WATER IS HERE FAQS

HOW ARE YORK REGION'S VARIOUS WATER SUPPLIES COMBINED?

York Region water is supplied by Lake Ontario and groundwater production wells which is blended in reservoirs, water towers and distribution pipes. Water from Lake Simcoe is only supplied to the Town of Georgina. Pumping stations move our water between reservoirs, in to towers and ultimately to communities and residents.

Did you know? Pumping stations located in newer residential developments are often disguised as houses to blend in aesthetically.

HOW DOES YORK REGION ENSURE OUR GROUNDWATER WILL LAST?

With careful management, our groundwater—an underground water supply found in soil and rock crevices—will replenish (or "recharge") indefinitely if our usage does not exceed the natural recharge rate. Aquifers, which are large underground bodies of rock and/or sediment that hold groundwater, can be drained when too many residents and businesses draw on the supply.

Groundwater naturally recharges using rainwater and outflow from rivers, streams and lakes. As precipitation falls, it gets absorbed into the ground and moves down to our aquifers. One of the largest risks to our underground water supply is when rainwater recharge is reduced. This happens when important recharge areas get paved over, which causes rainwater to flow away from underground aquifers. The Regional Official Plan includes policies to protect recharge areas.

Although our aquifer levels fluctuate, they have remained generally stable in recent years. This indicates aquifer use is balanced with recharge. It helps that the aquifers York Region uses for groundwater supply are generally deep, well protected and resilient. In areas where groundwater supply is not sufficient to meet demand, York Region has introduced lake water supply in an effort to effectively manage the groundwater resources.

York Region operates groundwater production wells under permits from the Ministry of Environment, Conservation and Parks (MECP), which allow pre-determined sustainable volumes of water to be drawn from the ground. Sustainable volumes of water are determined using ongoing monitoring data and sophisticated computer models. York Region currently monitors water levels in over 200 test wells located throughout the region as part of the water resource management programs.

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WHAT PUTS OUR WATER SUPPLY AT RISK?

If not protected, all sources of water are at risk. York Region is vigilant about thorough protection.

The most common risk to our water is contamination from handling, storage and use of degreasers, pesticides, salt, fertilizer, human and animal waste, fuel oil, gas and solvents. In addition to policies specifying how to use and dispose of these substances responsibly, we actively promote awareness about the importance of proper use and disposal of chemicals.

Road salt poses a risk to plants, animals and the aquatic environment. Chloride—one of the two components in road salt—can get into streams and groundwater. York Region has approximately 1,200 kilometres (or 4,300 lane-kilometres) of paved roads where winter maintenance involves anti-icing brine application, salting and sanding, snow clearing and snow removal. Our maintenance staff monitor weather conditions to select the most appropriate plan for maintaining safe Reginal roadways and minimizing the amount of salt entering the environment.

WILL WE HAVE ENOUGH WATER IN THE FUTURE?

Yes. Through the Region's Water and Wastewater Master Plan, we plan for drinking water and wastewater services to meet community needs now and into the future.

York Region is expected to grow to 2.02 million people and 990,000 jobs by 2051. The Master Plan identifies long-term strategies, initiatives, programs and infrastructure projects to meet water and wastewater servicing needs to 2051 and beyond. Our long-term water supply agreements with the City of Toronto and the Region of Peel, and our strong groundwater protection plans and practices, ensure the Region has sustainable water supplies.

To stay current with the changing needs of the future, the Region reviews and updates the Plan every five years.

WATER IS HIDDEN FAQS

WHAT WOULD WE SEE IF WE COULD LOOK UNDERGROUND?

Geologically, the ground under York Region looks like a layer cake. Between the surface and bedrock is an average of approximately 200 metres of sand, gravel, clay and glacial till, deposited over the past 10,000 years. Some layers, known as aquifers, hold water. Others, such as clay, are called aquitards because they block the flow of water.

Generally, the underground water used in York Region is from aquifers located approximately 100 metres deep. Isotope testing has shown some samples of this water to be thousands of years old.

Underneath York Region's roads is an infrastructure system that supplies drinking water and transports wastewater to the treatment facility. Large water mains, up to 1.8 m in diameter bring water from the City Toronto and the Region of Peel to York Region. Smaller pipes move water from reservoirs and water towers. The pipes get smaller—down to 150 to 300 mm—under residential streets, and smaller still—13 to 19 mm—between the streets and homes, businesses and schools.

WHAT ARE THE MAIN COMPONENTS OF OUR WATER DISTRIBUTION SYSTEM?

Water distribution systems are primarily made up of water transmission mains, narrower pipes that split off those mains, valves, pumping stations, storage tanks and reservoirs.

York Region operates a "trunk" distribution system, which mainly consists of large diameter pipes and numerous individual facilities such as pumping stations, towers and reservoirs. The cities and towns own and maintain those parts of the system and are responsible for delivering water from our mains to homes, businesses and schools within their jurisdictions.

WHAT IS YORK REGION'S ROLE?

The main role of York Region is to act as a wholesale provider of water and wastewater services to our nine cities and towns.

York Region is guided by specific objectives and principles to ensure effective delivery of water and wastewater services.

In its role as a wholesale provider of drinking water, York Region:

- Purchases water from the Region of Peel and the City of Toronto, which together supply more than 90% of York Region's total municipal drinking water needs
- Works with these municipalities on initiatives to ensure the adequacy of supply, such as through sharing costs of capital projects and carrying out studies on how to optimize system performance

- Operates and maintains 40 groundwater production wells and two surface-water treatment plants for the balance of drinking water demand
- Provides and delivers drinking water through 22 water pumping stations, 44 elevated water tanks and reservoirs and 360 kilometres of transmission mains

The long-term arrangements with the Region of Peel and the City of Toronto are necessary because York Region lacks direct access to Lake Ontario, making it unique in our area.

In its role as a wholesale provider of wastewater services, York Region:

- Collects wastewater from the local municipalities and conveys it to treatment facilities through a system of 361 kilometres of sewer pipe, 21 wastewater pumping stations and two wastewater equalization tanks
- Manages the operation and maintenance of the Duffin Creek Water Pollution Control Plant in Pickering, which is jointly owned with Durham Region and treats about 85% of the Region's wastewater
- Manages an agreement with the Region of Peel for the treatment of about 10% of the Region's wastewater
- Operates and maintains six wholly owned water resource recovery facilities, mainly in the northern part of the region, that treat the balance of York Region's wastewater

HOW OLD IS YORK REGION'S WATER SYSTEM AND IS IT IN GOOD SHAPE?

A 2019 analysis showed more than 60% of York Region's water-related infrastructure is less than 25 years old, which is considered "young" compared to more established cities like Toronto and Hamilton. In the 2019 annual review, the Region's water infrastructure earned an "A" grading. This review considered the condition, average age and useful life expectancy of the various assets in our water system.

With that being said, water infrastructure will break down over time. If you live in a century-old home anywhere in Ontario, chances are the pipes underground are the same age as the house, unless they have been replaced. While infrastructure of that age can still function, it is important to monitor for cracks, leaking joints and broken sections which can allow stormwater to enter the wastewater system. Infiltration of this kind is an added burden on treatment plants and should be fixed when discovered.

WHAT IS INFLOW AND INFILTRATION?

Inflow and infiltration happen when water, groundwater or stormwater enters the sewage system through sump pumps, downspouts, and/or holes and cracks in the pipes.

HOW HAS YORK REGION'S WATER SYSTEM CHANGED OVER THE YEARS?

The biggest change in the York Region water and wastewater system has been its expansion. When York Region was incorporated in 1971, the population was approximately 170,000. Today, there are more than one million residents. Naturally, such growth requires many more kilometres of pipes and sewers, as well as pumping stations, reservoirs and water towers.

As of 2019, York Region operated and maintained 173 water and wastewater infrastructure assets including:

- Water (133 assets)
    - Two Surface Water Treatment Plants
    - One Groundwater Treatment Plant
    - 23 groundwater treatment facilities (including 40 production wells)
    - 29 elevated tanks and 15 storage reservoirs
    - 22 pumping stations
    - 360 kilometres of transmission mains including chambers and maintenance holes
- Wastewater (40 assets)
    - Six water resource recovery facilities
    - One water pollution control plant (co-owned with Durham Region)
    - One wastewater treatment lagoon
    - Two equalization tanks
    - Eight odour control facilities
    - 21 wastewater pumping stations
    - 134 kilometres of sanitary force mains
    - 227 kilometres of trunk sewers

WATER IS MOVING FAQS

HOW IS WATER PRESSURE MAINTAINED SO EVENLY?

Ontario's guidelines require drinking water systems be kept at a minimum pressure of 275 kPa (a kilopascal of pressure, roughly 40 pounds per square inch). In York Region, that pressure is maintained with 22 pumping stations throughout our system and by water towers exerting the pressure of gravity. Electronic monitoring throughout the system confirms steady pressure. Local power failures or maintenance issues can cause temporary drops in pressure, but these are rare.

WHY DO WE HAVE WATER TOWERS?

Water towers are large elevated tanks constructed on high points of land. They are built to heights that ensure gravity can create necessary pressure to reliably deliver drinking water to residents and businesses.

Essential to the water supply system, York Region's 29 water towers:

- Equalize pressure
- Provide large volumes of water when needed for firefighting
- Provide an emergency supply of water if catastrophe occurs

Water towers continually equalize pressure by adding pressurized water to the system at times of highest use, typically during hot, dry summers. This enables municipalities to save money by sizing pumps and pumping stations for average use rather than when use is highest.

The storage tanks at the top of water towers can be very large. The two largest tanks in York Region are Richmond Hill's Bloomington and Coon elevated tanks, each holding 7,550 cubic metres of water. All York Region elevated tanks are designed to hold approximately one-to-two days' supply of water for households and businesses served by the tower.

ONCE WATER GOES DOWN MY DRAIN, WHERE DOES IT GO?

The drains and toilet pipes in homes and businesses carry wastewater into large underground sewers. With the help of gravity and pumping stations, this used water is moved to a wastewater treatment facility.

The wastewater from approximately 80% of York Region is treated at the Duffin Creek Water Pollution Control Plant on Lake Ontario east of Toronto. After treatment, that wastewater re-enters Lake Ontario.

Treated wastewater from Schomberg in the Township of King flows to the Schomberg River, which along with Mount Albert and Holland Landing in the Town of East Gwillimbury, Sutton and Keswick in the Town of Georgina, is returned to Lake Simcoe. Treated wastewater from Nobleton in the Township

of King and Kleinburg in the City of Vaughan flows into the Humber River, which flows south to Lake Ontario.

In all cases, the water entering the lakes is treated in keeping with strict environmental standards, regulated by the province. It is returned cleaner than the raw water taken from the lake.

WHAT IS THE UPPER YORK SEWAGE SOLUTIONS (UYSS) PROJECT?

The Upper York Sewage Solutions (UYSS) project began with an environmental assessment process in 2009 with the goal of identifying the best methods of providing additional wastewater servicing capacity in the fast-growing communities of upper York Region, including the Town of Aurora, the Town of Newmarket and the communities of Holland Landing, Queensville and Sharon in the Town of East Gwillimbury.

The UYSS project has three components:

1. A new Water Reclamation Centre, which only handles wastewater from within the Lake Simcoe watershed
2. Modifications to the existing York Durham Sewage System (YDSS)
3. A project-specific total phosphorus offsetting program

In 2018, the Region received approval to proceed with one of the components of the UYSS project, implementing modifications to the YDSS. Construction has started on forcemain twinning in Newmarket and is expected to be complete by the end of 2021. This construction will install a secondary forcemain parallel to the existing one, which will increase reliability and capacity.

HOW DOES THE STORMWATER SYSTEM DIFFER FROM THE WASTEWATER SYSTEM?

The stormwater system is a sewer system under our streets. Storm drains channel rain and melted snow from roofs, streets, parking lots and other paved areas to storm water holding ponds and into our creeks, rivers and lakes untreated. The wastewater system carries this ‘used’ water from homes, schools and businesses to a wastewater treatment facility. After treatment, this water is safe to re-enter the environment.

WATER IS SAFE FAQS

HOW IS OUR WATER KEPT SAFE, AND HOW IS IT MONITORED?

York Region's drinking water must meet high quality standards legislated by the provincial Ministry of Environment, Conservation and Parks. The standards identify more than 100 criteria for safe consumption limits based on medical research. These standards are constantly being revised to address changing findings and concerns.

In the thousands of tests conducted in 2019, the Region's drinking water was within regulations 99.98% of the time. Each year collected samples are sent to a lab for a complete analysis to check for organic chemicals, pesticides, trichloroethylene, radiation and many other toxins.

We also continually test to ensure the disinfectant chemicals added to York Region's drinking water are at proper levels. Online analyzers record those levels on a second-by-second basis. An operational team does further testing at all facilities to verify the results.

Additionally, the Ministry of the Environment, Conservation and Parks conducted 16 inspections of the Region's 15 drinking water systems in 2019 to confirm compliance with regulations, licenses, permits and Ministry standards. In 2019, all Ministry inspections scored 100% which demonstrates the safety of our water supply system.

HOW IS OUR WATER PROTECTED?

If development is not properly planned and managed, it can affect the quality and quantity of our water. For example, it can be difficult for groundwater to recharge when land is paved. York Region's 40 production wells and two Lake Simcoe intakes are the most vulnerable. Planners and risk management officials make sure industries handling toxic chemicals are not located near municipal production wells or lake intakes.

York Region works with businesses, farms, area municipalities, the provincial government and residents to:

- Define wellhead protection areas for all municipal wells
- Monitor the quality and quantity of groundwater
- Treat wastewater to make it safe for reintroduction into the environment
- Review development applications to ensure drinking water sources are protected
- Negotiate risk management plans with business owners and farmers

York Region provided input to two approved source protection plans, as approved by the Ontario Ministry of Environment, Conservation and Parks:

- The South Georgian Bay Lake Simcoe Source Protection Plan (effective July 1, 2015)
- The CTC Source Protection Plan (effective December 31, 2015) which applies to Credit Valley, Toronto and Region and Central Lake Ontario.

Additional information on our drinking water source protection is available at york.ca/protectingwater

HOW IS OUR WATER TREATED?

Water purchased from the City of Toronto and the Region of Peel—more than 90% of York Region's total supply—comes pre-treated with chlorine, an effective bactericide. The treated water is integrated with the Region's other supplies and further chlorinated if necessary. Chlorine is identified for drinking water disinfection under the provincial *Safe Drinking Water Act, 2002*.

Water from 40 production wells is also treated with chlorine to kill bacteria and other microorganisms that might be present. Ammonia is also added to some supplies. This combined treatment is called "chloramination".

Water from Lake Simcoe undergoes multi-stage treatment at the Keswick and Georgina Water Treatment Plants. At the Georgina Water Treatment Plant, an intake pipe extends into the lake to draw water to the plant. Screens are in place to remove debris. Raw lake water is then passed through ultra-fine membranes that remove virtually all contaminants, including viruses. The water then passes through ultraviolet light reactors that destroy any remaining bacteria, then through activated-carbon filter beds that take out any lingering taste and odour-causing molecules. Finally, a chlorine residual is added to protect the water from bacteria that might reside in pipes during its journey to users.

IS FLUORIDE ADDED TO YORK REGION DRINKING WATER?

Yes, fluoride is added to most York Region drinking water.

Fluoride is a mineral found naturally in our environment and has been proven to prevent tooth decay. More than 90 national and international professional health organizations, including the Canadian Dental Association, and York Region Public Health support using fluoride to help prevent dental cavities.

Fluoride levels throughout the region vary depending on the drinking water source. Water sampling indicates all sources are safe and consistently well below maximum recommended levels of 0.6 to 0.8 parts per million (ppm). For additional information about fluoride in drinking water and your health, read Facts about Fluoride.

In the Town of Georgina, only Keswick, Sutton and the lake communities in-between currently receive fluoridated drinking water. Other communities in the area do not.

The City of Markham, City of Vaughan, Town of Richmond Hill and Township of King are supplied with fluoridated water through connection to the water systems of the City of Toronto and the Region of Peel

(Toronto has been fluoridating its water since 1963). Blended surface and groundwater supplies serve the Towns of Aurora, Newmarket, Whitchurch-Stouffville and parts of East Gwillimbury. The mixed sources of water for these communities' results in drinking water slightly below the 0.6 to 0.8 ppm fluoride concentration range.

SHOULD I DRINK TAP WATER OR BOTTLED WATER?

York Region provides high-quality drinking water that is safe, clean and affordable. From a cost value, bottled water is dramatically more expensive. One litre of tap water costs about $0.001. A litre of bottled water costs about $1.50.

Canadians consume more than two billion water bottles each year and sadly not every bottle gets put into the blue box for recycling. When considering waste, a reusable water bottle filled with tap water is the better choice.

SHOULD I BE TREATING WATER IN MY HOME?

In York Region, home water treatment is a choice by some residents, not a need. There are no health reasons to treat water at home. Many people choose to use water filters to remove chlorine and softeners to remove hardness.

HOW CAN YOU HELP PROTECT OUR WATER?

Residents and businesses in York Region can help keep water safe by:

- Maintaining septic systems
- Minimizing the use of pesticides, fertilizers and de-icing salt
- Storing fuels properly
- Taking household hazardous waste to one of York Region's household hazardous waste depots for disposal (rather than pouring them down the drain)
- Properly disposing of fats, oils and grease in the green bin
- Returning unused or expired medications to a pharmacy for proper disposal (rather than flushing them down the toilet, rinsing them down the drain or disposing of them in the garbage)

Land owners, including farmers, can apply for funding for projects that protect water through the Landowner Environmental Assistance Program (LEAP) in the Lake Simcoe watershed and the Rural Clean Water Program in the Toronto and York Region watershed.

Over the years, York Region *has introduced several educational programs and community initiatives that promote* water-use efficiency and conservation such as:

- Outdoor water reduction programs, including the use and promotion of landscape practices such as fusion gardens, which reduce the need for potable water
- Partnerships with service sectors like irrigation and landscape contractors to reduce water demand through programs including the Water Smart Irrigation Professional (WSIP) program and Fusion Landscape Professional (FLP) program
- Publications like Water for Tomorrow's at-home guide for conserving water
- Youth education programs like the York Children's Water Festival

For more information on how you can conserve water at home, visit york.ca/waterfortomorrow