Manchester Water Works Educational Outreach Program

3rd Grade Poster Contest

1st PLACE
Benjamin Hambleton,
Green Acres Elementary

4th Grade Water Science Fair Top Winners

4th PLACE: **Eric Desmaris** *and* **Jacob Pawlak,**
Parker Varney School;
3rd PLACE: **Jocelyn Arseneault,**
Jewett Street School;
1st PLACE: **Abby Swenson,**
Smyth Road School;
2nd PLACE: **Elaina Frenchette,**
Green Acres Elementary.

1st PLACE: *Winner: "Capillary Action" by* **Abby Swenson,**
Smyth Road School

Frequently Asked Questions About Your Water

Q. Why does my water sometimes look cloudy?

A. Most of the time this cloudiness is due to air in the pipes of your home and is not harmful. If you fill a glass of water and let it sit for a minute you will see the cloudiness start to disappear (from bottom to top). Pouring it from one glass to another may also help alleviate the air.

Q. How often does Manchester Water Works test the water?

A. Your water is tested every day, with samples collected all the way from the source (Lake Massabesic) through treatment, to the water at our customer's tap. An average week in the lab involves at least 350 individual tests on over 100 discrete samples. In addition, water is continuously monitored for many crucial qualities.

Q. Why does my water sometimes taste and/or smell like chlorine?

A. Some residents may notice that their water may smell chlorinous at times. This is because Manchester Water Works uses a form of chlorine to disinfect the water. This is required to prevent microbes from contaminating the water. The form of chlorine we use was changed in 2006 to a weaker, safer variety called chloramines.

Q. Is there fluoride in my water?

A. Yes, Manchester Water Works adds fluoride to the finished drinking water at 1.10 ppm.

This report contains a summary of your drinking water quality. The Safe Drinking Water Act (SDWA) requires that utilities issue an annual "Water Quality" report to customers in addition to other notices that may be required by law.

This report details where our water comes from, what it contains, and the risks our water testing and treatment are designed to prevent.

Le rapport contient information concernant la qualité de l'eau de votre communauté. Faites-le traduire, ou parlez-en à un ami qui le comprend bien.

El informe contiene información importante sobre la calidad del agua en su comunidad. Tradúzcalo o hable con alguien que lo entienda bien.

Manchester Water Works invites its customers to become involved with their water supplier. Your Board of Water Commissioners meets monthly at our offices. Please feel free to call us for information about dates and times. Additionally, you can find out more about Manchester Water Works on the internet at **www.manchesternh.gov/citygov/wtr/**

Have a question about your account balance or wish to pay on line? Visit our new on-line service for details about your balance and payment history and click on **Direct Pay – Now** to pay your water bill.

Manchester Water Works

281 Lincoln Street
Manchester, NH 03103
603-624-6494

Manchester Water Works

WATER QUALITY REPORT 2007

Behind the scenes at your Water Works

DEAR VALUED CUSTOMER

The Manchester Water Works is very pleased to present you with this 2007 Water Quality Report. This report, which is required of all water utilities under the Safe Drinking Water Act, provides you with important information about your drinking water source, the impurities that are found in the water, as well as the steps we have taken to meet federal and state water quality standards.

As a customer of Manchester Water Works, your water quality continues to meet these strict standards. As a result of the recent upgrade of our water treatment facility, steps have been taken to improve water quality even further. The addition of ozone as the plant's primary disinfectant has resulted in a significant decrease in potentially harmful byproducts, which are formed when chlorine combines with natural organic matter. Also, new deep bed filters are producing finished water quality with significantly higher clarity and lower turbidity (cloudiness).

These improvements would not be possible without the efforts of the highly skilled and qualified water treatment plant and laboratory staff. Manchester Water Works' certified laboratory and licensed water treatment plant operators are on duty 24/7 to ensure that your drinking water quality meets the highest standards.

This report also contains a glimpse of other areas important in our day-to-day operation, such as our Educational Outreach Program and elements of our operational and infrastructure improvement program.

I hope you enjoy reading this report and take advantage of the opportunity to learn more about Manchester Water Works' commitment to you, our valued customer.

Sincerely,

Thomas M. Bowen, P.E.
Director

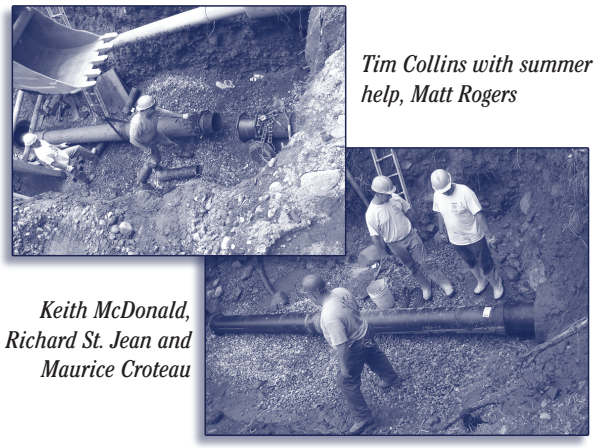
OUR CLEANING & LINING PROGRAM

The Manchester Water Works' distribution piping system consists of over 484 miles of ductile and cast iron piping. About 65 miles of this system installed before 1932 consists of unlined cast iron pipe. Modern cast and ductile iron pipe has a cement lining on the interior, which eliminates corrosion that results in the buildup of iron deposits called "tuberculation." Tuberculation deposits reduce the hydraulic capacity of the mains and can cause rusty water.

In recognition of this problem, Manchester Water Works has been systematically cleaning and lining older water mains since 1953. Proceeding at a pace of cleaning and lining approximately 10,000 feet of pipe per year, as well as replacing 5,000 to 10,000 feet of pipe per year, the goal of eliminating all of the unlined pipe will be achieved in about 20 years.

Here is how the cleaning and lining process works:

The initial step in each phase involves providing temporary water service to all customers within the limits of the construction area. Portable bypass water lines are installed above ground along the street curb lines. After disinfection, each property is connected to this bypass piping. The unlined cast iron main is then taken out-of-service and access holes are installed at approximately 500 foot intervals. Five-foot sections of pipe are removed within these holes. In order to clean the pipe and remove the iron scale, a cleaning device called a scraper is pulled through the main many times with large winch trucks. The main is then swabbed with rubber squeegee disks and the process is repeated until all signs of corrosion are removed. Following the cleaning, a one-eighth inch layer of cement-mortar lining is applied to the interior wall of the pipe. After a 24-hour curing period, the rehabilitated water main is disinfected and returned to service. Customers can then receive service from the newly relined main, while the bypass pipe is dismantled and removed. The actual cost of cleaning and lining the water mains is currently $50.00 per foot, compared to a cost of approximately $100.00 per foot to replace this main with new pipe. The cleaning and lining process is cost-effective and dramatically improves water service to our customers, while minimizing the impact on water rates. Manchester Water Works understands the importance of maintaining our infrastructure . . . such programs are given the highest priority.

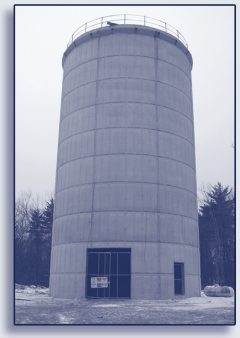


Tim Collins with summer help, Matt Rogers

Keith McDonald, Richard St. Jean and Maurice Croteau

A NEW WATER STORAGE TANK UNDER CONSTRUCTION

This partially completed 1million gallon capacity water tank will provide improved service and fire protection to the area surrounding Countryside Village and Hillcrest Terrace off Hackett Hill Road in Northwest Manchester.



Water Quality & Health Information

To ensure that tap water is safe to drink, the EPA prescribes limits on the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water.

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.

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 can dissolve many natural minerals and, especially in the case of ground water, radioactive material. Water is also subject to contaminants resulting from the presence of animals or human activity. The wide variety of contaminants that may be present in source water include:

A) Microbiological contaminants, such as viruses and bacteria originating from sewage, septic systems, agricultural livestock and wildlife;

B) Inorganic contaminants, such as road salt, metals, industrial or domestic wastewater discharge, oil and gas production, mining or farming;

C) Synthetic organic chemicals, such as petroleum products from gasoline and oils, or pesticides and herbicides and are present in runoff and as residues from household use;

D) Radioactive contaminants, either natural or man-made. Radon is one such natural, radioactive contaminant currently being regulated by the EPA. Manchester's water does not contain radon.

E) Lead – Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested and flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is available from the Safe Drinking Water Hotline (800-426-4791).

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk for infections. These people should seek advice about drinking water from their health provider. EPA/Center for Disease Control guidelines on appropriate means to lessen the risk of infection by Cryptosporidium are available from the Safe Drinking Water Hotline at **1-800-426-4791**.

Notification violation

On December 26, 2006, MWW underwent a 30 minute period where the chlorine level dropped below minimum standards. While this in itself is not a violation of the disinfection standard (4 hours) and public health was not at risk due to the fact that this water was fully disinfected by ozone during this period, MWW failed to notify NHDES of this incident until January 2nd. This delay constitutes a violation of NH Rule 380.21(f) (1), which requires notification within 1 business day of becoming aware of the incident. We sincerely regret this incident and have taken steps to assure that it will not happen again.

OUR WATER QUALITY LAB TEAM

As part of the new Water Treatment Plant renovation project, we expanded and modernized our laboratory facility to accomplish different forms of testing. The new lab was completed in June of 2005 and houses a General Lab, Microbiological Lab, and Metals Lab.

Our lab staff includes a microbiologist, a chemist and a biologist – a team dedicated to ensuring your water not only looks clean and pure, but is proven to be so!

Laboratory staff (l. to r.) Diane Bogacki, Chemist; Cheryl Wood, Microbiologist; and Kristin Conte, Biologist.

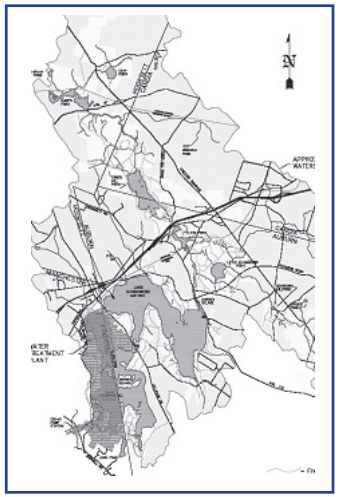
LAKE MASSABESIC

Unspoiled. Undeveloped. Natural.

Cool summer breezes, the sound of gentle waves and perhaps a loon call in the distance… our water source.

Lake Massabessic, located in East Manchester and Auburn, has been the sole supply for our Manchester and out-of-town customers since around 1874. Unlike other lakes in Southern NH, Lake Massabesic retains its natural, pure quality. This is because most of the shore and surrounding lands were purchased by Manchester Water Works to protect the water supply from development. Lake Massabesic is actually the last in a series of water bodies that collect rain and precipitation that flow through streams into the lake. Tower Hill Pond, Little Massabesic Lake and Grant's Pond, all in Auburn, are some of the major impoundments. Clay Pond, Dubes Pond and Hinemen Pond in Hooksett are also important to the quality of water because they act to clarify and filter the water well before it spills into Lake Massabesic.

We are asking our watershed neighbors and our customers to respect their natural condition, take care with their use, and observe the Manchester Water Works' rules and regulations established for their benefit. Each of us plays a vital role in preserving these natural treasures for our children and generations to come.



Lake Massabesic and Watershed

For more information regarding the Massabesic Watershed, go to our website, or check NHDES for their 2002 Source Water Assessment of the Massabesic Watershed, which categorized the watershed with four high, four medium and five low level vulnerabilities.

http://www.manchesternh.gov/citygov/wtr/
or visit the NH Department of Environmental Services website where a copy of their 2002 Source Water Assessment is available at:
http://www.des.state.nh.us/dwspp/reports/manchester.pdf

Water Quality Table

The table shown below provides information about those contaminants that were detected in Manchester's water in 2006. During the year, Manchester had multiple analyses run by the New Hampshire Department of Environmental Services for well over 100 individual contaminants. At the same time, Manchester Water Works' laboratories perform approximately 50 daily tests on the water to assure that it is safe to drink. Please feel free to call us at 624-6482. For additional information about your water quality, take a look at MWW's website for a typical analysis of both raw and treated water.

KEY TO TABLES

Definitions

MCLG: Maximum Contaminant Level Goal, or 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.

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.

MRDLG: Maximum Residual Disinfection Level Goal. The level of 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.

MRDL: Maximum Residual Disinfectant Level. 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.

AL: Action Level, or the concentration of a contaminant that, when exceeeded, triggers treatment or other requirements which a water system must follow.

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

Abbreviations

ppb = parts per billion

ppm = parts per million

pCi/l = picocuries per liter, measurement of radiation

NA = not applicable

NTU = Nephelometric Turbidity Unit

ND = not detected

< = less than

mg/l = milligrams per liter

BDL = below detection limit

P = presence of bacteria

2006 CONTAMINANT RESULTS

ANALYTE	UNIT	MCL	MCLG	LEVEL	RANGE	VIOLATION	SOURCE
Inorganic Chemicals							
Lead	ppb	15 (AL)	0	9.5 (90th Percentile; 6 samples exceeded the Action Level)	<5 – 38	NO	Corrosion of household plumbing systems; Erosion of natural deposits
Copper	ppm	1.3 (AL)	1.3	0.035 (90th Percentile; 0 samples exceeded the Action Level)	<0.01 – 0.12	NO	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Barium	ppb	2,000	2,000	11	8.3 – 13.4	NO	Erosion of natural deposits; Discharge from drilling wastes and metal refineries
Fluoride	ppm	4.0	4.0	1.11	0.1 – 1.57	NO	Water additive that promotes strong teeth; Erosion of natural deposits
Chlorine	ppm	4.0	4.0	1.37	0.60 – 2.1	NO	Water additive used to control microbes.
Chloramines	ppm	4.0	4.0	1.8	0.0 – 2.94	NO	Water additive used to control microbes.
Nitrate	ppm	10.0	10.0	0.04	0.0 – 0.08	NO	Erosion of natural deposits; Runoff from fertilizer; Sewage leaching from septic tanks
Mercury	ppb	2.0	2.0	0.1	0.0 – 0.2	NO	Erosion of natural deposits; Discharge from refineries and factories; Runoff from landfills; Runoff from cropland
Microbial Related Measurements							
Total Coliform	P	<5%	0%	<1%	Absent – 2%	NO	Naturally present in the environment
Turbidity	NTU	TT	N/A	0.09	0.02 – 0.18	NO	Soil runoff –a measurement of cloudiness of the water and a way to judge treatment efficiency
Total Organic Carbon	ppm	TT	N/A	1.9	1.7 – 2.5	NO	Naturally present in the environment
Organic Chemicals							
Trihalomethanes	ppb	80	N/A	25	3 – 57	NO	By-product of drinking water chlorination
Haloacetic Acids	ppb	60	N/A	13	3 – 28	NO	By-product of drinking water disinfection