It's A Very Good Year!

The New England Patriots officially establish a Dynasty with their third Super Bowl win in four years.

The Boston Red Sox *win their second straight world series* after an 86 year drought.

The Manchester Water Works completes work on the redesign and renovation of the drinking water treatment facility.

When you look back at 2005 thirty years from now, three remarkable events might stand out in your memory. While the first statement is a fact and the second is a fond wish, the third is a reality based on your water department's work over the past five years. That is how long the current redesign and renovation project has been underway from assessing need, to reviewing options, to building the structure. The result is a design that assures residents of Manchester and surrounding communities a sound, safe supply of tap water for the foreseeable future.

The process of planning, design and construction based on best science is not new. Since 1974, when the current purification facility was completed, our understanding of drinking water, its treatment, distribution, and health impact has evolved significantly. Before that, water purity was determined by methods that focused on acute disease prevention. Over the past 30 years, better knowledge equipped us with better understanding of overall safety. The people of Manchester have benefited from the operation of a facility designed around the best technology of the early 70s and will now benefit from a system re-designed using 21st century science.

When you look back from the year 2035, you might remember the Patriots and Sox victories. However, every time you enjoy a cold, crisp, clean glass of water from the tap, you most certainly will be reminded of the year your water plant was upgraded. We thank you for the trust you have placed in us over the years and promise to continue to do whatever it takes to provide the safest, cleanest, most reliable tap water possible.

Manchester Water Works
Contact us for more information about the Water Treatment Plant at 624-6482 or visit our website at **www.manchesternh.gov/citygov/wtr/**

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/**

Manchester Water Works
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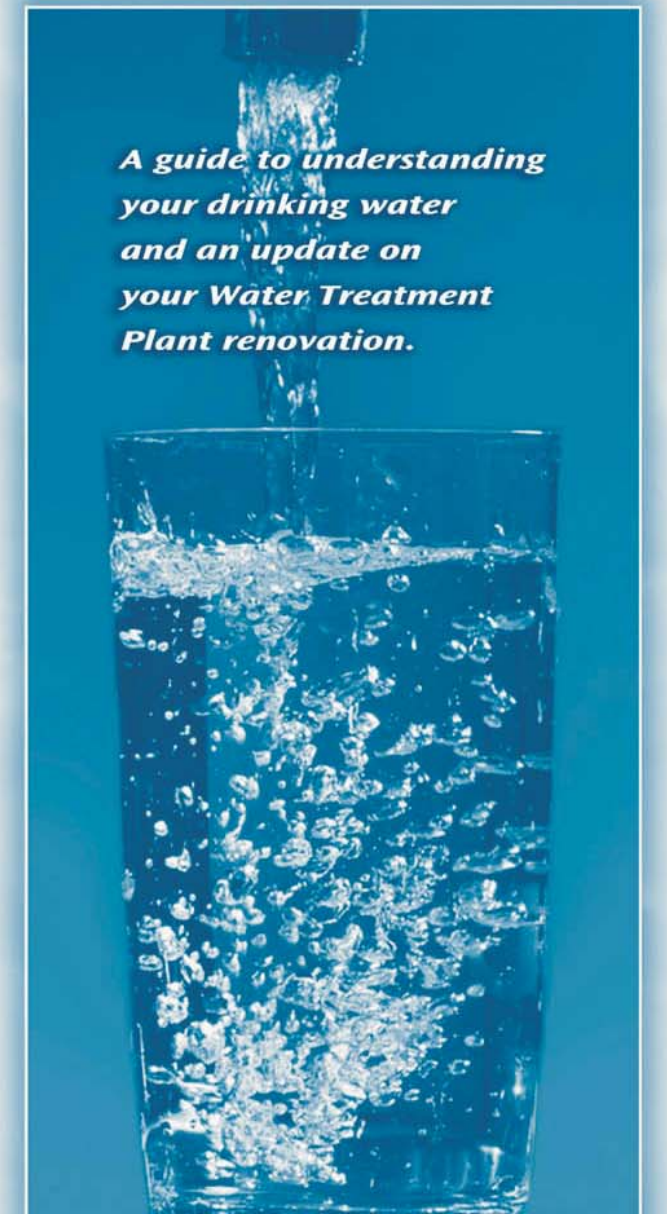
MANCHESTER WATER WORKS

2005
Water Quality Report



It's Your Water

...and It's not always about the Rules

As the Safe Drinking Water Act (SDWA) celebrates its 30th birthday, we have seen a drastic improvement in the quality of the nation's tap water. Before this act's implementation, tap water quality was governed by a relatively simple set of regulations under the auspices of the nation's Public Health Service. Following President Nixon's creation of the Environmental Protection Agency in 1972, a much more complete set of standards was enacted in 1975. These rules have been modified, reenacted, augmented and expanded over the past three decades.

In conjunction with this refinement and improvement of the nation's tap water, we have seen significant growth of the bottled water industry. While seemingly contradictory, surveys found the reasons for this change to involve convenience, aesthetics, and perceived safety of the product in that relative order.

Manchester Water Works has heard the message. While convenience could be defined as home delivery, we recognize that here convenience really means drinking water "to go". We suggest that you reuse or at least recycle that bottle, as the natural resources required to manufacturer bottles on a national basis are extensive. Aesthetics are another matter. When our renovations are completed this summer, your tap water will be treated with ozone and activated carbon filtration. These techniques are renowned for producing high quality and aesthetically appealing water. The third reason involves safety. Water is an absolute necessity for life. We want you to know that you can depend on the quality and safety of your tap water.

Historically, MWW has taken every step to ensure that our customers get the finest water, delivered by the best piping network and emanating from the highest quality protected source available. We have invested in technology that will not only improve the taste, but also significantly reduce our reliance on chlorine. This is one example of how we are working continuously to bring the safest, best quality water to your tap.

Chloramination and Disinfection

In the mid 1800s, Dr. Snow discovered that the drinking water was killing many Londoners. Over the past 150 years, water utilities have understood that drinking water must be disinfected to be safe. The preferred method of disinfection since then has been with chlorine.

With our increased understanding of chlorine use and its drawbacks, drinking water and public health scientists have determined that a less powerful form of chlorine, called chloramines, is a better overall solution for public health. EPA estimates that nearly 60% of all utilities will use chloramines to comply with their new stringent rules for chlorine by products. Disinfecting the water while minimizing the by products formed is the overall goal.

Manchester Water Works has considered the issues and, in addition to utilizing ozone for disinfection of the treatment plant, is also preparing to convert your water system to chloramines later this year. The conversion will be of significant interest to dialysis patients and owners of tropical fish. Otherwise, we anticipate the conversion will result in reduced chlorine tastes and odors with overall safer water.

See our Q&A section or feel free to give us a call for more information.

One of Manchester's three ozone generators during testing in Charlotte, NC.

Q&A About Chloramines

Q: ***What is chloramine?***

A: Chloramine is a disinfectant used to protect water systems. It is produced by combining chlorine and ammonia.

Q: ***Why is chlorine or chloramine added to the water?***

A: All drinking water suppliers using surface water are required by the U. S. Environmental Protection Agency (EPA) to disinfect. Cholera, typhus, and other waterborne diseases kill over 10 million people each year in places where disinfection is not used.

Q: ***Why is MWW changing from chlorine to chloramine disinfection?***

A: The primary reason for changing is to reduce the formation of trihalomethanes (THMs) with chlorine. THMs are disinfection by-products, that at high concentrations over a lifetime, may statistically increase the chance of some cancers. The original standard for THMs of 100 parts per billion (ug/l) was reduced in 2004 to 80 ug/L. Further restrictions on the levels of THMs are forthcoming. Chloramination has been shown to effectively control the formation of THMs.

Q: ***What regulations are pertinent to this issue?***

A: New regulations amending the Surface Water Treatment Rule commonly referred to as LT1 and LT2 (Long Term 1 and 2) are being implemented along with new standards for chlorine by products called Stage I and Stage II. This group of regulations attempts to balance risks of chlorination against the risks of waterborne disease.

Q: ***What is the history of chloramine use in drinking water?***

A: Chloramine has been used for disinfection in the United States since the early 1900's. Both chlorine and chloramine are well known disinfectants with a considerable body of experience.

Q: ***What is the current use of chloramine for drinking water disinfection?***

A: The EPA estimates that chloramine use will approach 60% as utilities make changes to comply with their new rules.

Q: ***What are the benefits to using chloramine instead of chlorine?***

A:
1. It is more effective as a residual disinfectant and has the ability to penetrate biofilms in the distribution system.
2. It produces lower levels of chlorination by products (DBPs), such as THMs.
3. It minimizes chlorinous or other objectionable taste and odors.

Q: ***What customers are affected using chloramine instead of chlorine?***

A: Treatment prcautions must be taken for dialysis clinics and fish hobbyists. Because of the persistent nature of chloramines, extra removal must be implemented.

Q: ***Can other disinfectants be used instead of chloramine?***

A: **Yes.** MWW will be changing to ozone for primary disinfection at the Water Treatment facility. Chloramines will be used as a secondary disinfection ie within the distribution piping network.

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, such as people with cancer undergoing chemotherapy, people who have undergone organ transplants, 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**.

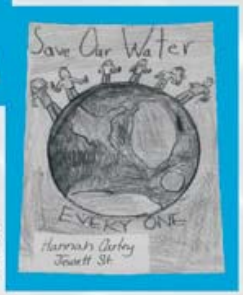
Posters from Manchester Water Works School Education Program

This entry by Jessica Gray of Northwest Elementary School during Manchester Water Work's 2004 3rd grade poster contest won First Prize.

Brenda Welch of Smyth Road School depicts a busy beaver building for the future in last year's 3rd grade poster contest.

Understanding that water is essential to life is the theme of this entry by Tyler Colby of Jewett Street School.

Kassandra Baron is all smiles in this neat poster from last year.



Every drop counts is the theme of a 2003 poster by Hannah Curley.

The Water Source

Every glass of Manchester's tap water comes from Lake Massabesic. Located in Manchester and Auburn, this lake is a wonderful resource protected for drinking water use. Although Manchester Water Works owns nearly 8000 acres of land to isolate the water from the detrimental effects of development, it is not possible to own the entire drainage area estimated at 42 square miles.

Source Water Assessment

In compliance with a federal mandate, the NH Department of Environmental Services performed a Source Water Assessment on Lake Massabesic in September of 2002. This assessment looked at the drainage area for the lake and ranked its vulnerability to contamination. You may view this assessment at DES or at **http://www.des.state.nh.us/dwspp/reports/MANCHESTER.pdf.** Lake Massabesic received four high and four medium vulnerability ratings, while it ranked it at low vulnerability for five additional categories. Concern was raised over the detection of MTBE that comes from motorboats, as well as Potential Contamination Sources (PCSs) on the watershed, such as highways. Overall, the report presents a positive picture of Manchester's source and its condition. While Manchester Water Works has done its best to protect and defend the purity of Lake Massabesic, we understand more than ever that we rely heavily upon the standards and practices of each citizen and each community on the watershed for its preservation as a high quality drinking water supply.

Renovations Update

One of the final roof sections being lowered into place.

The Manchester Water Works has been involved in major renovations throughout the Water Treatment Plant for the past two years to completely upgrade and replace most of the equipment used to purify your drinking water. These processes will include ozone instead of chlorine and the use of highly efficient water filters, together designed to create a cleaner, safer and more appealing water supply. These renovations will be apparent when they are completed later this year. We look forward to that day when we bring you even better tasting, higher quality water than ever before.

Water Quality Table

The table to the right provides information about those contaminants that were detected in Manchester's water in 2004. 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 40 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.

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

2004 CONTAMINANT RESULTS

CONTAMINANT	UNIT	MCL	MCLG	AVERAGE LEVEL	RANGE	VIOLATION	MAJOR SOURCE
Inorganic Contaminants							
Lead	ppb	15 (AL)	0.0	9.5 90th Percentile	0 – 38.0	NO	Corrosion of household plumbing systems; Erosion of natural deposits
Copper	ppm	1.3 (AL)	1.3	0.035 90th Percentile	0 – 0.120	NO	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Barium	ppm	2.0	2.0	0.0127	0.0095 – 0.0148	NO	Erosion of natural deposits; Discharge from drilling wastes and metal refineries
Fluoride	ppm	4.0	4.0	0.98	0.29 – 1.67	NO	Water additive that promotes strong teeth; Erosion of natural deposits
Chlorine	ppm	4.0 (MRDL)	NA	0.49	0.02 – 1.51	NO	Drinking water disinfectant
Microbiological Contaminants							
Total Coliform	P	<5%	0%	<1%	0 – 1%	NO	Naturally present in the environment
Turbidity	NTU	0.3	0.0	0.07	0.05 – 0.14	NO	Soil runoff
Total Organic Carbon	mg/l	TT	NA	2.3	1.9 – 3.1	NO	Naturally present in the environment
Volatile Organic Contaminants							
TTHMs (Total Trihalomethanes)	ppb	80	NA	80.0	44 – 91	NO	By-product of drinking water chlorination
Total Haloacetic Acids (5)	ppb	60	NA	22.0	14 – 32	NO	By-product of drinking water disinfection