation project
- Replaced over 24,000 feet of water mains in distribution system

(Note: This report contains important information about your drinking water. If you need the report in Spanish, call 860-278-7850, ext. 3211.)

WATER SOURCE

The MDC's untreated water comes entirely from surface water sources in watersheds that cover approximately 89.7 square miles. A watershed is considered all of the land area that drains to a particular water course or water body, such as a reservoir.

The MDC's water supply comes from the East Branch of the Farmington River and the Nepaug River, a tributary of the Farmington River. The reservoirs are: the 30-billion gallon Barkhamsted Reservoir, impounded by the Saville Dam, located about one mile north of New Hartford; and the 9.5-billion gallon Nepaug Reservoir, created by the Phelps Brook and Nepaug Dams, located about one mile northwest of Collinsville. Both reservoirs are in Connecticut's northwest hills, roughly 20 miles from Hartford and feed reservoirs in West Hartford and Bloomfield. These relatively remote, less developed watershed locations help reduce the chance of pollution. Even so, the MDC aggressively implements various source protection programs to further ensure the quality of its water supplies.

SOURCE WATER PROTECTION

Source water is untreated water that is used to supply public drinking water. Natural processes and human activities that occur within a watershed area can greatly impact the quality of that source water. As water travels over the surface of the land or through the ground, it can carry substances such as soil particles, salts, metals, oils, bacteria, fertilizers and pesticides that can contaminate water supplies. The MDC is very fortunate to have heavily forested watersheds, which help safeguard the water supplies by acting as a natural filter and buffer to potential contaminants.

In order to prevent contamination and unsanitary conditions in our watershed areas, the MDC performs watershed inspections on properties draining to the Barkhamsted Reservoir, the Nepaug Reservoir, and Reservoir No. 6 and the West Hartford Reservoirs. These inspections are required to be conducted by the Connecticut Department of Public Health (DPH).

The MDC's watershed inspector visits residential, business and farm properties located within the watersheds to identify conditions that may adversely affect drinking water supplies. The inspector checks for signs of septic system failure, leaking fuel oil tanks, soil erosion and sedimentation issues, illegal discharges and dumping, improper storage of chemicals and animal waste, and other conditions that have the potential to affect water quality. In 2012, a total of 1,272 watershed inspections were conducted.

The MDC's watershed staff also reviews land use development proposals that come before watershed towns and when appropriate, submits comments to encourage practices that protect reservoir water quality.

In addition, routine raw water sampling of reservoirs and tributaries is performed in order to monitor changes, if any, in water quality. The MDC's Water Analysis Laboratory conducts the physical, chemical, nutrient and biological analyses to help identify potential drinking water contaminants.

Permanently protecting additional water supply watershed land is one of the most important measures that can be taken to strengthen source water protection efforts. To this end, the MDC implemented and funded a land acquisition program in 2006. To date, the MDC has acquired a total of 211.4 acres of additional watershed land under this program.

SOURCE WATER ASSESSMENT

The Connecticut Department of Public Health (DPH) Drinking Water Section completed assessments of all public drinking water sources in 2003 to identify and document potential sources of contamination that could adversely impact drinking water quality. The assessments found that reservoirs owned by the MDC have a low susceptibility to potential sources of contamination. The Source Water Assessment Program report can be found on the Connecticut DPH's website: http://www.ct.gov/dph. For more information visit the U.S. Environmental Protection Agency's (EPA) website: http://water.epa.gov/drink.

WATER TREATMENT

The MDC has always filtered its water supplies. The slow sand filtration plant located just off Farmington Avenue in West Hartford contains 22 underground filter beds. In the filter beds, water trickles down through more than three feet of sand and stones, where within the first 2-3 inches of sand, solids and microscopic bacteria are trapped. Additional chemical treatment follows to eliminate any remaining bacteria.

The Reservoir #6 plant in Bloomfield is a rapid sand filtration facility, also known as a complete conventional plant. The system combines chemical treatment prior to filtration at six filter beds. Because pretreatment removes most impurities, those remaining impurities can be removed quickly by the filtration process. While the filtration process is accomplished somewhat differently at each plant, there are five basic components in the treatment process that the plants have in common:

1. Filtration
2. Disinfection through chlorination
3. Fluoridation (mandated by the State of Connecticut Department of Public Health to help prevent tooth decay)
4. pH adjustment of all treated water
5. Corrosion control for distribution system piping and household plumbing

CROSS CONNECTION

The State of Connecticut and MDC Ordinances require that the MDC conduct periodic inspections of properties for cross connection situations. A cross connection is an actual or potential connection between a public water system and any other source or system through which it is possible to introduce any contamination or polluting agent. The regulations require that commercial, industrial and residential structures maintain one or more cross connection control devices if there is a possibility of a "toxic or objectionable substance" being used at, in or outside the structure. State of Connecticut cross connection regulations require that the homeowner notify the MDC and obtain its approval of the plans prior to the installation of any of the previously mentioned installations. The cross connection requirements have been expanded to include, but are not limited to, fire suppression systems, lawn irrigation systems, marinas, boilers, solar heat, geothermal wells, lawn irrigation wells, ice machines and facilities which utilize chemicals within the premises, which would meet the definition of toxic or objectionable substances.

WATER CONSERVATION

Water is a limited resource, so it is vital that we all work together to maintain it and use it wisely. Here are a few tips that you can follow to help conserve water:

- Check for leaky fixtures. A leaking faucet or toilet can dribble away thousands of gallons of water per year.
- Store a jug of ice water in the refrigerator for a cold drink.
- Water lawn and plants in the early morning or during the evening to avoid excess evaporation. Don't water on a windy, rainy or very hot day.
- Apply mulch around flowers, shrubs, vegetables and trees to reduce evaporation.

LEAD

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 MDC 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 the residential plumbing 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 or at http://water.epa.gov/drink/info/lead.

Another simple way to reduce the possible exposure to lead is to regularly clean your faucet screens to remove material that may become trapped in the screen. Some of that material may be lead particles from your home's internal plumbing. Finally, do not use hot water from the tap to make infant formula or for cooking. Hot water may have higher mineral content than the cold water supplied by the MDC.

Infants and young children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink water containing lead in

LEAD (continued)

excess of the action level over many years can develop kidney problems or high blood pressure. Infants and young children are typically more vulnerable to lead in drinking water than the general population. While the MDC uses no lead pipes in its distribution system, it is possible that lead levels may be elevated in your home, which is a result of materials used in your home's plumbing.

The table on page 6 of this report summarizes the results of lead and copper testing. Federal regulations require that a minimum of 50 homes be periodically sampled by having the homeowner collect a one-liter sample from the cold-water kitchen tap as "first draw" (after water has been standing motionless in household pipes for at least six hours). During the last lead and copper sampling round conducted in 2011, the MDC collected samples from 63 homes. Since less than 10 percent (2 out of the 63 - see table) of the homes sampled were above the action level set by the EPA, the MDC remains in compliance with the Lead and Copper Rule.

During this testing, homeowners were also asked to collect an additional sample after having the water run for a few minutes. These samples were also analyzed for lead and copper content. The results consistently showed that little or no lead or copper was present in the water coming from the MDC water mains after the water was allowed to run for a short period of time. The MDC is scheduled to conduct the next round of lead and copper testing in 2014.

COPPER

Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some individuals who may drink water containing elevated copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's disease should consult their personal health care provider. During the lead and copper monitoring period conducted in 2011, there were no exceedances of the copper action level in any of the first draw samples collected by the homeowners. The lower level of copper found in the flushed sample versus the first draw sample showed that the water within the mains had a very low level of copper.

SYNTHETIC ORGANIC COMPOUNDS

In 2012, the Metropolitan District utilized two State of Connecticut certified public health environmental laboratories to conduct synthetic organic compound analysis as regulated under the public health code. The collection and analysis of these forty-two synthetic organic compounds (herbicides, pesticides, PCBs etc) did not detect any of these compounds in the potable water as supplied to the customers of the MDC. Review of the analytical data by the public, related to this monitoring is available at the MDC's Water Analysis Laboratory. The continued monitoring and vigilant ongoing watershed inspection programs help to minimize the possibility of these compounds from being found in our drinking water.

INFORMATION ABOUT DRINKING WATER CONTAMINANTS

The State of Connecticut is one of the few states where only Class A waters (not receiving discharges from sewer treatment plants) may be used for drinking water purposes.

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 from the presence of animal or human activity.

Contaminants that may be present in source water include:

- *Microbial contaminants*, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife;
- *Inorganic contaminants*, such as salts and metals, which can be naturally occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production and mining or farming;
- *Pesticides and herbicides*, which may come from a variety of sources, such as agriculture, urban storm water runoff and residential uses;
- *Organic chemical contaminants*, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, can come from gas stations, urban storm water runoff or septic systems (some of these compounds, such as trihalomethanes and haloacetic acids, are disinfection byproducts that result from the use of chlorine as a disinfectant in water treatment, which reacts with naturally occurring materials in water);
- *Radioactive contaminants*, which can be naturally occurring or the result of oil and gas production and mining activities; and
- *Radon*, a radioactive gas found commonly in well water. (Radon is not present in MDC water since all its drinking water is initially derived from surface water reservoirs.)

In order to ensure that tap water is safe to drink, the EPA prescribed regulations which limit the amount of certain contaminants in water provided by public water systems. The U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide similar protection for public health.

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 can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791).

HOW TO READ THE TABLE (PAGE 6)

The table on page 6 shows the results of the MDC's water quality analyses on its treated drinking water.

The table lists all drinking water analytes that were detected during the 2012 calendar year. Unless otherwise noted, the data presented in this table are from tests performed between January 1 and December 31, 2012. The table contains the name of each substance, the highest level allowed by regulation (Maximum Contaminant Level, or MCL), the ideal goals for public health, the amount detected, the usual sources of each substance and a key to units of measurement.

DEFINITIONS

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

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

Maximum 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 or 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 or 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.

NTU: Nephelometric Turbidity Units

ppm: parts per million, or milligrams per liter

ppb: parts per billion, or micrograms per liter

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

HOW TO LEARN MORE ABOUT YOUR WATER

If you have questions about the quality of your tap water or the information contained in this report, please call **860-278-7850, ext. 3211** during normal business hours.

The MDC welcomes public input and participation in decisions affecting your drinking water. All District Board meetings, committee agendas and schedules are posted at the MDC's Headquarters located at 555 Main Street in Hartford, CT and are also found on the District's website. Meetings are open to the public.

For more information on water quality, water treatment and water conservation visit: www.themdc.com

Water Quality and Billing Questions: (860) 278-7850, ext. 3600
Cross Connections: (860) 278-7850, ext. 3673

OTHER SOURCES OF INFORMATION:

U.S. EPA Safe Drinking Water Hotline: (800) 426-4791
CT Department of Public Health: (860) 509-7333

2012 MDC Water Quality Results

Substance (units)	Highest Level Allowed (EPA's MCL)	Goals (EPA's MCLG)	Average	Range	Major Sources
Inorganics					
Fluoride (ppm)	4	4	0.91	0.72 - 1.81	Erosion of natural deposits; water additive that promotes strong teeth
Calcium (ppm)	NA	NA	3.59	2.0 - 26.0	Erosion of natural deposits
Chloride (ppm)	250	NA	8.2	6.8 - 9.6	Byproduct of drinking water disinfection
Nitrate (ppm)	10	10	0.056	<0.005 - 0.086	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits
Nitrite (ppm)	1	1	<0.01	<0.01	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits
Disinfectant residual distribution (ppm)	4.0	4.0	0.44	0.00 - 0.95	Byproduct of drinking water disinfection
Sodium (ppm)	28 (state of CT advisory level)	N/A	7.2	5.78 - 8.05	Erosion of natural deposits and byproduct of water treatment
Sulfate	NA	NA	5.7	5.0 - 7.0	Erosion of natural deposits
Orthophosphate (ppm)	N/A	N/A	1.03	0.84 - 1.5	Corrosion control inhibitor added at the water treatment plants
Alkalinity (ppm)	NA	NA	14.3	5.0 - 17.4	Erosion of natural deposits
pH	N/A	6.4 - 10 (State of CT)	7.55	7.08 - 8.36	Sodium Hydroxide added for corrosion control to bring pH above a neutral pH (7.0)
Copper (ppm)	1.3	1.3	0.006	<0.003 - 0.014	Erosion of natural deposits
Chromium (ppm)	0.100	0.100	<0.002	ND	Erosion of natural deposits
Barium (ppm)	2.0	2.0	0.007	0.003 - 0.009	Erosion of natural deposits
Turbidity & Bacteria					
Turbidity (NTU-Max allowable) West Hartford Water Treatment Plant	1.0	0	0.07	0.03 - 0.50	Soil Runoff—Turbidity has no health effects but may interfere with disinfection and provide a medium for microbial growth.
Turbidity (NTU-Max allowable) Reservoir #6 Filter Plant	0.3	0	0.06	0.04 - 0.09	Soil Runoff
Total coliform (Distribution system) (2493 samples - 2160 required) One thermo-tolerant fecal coliform recovered	Presence of coliform bacteria in 5% of monthly samples	0	0.27%	0 - 1.9%	Naturally present in the environment
Volatile Organics & Organic Carbon (distribution data)					
Total haloacetic acids (ppb) total distribution average for Stage 1. (See table on page 7 for Stage 2 results)	60	None set	32.2 Highest single site sample average - 46.3	12.3 - 162.3 Range for highest sample location 25.9 - 76.2	Byproduct of drinking water disinfection
Total trihalomethanes (ppb) total distribution average - Compliance is based on a system wide average for Stage 1. (See table on page 7 for Stage 2 results)	80	None set	System average - 76.8 Highest single sample site average - 121.3	Range of all locations: 30.3 - 178.7 Range for highest sample location 86.1 - 178.7	Byproduct of drinking water disinfection
Total organic carbon (minimum of 35 percent reduction required at the Reservoir #6 Water Treatment Plant)	N/A	Minimum removal ratio 35%	45 %	37% - 51%	Rapid sand filter plant only treatment technique
Household Lead and Copper (2011 data — most recent required household testing)					
Substance (units)	**Action Level**	**Goals (EPA's MCLG)**	**90th Percentile**	**Highest Level Detected**	**Major Sources**
Lead (ppb)	15 ppb	0	9.3 ppb	33.6 ppb 63 sites tested (number of sites above AL=2)	Corrosion of household plumbing systems; erosion of natural deposits
Copper (ppm)	1.3 ppm	1.3	0.077 ppm	0.21 ppm 63 sites tested (number of sites above AL=0)	Corrosion of household plumbing systems; erosion of natural deposits

2012 Disinfectant and Disinfection Byproduct Rule Results

MDC - Stage 1 and Stage 2 DDBP parameters			Average Level and Range Detected During 2012 Stage 1	Average Level and Range Detected During 2012 Stage 2
Parameter	MCL	Units		
Bromodichloromethane	N/A	ppb	10.2 Range 8.45 - 12.3	2.6 Range 0.56 - 4.67
Chloroform	N/A	ppb	84.35 Range 36.8 - 150	42.1 Range 9.44 - 82.8
Dichloroacetic Acid	N/A	ppb	15.4 Range 2.6 - 33.4	10.51 Range 0.78 - 33.4
Trichloroacetic Acid	N/A	ppb	32.7 Range 13.9 - 63.2	17.6 Range 4.2 - 35.7

THE DISINFECTANT AND DISINFECTION RULE

The EPA developed the Stage 2 Disinfectants and Disinfection Byproducts Rule (DDBR) to improve drinking water quality and provide additional protection from disinfection byproducts. The compliance under the Stage 2 DDBR Rule is still based on the sum of the Trihalomethanes at 80 ppb and Haloacetic Acids at 60 ppb at a location running annual average.

HEALTH EFFECTS

Trihalomethanes (Bromodichloromethane and Chloroform) are a byproduct of drinking water disinfection. 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 systems, and may have an increased risk of getting cancer.

During 2012, the MDC transitioned from the Stage 1 Disinfectant Disinfection Byproducts Rule to the Stage 2 Disinfectant Disinfection Byproducts Rule. Under Stage1, compliance entailed monitoring of 8 sites and computing a distribution system running annual average. Under Stage 2, compliance now entails monitoring 12 sites.

The information presented above is broken down to display compliance with the Stage 1 requirements of one quarter of monitoring and the Stage 2 requirements under the Disinfectant Disinfection Byproducts rule for the remainder of the year. In the above table, the top number is the average followed by the range of the compound.

For Additional Information about the MDC:

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