Northbrook Water Consumer Confidence Report 2021

General Introduction to Water Supplies
This information is provided as required by United States Environmental Protection Agency (USEPA) and Illinois Environmental Protection Agency (IEPA). Northbrook tests its water routinely for more than 120 different contaminants. This report lists only those regulated substances showing some level of detection. All of these were within USEPA/IEPA water quality standards. If you have any questions or want to know where to find additional information about our water supply, contact Utilities Superintendent Joseph Rizzo at *joseph.rizzo@northbrook.il.us* or 847-664-4139.

Sources of Drinking Water
The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and groundwater 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. It also can pick up substances resulting from the presence of animals or from human activity.

Our water comes from Lake Michigan. Please share this information with other people who drink this water, especially those who may not have received this notice directly (for instance, people in apartments, nursing homes, schools, or businesses). You can do so by posting this notice in a public place or distributing copies by hand or via US mail.

Contaminants That May be Present in Source Water:

- *Disinfectants and Disinfection By-Products (D/DBPs)*, including chlorine, total trihalomethanes (TTHMs) and haloacetic acids (HAA5s). HAA5s and TTHMs are by-products of chlorine and certain organic compounds present in raw water. The maximum contaminant levels for TTHM and HAA5 are 80 µg/1 and 60 µg /1 respectively. Some people who drink water containing DBPs in excess of the Maximum Contaminant Levels (MCL) over many years' may experience problems with their livers, kidneys, or central nervous system, and may have increased risk of developing cancer;

- *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, mining or farming;

- *Lead*, if present in elevated levels, 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. Northbrook 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 two to three 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 (800-426-4791) or at www.epa.gov/safewater/lead. Northbrook remains in compliance with the lead and copper regulations;

- *Microbial Contaminants*, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife;

- *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 storm water runoff and septic systems;

- *Pesticides and Herbicides*, which may come from a variety of sources such as agriculture, urban storm water runoff and residential uses;

- *Radioactive Contaminants*, including Alpha particles, Beta particles/Photon emitters, Radium 226 and 228, and Uranium, which can be naturally-occurring or be the result of oil and gas production and mining activities;

- *Sodium*, which is not regulated by US Environmental Protection Agency (USEPA) or Illinois Environmental Protection Agency (IEPA), but for which monitoring is required to provide information about sodium uptake due to dietary precautions. If the level is greater than 20 mg/1 and you are on a sodium restricted diet, you should consult a physician; and

- *Turbidity* which is a measure of the "cloudiness" of water. It is good indicator of water quality and the effectiveness of our filtration system and disinfection practices. Our water typically leaves the plant at 0.04 Nephelometric Turbidity Units (NTUs).

Other Facts about Drinking 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. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at 800-426-4791. In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) establishes limits for contaminants in bottled water, which must provide the same protection for public health as tap water.

Some people may be more vulnerable to contaminants in drinking 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, and some elderly and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA and Center for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by microbial contaminants including Cryptosporidium are available from the USEPA Safe Drinking Water Hotline at 800-426-4791. No evidence of Cryptosporidium has ever been found in Northbrook's water.

Some Facts About Northbrook's Water

Northbrook is the only off-shore community in the Chicago area to draw water directly from Lake Michigan and process it at an inland water filtration plant. Since 1963, Northbrook has increased rated production capacity from 6 million gallons per day (MGD) to approximately 20 MGD.
Our water supply begins at our Lake Michigan intakes. Raw water flows through two intake lines to our Lake Front Pumping Station in Glencoe. The older (1963) 30-inch intake extends 2,550 feet from shore, ending in an intake structure with three cone-shaped "funnels" located 23+ feet under the surface of Lake Michigan. The newer (1993) primary intake, is 48 inches in diameter, 6,400 feet in length and 36+ feet under the surface with one large flared riser surrounded by a 35 foot square by 8 foot high wooden timber crib. Water flows by gravity into a 28 foot deep, 26,000 gallon "suction well" in the pump station at the shoreline. Seven various sized vertical turbine "low lift" pumps, controlled by Water Plant Operators at the Water Treatment Plant, pump the raw water through 2.9

miles of 24 and 30 inch Raw Water Transmission Mains to the Plant for processing. Water is filtered through anthracite/ sand media filters, chlorinated for disinfection, and fluoridated for prevention of tooth decay. The newest (1994) 8 MGD plant addition uses multi-media filters with additional anthracite and two gradations of crushed garnet.

After water is treated at the Plant, eight "high lift" pumps of various sizes send the processed water through a network of about 205 miles of water mains. Four additional system pumps are located at the West Side Reservoir. The Water Plant is staffed around-the-clock. Operators are required to obtain the highest competency (Class A) certificates from the Illinois EPA which requires passing a rigorous series of exams. The Village operates two separate pressure zones and tap water is typically delivered in the 45 - 60 PSI pressure range throughout Northbrook

In addition to redundant lake water intake mains and raw water transmission mains, Northbrook has invested heavily in emergency preparedness. The Lake Front Pump Station and Water Treatment Plant both have two electrical supplies from ComEd in addition to back-up generators. The West Side Reservoir also has an emergency generator. The Village has agreements and water main connections with Glencoe, Glenview, and Highland Park for emergency supplies of water. The water system includes a 2.5 million gallon (MG) clear well at the Treatment Plant, a 4.2 MG reservoir in the western portion of the Village, and two water towers with capacities of 0.5 and 1.0 MG.

Periodically, water issues are addressed by the Village Board of Trustees. The Village Board normally meets on the second and fourth Tuesdays of each month at 7:30pm at the Village Hall, 1225 Cedar Lane. Exact times and dates can be verified by calling the Village Hall at 847-272-5050 or visit www.northbrook.il.us.

Source Water Assessment

The Illinois EPA considers all surface water sources to be susceptible to potential pollution. By nature surface water allows contaminants to migrate into the intakes with no protection except dilution. Thus, IEPA mandates treatment for all Illinois surface water supplies. A workgroup from the Great Lakes States organized to develop a protocol for assessing the Great Lakes. The mission of the Great Lakes Protocol workgroup was to develop a consistent procedure with the flexibility to properly conduct source water assessments of our Great Lakes drinking water sources. According to the IEPA, this flexibility takes into account source variability and site-specific concerns for determination of source sensitivity and susceptibility. Sensitivity is the intrinsic ability of surface water to be isolated from contaminants by the hydrologic or geologic attributes. According to the sensitivity analysis, Northbrook's two intakes are located far enough offshore that shoreline point sources are not a water quality factor.

However, at certain times of the year, the potential for contamination exists due to storm water runoff and wet weather flows from the North Shore Channel. If currents are flowing in a northerly direction, contaminants from these flows could migrate to Northbrook's intakes and compromise water quality. A correlation between Northbrook's rainfall data and coliform data, combined with North Shore Channel discharge dates, show the potential effect of these flows on Northbrook's water quality.
The best way to ensure a safe source of drinking water for a water supply is to develop a program designed to protect the source water against potential contamination on the local level. Since land use within the Illinois Lake Michigan watershed is mostly urban, most watershed protection activities in this document are aimed at this purpose. Citizens must be aware that activities around the house may have a negative impact on their source water.

The main efforts of the immediate community should be to promote an awareness of storm water drains and their direct link to Lake Michigan. A proven best management practice (BMP) for this purpose is the stenciling of a notice indicating the connection between storm water drains and the lake. Stenciling,

along with education about proper storage, disposal and use of potential contaminants, is necessary to continue to keep Lake Michigan a safe reliable source of drinking water.

A source water assessment for our supply has been completed by the Illinois EPA. If you would like a copy of this information, call Joseph Rizzo at 847-664-4139. 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, you may access the Illinois EPA website at www.northbrook.il.us/IllinoisEPA.

Recent Concerns

Lead –

The United States Environmental Protection Agency (USEPA) has set the action level of lead in drinking water at 15 µg/l. However, any detectable lead makes it advisable to reduce lead levels as much as possible. Lake Michigan water is virtually lead free. Lead contamination, if it does occur, results from corrosion of the element from service lines and/or household plumbing. Homes in neighborhoods constructed before the early 1950s may have lead service lines and those built prior to 1987 may have plumbing fixtures containing significant amounts of lead.

As time passes, mineral deposits tend to form a coating on the inside of the pipes, which insulates the water from the lead. To enhance this process, the Village treats our water with poly-orthophosphate which reacts with lead, copper, calcium and magnesium to form an insoluble coating on pipe walls. This coating greatly limits dissolution of lead and copper into water. The USEPA has determined that sampling homes with lead service lines or those with lead based solder built between 1982 and 1986 is the best means of determining if water systems are in compliance with the Lead Copper Rule (LCR).

The United States and Illinois Environmental Protection Agencies (USEPA and IEPA) have established lead/copper testing requirements for all water systems under their jurisdictions. The Village of Northbrook is obligated to collect water samples from its distribution system for lead and copper analysis every three years. We have been placed on a reduced monitoring schedule because the results of the past sampling rounds were in compliance with established limits. This means we must test 15 sites with lead service lines and 15 with internal plumbing systems with copper pipes with lead solder constructed between 1982 and 1986. Northbrook's last sampling period was in 2020, and we were again found to be in compliance.

The Village replaces the public portion of lead service lines (main to B-box) encountered during water main replacement programs. **While this has a long term benefit, it may cause elevated levels of lead in an individual plumbing system for up to several months.** The Village will perform lead/copper tests prior to disruption of the service and again after the work is complete if the private portion of the homeowner's service line remains lead. All results are shared with the customers. The Village requires replacement of lead lines for properties undergoing substantial remodeling or demolition.

Covid-19 -

The Center for Disease Control (CDC) advises that the virus that causes COVID-19 has not been detected in drinking water. Conventional water treatment methods that use filtration and disinfection, such as those in most municipal drinking water systems, should remove or inactivate the virus that causes COVID-19. The USEPA recommends that Americans continue to use and drink tap water as usual.

PFAS –
Per- and poly-fluoroalkyl substances are a group of thousands of chemicals collectively known as PFAS. Since the 1940s, PFAS have been used in manufacturing, firefighting, water- and oil-resistant products, and many consumer products such as carpet, clothing, cosmetics, and food packaging. USEPA and IEPA have not developed enforceable drinking water standards for PFAS, but IEPA has developed health-based Draft Guidance Levels (DGL) for the small number of PFAS for which there is appropriate information to do so. DGLs are not regulatory limits but are benchmarks intended to protect all people consuming the water over a lifetime of exposure and to determine if additional investigation or other response action is necessary.

In late 2020 and early 2021 IEPA collected three sets of samples of Northbrook's finished water to test for 18 of the PFAS constituents. Required follow up testing results are provided in the table below. Note that any PFAS detected originates in our Lake Michigan water supply and are not the result of any of our treatment processes.

PFAS Analyte (Acronym)	Guidance Level (ng/l)	Minimum Reporting Level (i.e. lowest detectable limit) (ng/l)	Sample Date	Sample Results (ng/l)
Perfluorooctanoic acid (PFOA)	2	2.0	12/15/2020	2.0
			1/19/2021	Not Detected
			2/2/2021	Not Detected
			5/10/2021	Not Detected
			8/12/2021	Not Detected
			8/30/2021	Not Detected
			11/16/2021	Not Detected
			2/14/2022	2.1
Perfluorooctanesulfonic acid (PFOS)	14	2.0	12/15/2020	2.4
			1/19/2021	Not Detected
			2/2/2021	2.0
			5/10/2021	2.5
			8/12/2021	Not Detected
			8/30/2021	Not Detected
			11/16/2021	Not Detected
			2/14/2022	Not Detected

Two of the most common compounds within this class, perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS), stopped being produced in the United States (U.S.) in the early 2000s, but these compounds may still be present in imported goods. Most people are exposed to these chemicals from water, food, and consumer products. PFAS are very stable and do not break down easily in the environment. They are often referred to as "forever chemicals."

Studies indicate that exposures to high levels of PFAS contaminated water over time may cause certain adverse health effects. Exposure to PFAS above the recommended Draft Guidance Levels does not necessarily mean that a person will get sick or an adverse health effect will occur. Research on the health effects associated with PFAS is ongoing.

Scientific studies of laboratory animals, as well as studies on human populations exposed to PFOA and PFOS over periods of time, have shown that exposure to PFOA and PFOS above certain levels may result in adverse effects such as:

- increased cholesterol levels
- changes in liver enzymes
- decreased response to vaccines in children
- increased risk of high blood pressure or pre-eclampsia in pregnant women
- small decreases in infant birth weight
- increased risk of kidney or testicular cancer

If you have specific health concerns, please consult your health care professional.

Boiling water does not destroy PFAS, but you can safely use your water for bathing and showering as PFAS is not easily absorbed into the skin. Exposure to PFAS in drinking water can be minimized by using bottled water that has been tested for PFAS for drinking, cooking, and preparing infant formula. IEPA advises that installing filters or treatment systems certified by American National Standards Institute (ANSI) or NSF International for the reduction of PFOA and PFOS. A searchable list is available at http://info.nsf.org/Certified/DWTU/. Additional information is available from the IEPA (https://www2.illinois.gov/epa/topics/water-quality/pfas/Pages/default.aspx).

Following is a summary of water quality tests taken during (with a few exceptions) 2021 which indicated presence of regulated contaminants. It is important to remember that none of the substances were found to be in excess of USEPA and IEPA regulations.

A summary of various terms commonly used for this kind of reporting is given below.

- AL (Action Level): Concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
- ALG (Action Level Goal): Concentration of a contaminant below which there is no known or expected risk to health. ALGs allow for a margin of safety.
- Avg: Regulatory compliance with some MCLs is based on running annual average of monthly results.
- D/DBP (Disinfectants & Disinfection By-Products): chlorine and by-products of chlorine and certain organic compounds present in raw water.
- DGL: (Draft Guidance Levels): Health-based limits developed in lieu of enforceable standards
- HLD (Highest Level Detected): Highest concentration of a substance discovered during the sampling period.
- Level 1 Assessment: A Level 1 assessment is a study of a water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in a system.
- Level 2 Assessment: A Level 2 assessment is a very detailed study of a water system to identify potential problems and determine (if possible) why an E. coli MCL violation has occurred and/or why total coliform bacteria have been found in a water system on multiple occasions.
- MCL (Maximum Contaminant Level): Highest level of a contaminant allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology.

- MCLG (Maximum Contaminant Level Goal): 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/1 (milligrams per liter): equivalent to parts per million (ppm) or ounces per 7,350 gallons of water.
- µg/1 (micrograms per liter): equivalent to parts per billion (ppb) or ounces per 7,350,000 gallons of water.
- MRDL (Maximum Residual Disinfectant Level): Highest level of disinfectant allowed in drinking water.
- MRDLG (Maximum Residual Disinfectant Level Goal): Level in drinking water below which there is no known or expected risk to health. MRDLGs allow for a margin of safety.
- mrem (millirems per year): a measure of radiation absorbed by the body.
- n/a: (Not Applicable): Result or term not defined or available.
- ng/1 (Nanograms per liter): equivalent to parts per trillion (ppt) or ounces per 7,350,000,000 gallons of water.
- NTU (Nephelometric Turbidity Units): a measurement of the clarity of water.
- pCi/L (picoCuries per liter): a measure of radioactivity One picoCurie of radioactivity is equivalent to 0.037 nuclear disintegrations per second.
- ppb (parts per billion or micrograms per liter (µg/l)): ounces per 7,350,000 gallons of water.
- ppm (parts per million or milligrams per liter (mg/l)): ounces per 7,350 gallons of water.
- ppt (parts per trillion or nanograms per liter): ounces per 7,350,000,000 gallons of water.
- TT (Treatment Technique): A required process intended to reduce the level of a contaminant in drinking water.
- Turbidity: measurement of the cloudiness of water caused suspended by particles. It is a good indicator of water quality and the effectiveness of filtration methods and disinfectants.

Substance	Type	Units	MCLG	MCL	Range of Levels	HDL	Comments
Barium	Inorganic	mg/l	2	2	0.02 – 0.02	0.02	Drilling waste & metal refinery discharges; Natural deposit erosion
Chlorine	D/DBP	mg/1	MRGLG/MRDL = 4		0.9 – 1.4	1.4	Water additive for disinfection.
Coliform (non-fecal)	Microbial	% present		<5% monthly positive	0 – 2.3	2.3	Naturally present in environment
Copper	Inorganic	mg/1	1.3	1.3	90th % = 0.16	0 site > AL	Natural deposit erosion; Wood preservative leaching; Household plumbing corrosion
Fluoride	Inorganic	mg/1	4	4	0.662 – 0.662	0.662	Fertilizer & aluminum factory discharge; dental decay preventative additive
Haleoacetic Acids (HAAS)	D/DBP	µg/1	n/a	60	12.07 – 28.3	28.3	Chlorination by-product
Iron	Inorganic	mg/l	n/a	1.0	0.015 – 0.015	0.015	Erosion of natural deposits
Lead*	Inorganic	µg/1	0	AL = 15	90th % =4.2	1 site > AL	Plumbing system & natural erosion
Nitrate (as N)	Inorganic	mg/1	10	10	0.36 – 0.36	0.36	Fertilizer & septic run-off, sewage
Radium Combined	Radioactive	pCi/1	0	5	0.603 – 0.603	0.603	Erosion of natural deposits
Sodium	Inorganic	mg/1	n/a	n/a	10 - 10	10	Natural erosion, water softener
Total Trihalomethanes	D/DBP	µg/1	n/a	80	15.64 – 58.7	58.7	Chlorination by-product
Turbidity (highest single measurement)	Microbial	NTU	Limit (Treatment Technique) = 1		Highest single result = 0.06		Soil runoff
Turbidity (Lowest monthly % meeting limit)	Microbial	NTU	Limit (Treatment Technique) = 0.3		100% <0.3 NTU		Soil runoff

Note: All test results completed in 2021 except for Copper, Iron, Lead and Radium which were completed in 2020.

Note: The percentage of total organic carbon (TOC) was measured each month. Northbrook meets all IEPA requirements.

Note: Iron is not currently regulated by USEPA, but is regulated by the state.

Note: Sodium is not regulated by USEPA or IEPA but monitoring is required to provide information about sodium uptake due to dietary precautions. If the level is greater than 20 mg/1 and you are on a sodium restricted diet, you should consult a physician.

Note: Northbrook had one violation related to the Lead and Copper Rule. We provided results of a lead sample test to the consumers at the location where the water was tested later than the 30 day required time.