2010 Water Quality Report

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A Message from Your Water Utility

We are pleased to present you City of Evanston's annual water quality report, an information service for our water customers. The City is committed to providing you with the highest quality of drinking water. In 2010, as in past years, your tap water has met all USEPA and State drinking water health standards and has had no violations to report. Of the hundreds of substances that are monitored, only a handful were actually detected in our drinking water and all substances detected were far below a level at which there is any known health risk!

Your Water Source

Evanston's source of water, Lake Michigan (a surface water), is not just a major commerce artery and a recreational resource with miles of scenic shoreline, it is also a great source of drinking water! Almost half of the world's fresh water comes from it and the other Great Lakes. According to the USEPA, the quality of Lake Michigan water has improved dramatically over the past 20 years. The regulations in place restrict industrial and sewage treatment plant effluents from entering the lake thereby lowering the risk of having these contaminants in the water. All 63 miles of shoreline within Illinois are now considered to be in good condition.

Summary of Illinois EPA Source Water Assessment Report of Lake Michigan as a Drinking Water Source

The EPA report states that there is concern for Lake Michigan water quantity and also water quality (a 1967 U.S. Supreme Court decree limits the amount of Illinois diversions of water from the lake, and currently Illinois is reaching its limit on that allocation). The Illinois EPA (IEPA) considers all surface water sources of community water supply to be susceptible to potential pollution problems. The very nature of surface water allows contaminants to migrate into the intakes with no protection, only dilution. This is the reason for mandatory treatment for all surface water supplies in Illinois. Evanston recognized the need for treatment long before these requirements came into effect. In fact, Evanston has operated a water treatment facility for over 100 years! To view a summary version of the completed Source Water Assessments, including: *Importance of Source Water*; *Susceptibility to Contamination Determination*; and documentation/recommendation of *Source Water Protection Efforts*, access the IEPA website at: www.epa.state.il.us/cgi-bin/wp/swap-fact-sheets.pl.

All of Evanston's water intakes, which bring the lake water into the treatment plant, are located far enough offshore that shoreline impacts are not considered a factor on water quality. However, at certain times of the year the potential for contamination during wet-weather flow conditions exists due to the proximity of the North Shore Channel. Also, the proximity to a major shipping lane adds to the susceptibility of these three intakes. The Great Lakes have many different organizations and associations that are currently working to either maintain or improve water quality. The report further commends Evanston's involvement in such organizations as the West Shore Water Producer's Association, which leads to critical coordination regarding water quality issues that takes place between the utilities on the west shore of Lake Michigan.

Today, the staff of the City's Water Division continues Evanston's tradition of excellence by working around the clock for your health and safety. We are proud of our water and pledge to continue to provide you with the highest quality water that is humanly and technologically possible.

View the city's website at www.cityofevanston.org for more information.

Thank you for the opportunity to serve you.

How You Can Save on Water Use

We're for Water℠

www.epa.gov/watersense

WaterSense is a new program developed by the EPA. Launched in 2006, WaterSense is an EPA-sponsored partnership program that seeks to protect the future of our nation's water supply by promoting water efficiency and enhancing the market for water-effecient products, programs, and practices.

The City of Evanston is an official partner of the WaterSense program. Learn about water saving tips at www.epa.gov/watersense

Did you know..

- Water covers 70.9% of the Earth's surface, but only 3% of that is fresh water.
- Approximately 400 billion gallons of water are used in the United States per day.
- A running toilet can waste up to 200 gallons of water per day.
- At 1 drip per second, a faucet can leak 3,000 gallons per year.
- If you drink your daily recommended 8 glasses of water per day from the tap, it will cost you about 50 cents per year. If you choose to drink it from water bottles, it can cost you up to $1,400.

30 Homes Tested for Lead & Copper

To minimize contamination resulting from corrosion, the EPA established a lead action level of 15 parts per billion (ppb) in 1992. The 90th percentile result of samples analyzed for lead and copper content in homes with lead pipes must be less than the action level of 15 ppb and 1.3 ppm respectively. Evanston is required to sample for lead and copper every three years. In 2008, Evanston sampled water from thirty homes with lead service lines and analyzed them for lead and copper content. All results were below the action levels. The 90th percentile level for Lead was less than detection limit of 5 ppb. The 90th percentile level for copper was 0.36 ppm as illustrated as the Evanston Result in Water Quality Data table. The Evanston Water Utility is proud to have been in compliance with this rule since November of 1992!

Remember, there is no detectable lead in the water provided to the Evanston community. Lead enters the water from lead solder, lead pipes or plumbing fixtures in the home. 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 Evanston Water Utility 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 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 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 www.epa.gov/safewater/lead.

Unregulated Testing - City Voluntarily Tests for Other Compounds

The Evanston Water Utility is committed to providing water which meets or exceeds all governmental regulations for public water supplies. In addition, we are proud to voluntarily test for over 60 unregulated compounds. We do this to better inform the public, better understand our water quality and prepare for future regulations.

Underwriters Laboratories (UL), certified by the United States Environmental Protection Agency (USEPA), analyzed the water for the presence of 67 different compounds. The results of these tests are reported in concentrations of parts-per-billion (ppb). As a reference, a part-per-billion is equal to one pinch of salt in 10 tons of potato chips or one cent in ten million dollars.

Pharmaceutical and Personal Care Products

The Evanston Water Utility analyzed its finished water for the presence of Pharmaceutical and Personal Care Products (PPCP), perfluorinated chemicals (PFC), certain endocrine disrupting compounds (EDC), acrylamide and epichlorohydrin.

One PPCP compound, Cotinine, was found in the Evanston's Finished Tap Water and detected at a trace level of 0.002 ppb. Cotinine is a metabolite of nicotine; a by-product of nicotine as it is processed by the human body.

One compound, Perfluorooctane sulfonate (PFOS), was detected as a result of the perfluorinated chemicals analysis. PFOS was detected at a trace level of 0.0015 ppb. PFOS was a common ingredient in the production of fabric protectors/stain repellent and also fire fighting foam. This compound is no longer manufactured in the United States. A USEPA guideline for this compound does not exist, however there is a provisional health advisory (PHA) of 0.2 ppb. As you can see, the amount detected in Evanston's finished water is almost one hundred times less than this PHA.

Certain endocrine disrupting compounds (EDCs), acrylamide and epichlorohydrin were not detected in the water. Of note, Bisphenol A, a plastics by-product, which has been the topic of many discussions in the media of late, was not found in Evanston's water.

The most important thing to remember is there are ways to prevent Pharmaceutical compounds from entering Lake Michigan. First and foremost is the proper disposal of unused and expired drugs. The City of Evanston Department of Health and Human Services in cooperation with the Solid Waste Agency of Northern Cook County (SWANCC) gives residents the opportunity to dispose of their expired and unused medications in an appropriate manner.

The Health Department accepts expired prescription and over the counter medications (non-liquid) in their original containers only. According to SWANCC over the counter liquids and controlled substances cannot be accepted, visit www.cityofevanston.org/rxdisposal or www.swancc.org for more information. If you do not have access to a computer, please contact us at 3-1-1 (847/448-4311) or SWANCC at 847/724-9205 and the information will be sent to you via U.S. Mail.

Evanston residents can bring their items in to the Health Department on the lower level of the Civic Center between 9 a.m. and 4 p.m., Mondays through Fridays only. Over the counter liquids and controlled substances should be disposed of in the following manner:

1. Remove drugs from their original containers.
2. Mix drugs with undesirable substance like coffee grounds or kitty litter.
3. Place mixture into disposable container with a lid, such as an empty margarine tub, or into a sealable bag.
4. Remove or conceal any personal information, including Rx number, on the empty containers by covering it with black permanent marker or scratching it off.
5. Place the sealed container with the mixture, and the empty container, in the trash.

Chromium

Chromium is a metallic element and is found naturally in rocks, plants, soil and volcanic dust, humans and animals. Total chromium is made up of trivalent chromium, hexavalent chromium and the metallic form of chromium. Major sources of hexavalent chromium in drinking water are discharges from steel and pulp mills.

In January 2011 the Evanston Water Utility analyzed the finished water for total and hexavalent chromium. The level of hexavalent chromium was 0.27ppb; total chromium was 0.20ppb. These test results provide an indication of the margin of error in the testing methods when sampling for such miniscule detection levels. Currently the EPA maximum contaminant level (MCL) for total chromium is 100ppb, which Evanston is far below.

The EPA does not require testing for hexavalent chromium nor has a MCL for it. The Evanston Water Utility is committed to testing for both total and hexavalent chromium on a quarterly basis. These results will be reported as they become available and can be found on the City's website www.cityofevanston.org/water.

For more information on The Evanston Water Utility or any additional questions or concerns please contact 311 (847/448-4311).

The Evanston Water Utility is committed to providing water which meets or exceeds all governmental regulations and maintaining the quality of water that residents have come to enjoy!

2010 Water Quality Data Charts

City of Evanston™

The Basics About Your Water

Measured Parameter	Evanston Average	Evanston Minimum	Evanston Maximum
pH (0-14 pH units)	7.6	7.3	7.8
Hardness (as mg $CaCO_3$/L)	132	120	151
Alkalinity (ppm)	97	84	119
Raw Water Temperature	50.9°F 10.5°C	33.4°F 0.8°C	71.6°F 22.0°C

Definitions

Action Level – The concentration of a contaminant which, if exceeded, triggers treatment or other required actions by the water supply.
Disinfection By-Products – Total Trihalomethanes and Total Haloacetic Acids are used to regulate the amount of allowable by-products of chlorination.
Fluoride – The Illinois Department of Public Health recommends an optimal fluoride range of 0.9 ppm to 1.2 ppm
Lead and Copper – There is no detectable lead in the water provided to the Evanston community. Lead enters the water from lead solder, lead pipes or plumbing fixtures in the home. To minimize contamination resulting from corrosion, the EPA established a lead action level of 15 parts per billion (ppb) in 1992. The 90th percentile result of samples analyzed for lead and copper content in homes with lead pipes must be less than the action level of 15 ppb and 1.3 ppm respectively. In 2008, Evanston sampled water from thirty homes with lead service lines and analyzed them for lead and copper content. All results were below the action levels. The 90th percentile level for Lead was less than detection limit of 5 ppb. The 90th percentile level for copper was 0.36 ppm as illustrated as the Evanston Result in above table.
MCL – Maximum Contaminant Level, the highest level of a contaminant that is allowed in drinking water. A MCL is set as close to a MCLG 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.
mg $CaCO_3$/L – milligrams of calcium carbonate per liter.
mrem/yr – Millirems Per Year- Measure of radiation absorbed by the body.
MRDL – Maximum Residual Disinfection Level – The highest level of a drinking water disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
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.
NA – Not applicable.
NTU – Nephelometric Turbidity Units, measures water clarity.
pCi/L – picocuries per liter- Measure of radioactivity.
ppm – parts per million or milligrams per liter (mg/L).
ppb – parts per billion or micrograms per liter (µg/L).
Sodium – There is not a state or federal MCL for sodium. Sodium levels below 20 mg/l (ppm) are not considered to be a health issue.
TT – Treatment Technique, a required process intended to reduce the level of a contaminant in drinking water.
Turbidity – a measurement of the cloudiness of the water caused by suspended particles. This is monitored because it is a good indicator of water quality as well as verifying the effectiveness of the filtration and disinfection processes.
TOC – The Evanston Water Supply monitored the percentage of Total Organic Carbon (TOC) removal quarterly and met all TOC removal requirements set by the IEPA.

Detected Substances

Substance	Date Collected[a]	MCLG	Highest Allowed (MCL)	Highest Level Detected	Range of Levels Detected	Violation	Source of Contamination
Turbidity (NTU) (Cloudiness)	2010	NA	TT=Monitored by % exceeding 0.3 NTU & max allowed is 1 NTU	100% of samples meet 0.3 NTU	0.06 - 0.23	No	Soil runoff
Fluoride (ppm)	2010	4	4	1.1	0.90 - 1.1	No	Water additive which promotes strong teeth
Sodium (ppm)	10/4/2010	NA	NA	7.1	single sample	No	Erosion from naturally occuring deposits
Lead (ppb)	6/2008	0	Action Level = 15	<5 (90th Percentile)	<5 - 9.4	No	Corrosion of household plumbing
Copper (ppm)	6/2008	1.3	Action Level = 1.3	0.1 (90th Percentile)	<0.1 - 0.36	No	Corrosion of household plumbing
Total Coliform Bacteria	2010	0	5% of Monthly Samples are Positive	1.2	NA	No	Naturally present in the environment
Fecal Coliform Bacteria	2010	0	A routine sample & a repeat sample are total coliform positive & one is also fecal coliform or E. coli positive.	1	NA	No	Human and animal fecal waste
Combined Radium 226/228 (pCi/L)[b]	1/9/2008	0	5	0.82	Single Sample	No	Erosion of natural deposits
Gross Alpha excluding Radon and Uranium (pCi/L)[b]	1/9/2008	0	15	3.9	Single Sample	No	Erosion of natural deposits
Beta/Photon Emitters (mrem/yr)[b]	1/9/2008	0	50	7.3	Single Sample	No	Decay of natural and man-made deposits

Detected Substances

Disinfection By-products	Date Collected[a]	MCLG	Highest Allowed (MCL)	Evanston Result	Range of Levels Detected	Violation	Source of Contamination
Total Trihalomethanes (ppb)	2010	NA	80	28[c]	15.1-38	No	By-product of drinking water chlorination
Total Haloacetic Acids (ppb)	2010	NA	60	10[c]	6.8-11	No	By-product of drinking water chlorination
Chlorine	2010	4 MRDLG	4 MRDLG	0.4[d]	0.37-0.48[d]	No	Water additive used to control microbes

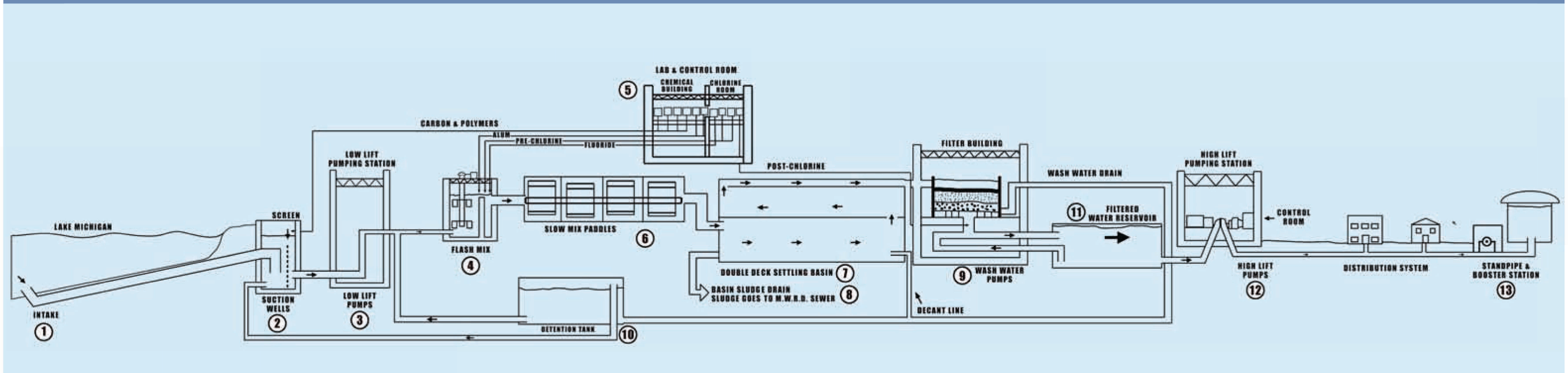
Unregulated Contaminants

Substance	Date Collected[a]	MCLG	Highest Allowed (MCL)	Evanston Result	Range of Levels Detected	Violation	Source of Contamination
Cotinine (ppb)	11/10/2010	Not Regulated	Not Regulated	0.002	Single Sample	No	nicotine metabolite/waste water discharge
Perfluorooctane sulfonate (ppb)	11/10/2010	Not Regulated	Not Regulated	0.0015	Single Sample	No	fabric protector/ stain repellent, fire fighting foam/waste water discharge

Footnotes

a – The state requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of our data, though accurate, is more than one year old. Some contaminants are sampled less frequently than once a year; as a result, not all contaminants were sampled for during the Consumer Confidence Report (CCR) calendar year. If any of these contaminants were detected in the last sampling period, the results are included in the table along with the date that the detection occurred.
b – Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Radiation is everywhere; from the sun, from the earth and even in our bodies. Living in the Chicago area exposes us to cosmic radiation at approximately 29 mrem/yr. (from www.iem-inc.com/primrite.html and www.thrnewmedia.com/RadiationCalculator/) The amounts detected in Evanston's water are well below the maximum contaminant level; so low in fact that Evanston is on a reduced monitoring schedule and is only required to sample every 6 years.
c – Highest Running Annual Average(quarterly) (RAA). RAA quarterly is calculated by adding the most recent quarter plus the 3 previous quarters and dividing by 4. The highest RAA during the year is reported.
d – Running Annual Average(monthly) (RAA). RAA monthly is based on the monthly averages of all samples.

How the Evanston Water Treatment Process Works



1. INTAKE SYSTEM

Water is drawn from Lake Michigan through three large in take pipes at a depth of approximately 28 feet.

2. SUCTION WELLS

Lake water flows by gravity through the Intake pipes into three suction wells. Activated carbon is added when needed in the suction wells for longer contact with the water to remove taste and odor.

3. LOW LIFT PUMPS

Six electric centrifugal pumps are provided to lift the water from the lake to a level that it can flow by gravity through the treatment plant at a total capacity of 130 million gallons per day. Four of the units have auxiliary natural gas engine drives for emergency operation in case of a power failure, providing 70mgd of emergency capacity.

4. FLASH MIX BASIN

This is a concrete tank with a vertical mixing paddle and is the point where treatment begins as liquid aluminum sulfate, polymer, chlorine and fluoride are added to the raw water and mixed. The chlorine is for disinfection and oxidation of organic materials. The aluminum sulfate and polymer are added to form a precipitate or floc in the water which causes the suspended solids to settle out. Fluoride is added to help reduce the incidence of dental decay.

5. CHEMICAL FEEDERS

The chemical feeders supply accurately measured amounts of liquid chemicals based on raw water quality and pumpage rates to be sure the proper amounts of chemicals are fed into the water.

6. SLOW MIX BASIN

The water next flows to the slow mix basins which are large chambers containing slow moving horizontal paddles. It is here that the chemicals are mixed and the floc increases in size before entering the settling basins.

7. SETTLING BASINS

Upon leaving the slow mix basins, the water enters the four large settling basins which have a total capacity of 14,330,000 gallons. It takes from 4 to 8 hours for the water to flow through the settling basins. In this process over 90 % of all suspended impurities are removed.

8. BASIN SLUDGE DRAIN

The sludge is cleaned from the settling basins twice per year and is pumped through an 8" force main into a large interceptor sewer to be treated by the Metropolitan Water Reclamation District of Greater Chicago at their local facilities.

9. FILTERS

The water next flows to the rapid sand filters where the last traces of turbidity and bacteria are removed. There are 24 filters operating in parallel for a total rated capacity of 108 million gallons per day. The filters are constructed in shallow concrete tanks with an underdrain system at the bottom, followed by filter sand and then topped off with anthracite coal which lengthens the filter run. When clogged, the filters are backwashed by reversing the flow for about 8 minutes.

10. DETENTION TANK

The detention tank was designed to collect all of the filter wash water and stop it from going back into Lake Michigan. The wash water is recycled back into the incoming raw water at approximately 10% of total raw water intake. A 700 gpm pump discharges the sludge to the basin sludge drain described in Step 8.

11. CLEAR WELLS AND UNDERGROUND STORAGE

Clear well reservoirs beneath the filters and an underground storage tank provide 9,500,000 gallons of reserve from which the distribution system is supplied. Before entering the reservoirs, a final post chemical treatment of chlorine is added when needed along with a blended phosphate corrosion control compound.

12. HIGH LIFT PUMPS

Nine centrifugal pumps, with a total capacity of 142 million gallons per day, supply water pressure at 50 to 65 pounds per square inch to the distribution system. Four of the units are equipped with auxiliary natural gas engine drives for emergency operation in the event of a power failure, providing 62 mgd emergency capacity.

13. ELEVATED STORAGE AND REMOTE BOOSTER STATIONS

The Evanston distribution system contains two standpipes with remote booster pumps. The southwest standpipe can store up to 5.0 million gallons and the northwest standpipe up to 7.5 million gallons. A 5.0 million gallon standpipe and a 5.0 million gallon surface reservoir, both with remote booster pumps, are located in Skokie. The standpipes float on the system and tend to level out peak loads, pressure fluctuations, and provide a reservoir for emergencies.

Did you know...

In 1874 the citizens of the Village of Evanston, with a population of 3500, started to build a communal water system. The system consisted of a 16-inch intake pipe extending 1200 feet into the lake, a small Holly steam engine, capable of pumping 2 million gallons per day, a hand fired boiler and a few miles of cast iron water main. The original cost of the steam engine and boiler was $24,000. During the first year of operation the plant pumped 95 million gallons of water.

Where Do Contaminants Come From?

In general, people obtain drinking water (both tap and bottled water) from rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of land or through the ground, it dissolves naturally occurring minerals and radioactive material. It can also pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include: microbial contaminants from a variety of sources, 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 runoff, industrial or domestic water discharges, oil and gas production, mining or farming; pesticides and herbicides which come from agricultural, storm water runoff and residential uses; organic chemical contaminants, including synthetic and volatile organics which are by-products of industrial processes and petroleum production and can also come from gas stations, urban storm runoff and septic tanks; and radioactive contaminants which can be naturally occurring or the result of oil and gas production and mining activities.

The primary sources of pollution threatening Lake Michigan include air deposition (pollution from the air, rain and snow), runoff and industrial discharge.

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 USEPA Safe Drinking Water Hotline at 1-800-426-4791. In order to ensure that tap water is safe to drink, the USEPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

Some people may be more vulnerable to contaminants in tap or bottled 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 for infections. These people should seek advice about drinking water from their healthcare providers. The USEPA/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 or visit, www.epa.gov/OW.

For specific information about the Water Department, your water's quality, a complete water quality report of all tested contaminants or any other water related question, please contact Kevin Lookis at the Evanston Water Department at 3-1-1(847-448-4311 outside of Evanston). The public is welcome to attend City Council meetings where decisions which affect drinking water quality are made. Additional information on the date and time for these meetings can be obtained by visiting www.cityofevanston.org or by calling 311(847-448-4311 outside of Evanston).