



Water and Wastewater Sustainability Strategy

Overview Report

March 2008

Towards Sustainable Water and Wastewater Services

Located in south central Ontario, York Region covers 1,776 square kilometres, and includes farmlands, wetlands and kettle lakes, the Oak Ridges Moraine and over 2,070 hectares of forest.

The Region is a mix of urban and rural communities, and is currently home to over 950,000 residents. By the year 2026, estimates suggest there will be 1.3 million people in York Region, an increase of almost 40%.

Right now 29,000 businesses provide more than 465,000 jobs in the Region, and employment is increasing at a rate of 15-20,000 jobs annually. Forecasters predict that employment will double to almost 700,000 jobs in the Region by 2026.



The human and economic growth that York is experiencing has and will continue to put enormous pressure on the Region's environment and its infrastructure.

Recognizing these challenges, Council for the Regional Municipality of York adopted the *York Region Sustainability Strategy – Towards a Sustainable Region*, a new approach to decision-making intended to better integrate economic, community and environmental objectives.

The *York Region Sustainability Strategy* contains a corporation-wide long-term framework for making smarter decisions about growth management and municipal responsibilities that better integrate the economy, environment and community and sets out guiding principles to inform and improve all Regional policies, initiatives and operations.

The Strategy is founded on nine principles, namely, a long-term vision, triple-bottom line evaluation that integrates economy, environment and community, leadership, continuous improvement, adaptation, innovation, resiliency, awareness, and shared responsibility, and includes more than 100 actions, organized under the themes of:



Sustainable development is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

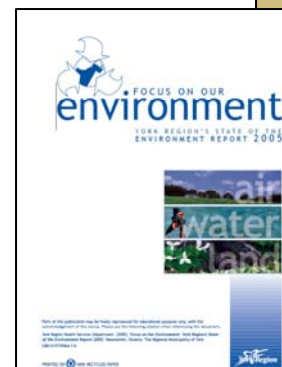
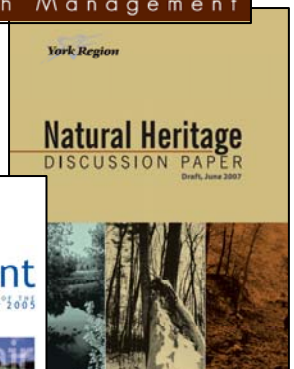
United Nations Brundtland Commission

- Corporate Culture of Sustainability;
- Healthy Communities;
- Economic Vitality;
- Sustainable Natural Environment, Education;
- Engagement and Partnerships; and,
- Implementation and Monitoring.

During development of the Strategy, York Region consulted with Regional stakeholders, partners and members of the public. This consultation helped York Region to develop a list of actions to begin right away.

Among the actions identified for immediate attention was the need to update sustainable infrastructure master plans, including one for water and wastewater services.

Part of the master plan update will involve integration of the Region's other plans to protect its Natural Heritage System and with the Region's updated Growth Management Strategy, along with other Provincial, Regional and local municipal policies, plans and initiatives.

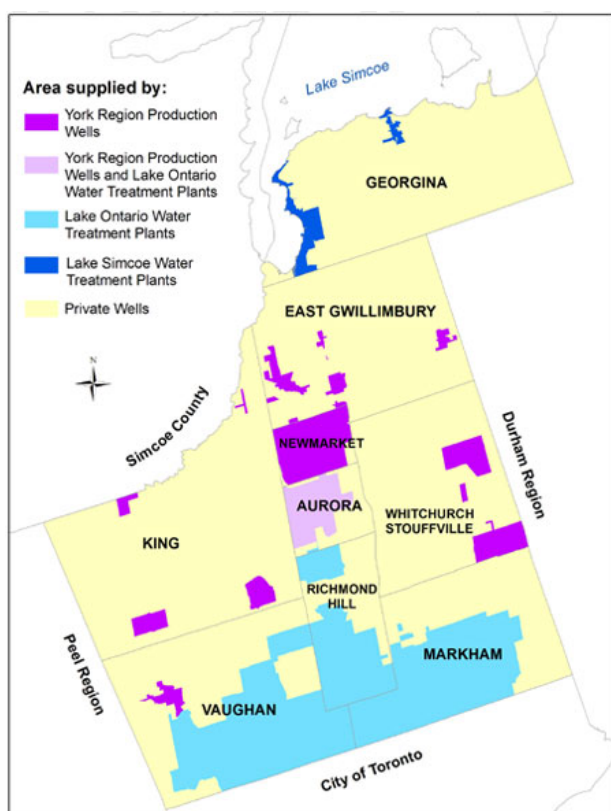


Towards Sustainable Water and Wastewater Services

Master planning for water and wastewater services in York Region presents unique challenges, and not just due to the high rate of growth. Water and wastewater servicing in the Region is a multi-jurisdictional undertaking, based on the Region's location and municipal governance structure. York Region comprises nine area municipalities, with the result that the Region acts as a water "wholesaler" supporting supply, treatment, storage, pumping and transmission mains. In turn, the area municipalities are responsible for distributing the water to local customers.



Potable water is provided from a number of surface and groundwater sources. Through partnership agreements with the City of Toronto and the Region of Peel, water is supplied from Lake Ontario to area municipalities in the southern part of the Region. The northern portion of the Region takes water from Lake Simcoe and several communities rely, in whole or in part, on groundwater supplies.



Responsibility for wastewater servicing is similarly divided between the area municipalities, (wastewater collection and local pumping) and the Region (major pumping stations, trunk sewers and treatment facilities).

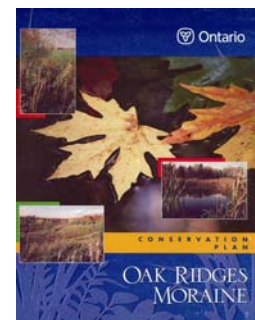
Wastewater treatment in the northern part of the Region is provided by facilities that are located either on Lake Simcoe or on one of Lake Simcoe's tributaries. Lake Simcoe and its tributaries presently exceed Ontario water quality standards for nutrients, principally nitrogen and phosphorus, limiting their assimilative capacity. In December, 2007, the provincial government announced it's intent to develop legislation and programs for Lake Simcoe that will protect the health of the lake and address all sources of phosphorus.



In the southern part of the Region wastewater is primarily treated in facilities discharging directly to Lake Ontario or its tributaries. York Region's main wastewater treatment facility, jointly owned with the Regional Municipality of Durham, discharges directly into Lake Ontario and has a rated capacity of 630 ML/d.

A large area of York Region is taken up by the Oak Ridges Moraine. The moraine's underlying geology makes it an important source of groundwater recharge and it is the source for headwaters for 65 river systems. Due to its importance, the Ontario Provincial Government has enacted legislation and planning directives aimed at protecting the ecological and hydrological integrity of the Moraine area, and which York Region must abide as part of the water and wastewater master planning effort.

Two-tier ownership and operation of water and wastewater systems, along with inter-regional supply and treatment arrangements are two of the features that present challenges to sustainable water and wastewater servicing in York Region. Other aspects include the limited nature of some receiving waters and area municipality jurisdiction over stormwater runoff. These factors must all be accounted as York Region strives toward a goal of "total water management".



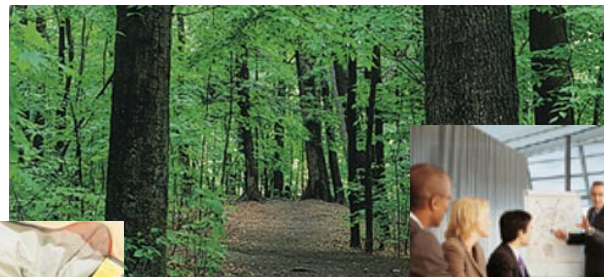
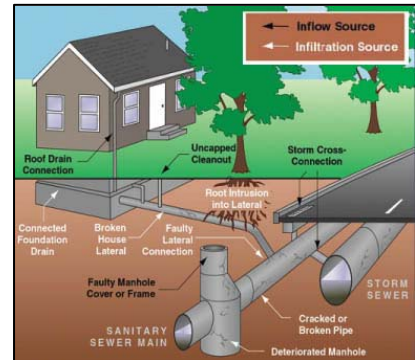
Towards Sustainable Water and Wastewater Services

Before updating the Water and Wastewater Master Plan, York Region determined the need to develop a sustainability strategy specifically geared to water and wastewater.



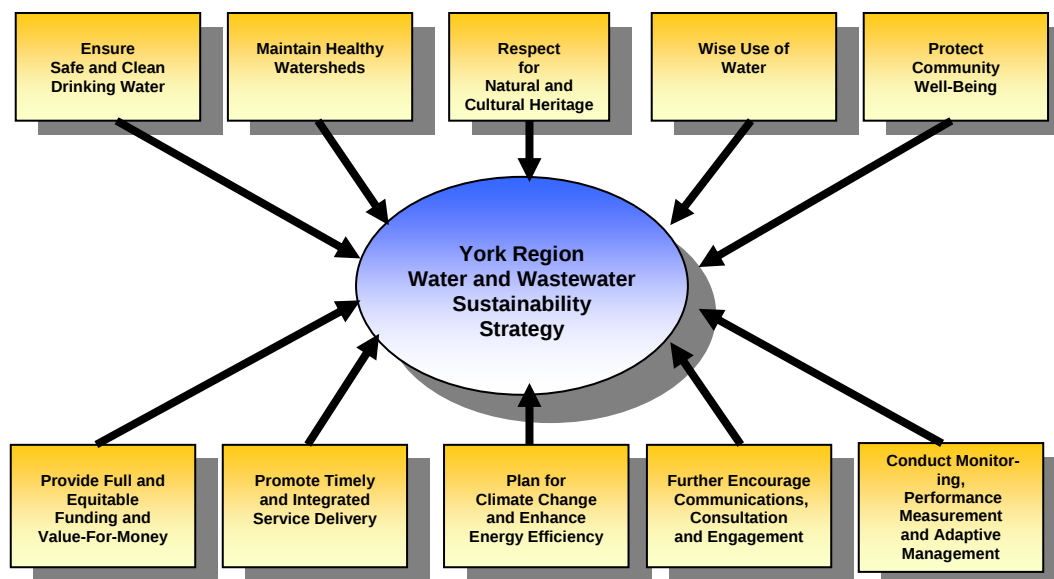
Using the *York Region Sustainability Strategy – Towards a Sustainable Region* as the overall guide, the *Water and Wastewater Sustainability Strategy* is based on three main components.

1. Current water and wastewater regulatory requirements, such as the Clean Water Act, the Safe Drinking Water Act, and the Environmental Protection Act
2. Existing York Region policies, programs, and practices, including *Water for Tomorrow* is York Region's water efficiency program. The objective of this program is to reduce the demand for water by more than 19 million litres per day. Another program, aimed at reducing infiltration and inflow to the sewage collection system, is being carried out jointly by the Region and area municipalities. The overall goal of the multi-year program is to reduce peak wet weather inflow and infiltration.
3. A review of best practices of jurisdictions here in Canada and around the world, to take advantage of lessons learned elsewhere about sustainable water and wastewater servicing, and to identify those best practices that would benefit the unique features and circumstances of York Region. The investigation considered experiences from Canada (Edmonton, Hamilton, and Vancouver), the United States (Chicago and Phoenix), the United Kingdom (WaterUK), and Australia (Sydney). These jurisdictions were chosen based on the challenges they face (for example, limited raw water supplies) and leadership they have demonstrated in the delivery of sustainable water and wastewater services. The investigation revealed a common themes among the jurisdictions, in particular commitments to:
 - Delivering clean drinking water and protecting raw water quality;
 - Protecting and conserving natural resources;
 - Proactively managing water and wastewater infrastructure; and,
 - Collaboration, open communication and public involvement.



Towards Sustainable Water and Wastewater Services

York Region's *Water and Wastewater Sustainability Strategy* focuses on ten themes, shown below. Guiding principles have been developed for each theme. These make up the Region's "mission statement" and describe the commitments the Region is making toward sustainable water and wastewater servicing.



Specific actions have been developed in order to fulfil each of the strategy's principles and to demonstrate progress toward sustainability.

Safe and Clean Drinking Water

- Coordinate with municipal partners (City of Toronto and Region of Peel) to ensure the provision/delivery of safe and aesthetically acceptable drinking water.
- Monitor and report on the quality of the drinking water in accordance with applicable regulations.
- Ensure the protection of the drinking water supply through the development of source protection strategies for groundwater supplies and intake zone protection strategies for surface water supplies.
- Coordinate with municipal partners (City of Toronto and Region of Peel) to ensure the protection of the drinking water supply through the development of source protection strategies for groundwater supplies and intake zone protection strategies for surface water supplies.
- Ensure that drinking water quantities supplied from surface and groundwater sources will be within safe yield limits for the water body or aquifer. Report on water takings in accordance with Permits to Take Water and applicable legislation/regulations.
- Develop and implement a Drinking Water Quality Management System (DWQMS), as required by the *Safe Drinking Water Act*, to facilitate York Region's ability to consistently produce and deliver safe and pleasing drinking water and to enhance consumer protection through the effective application and continual improvement of the DWQMS. The effectiveness of the DWQMS will be reported following each annual internal audit.
- Optimize water treatment facilities to minimize chemical use and process waste residuals (biosolids).

Healthy Watersheds

- Develop comprehensive watershed or sub-watershed strategies addressing all aspects of water quality and quantity. This activity should address all surface and groundwater taking activities, wastewater discharges and stormwater discharges. The strategies should define baseline conditions; address restoration needs; set specific watershed goals and objectives; examine the impact of future development; and, propose appropriate mitigation policies, programs and measures. These plans will be central to York Region's total water management approach. Planning will need to be done in partnership with area municipalities, conservation authorities, First Nations, adjacent communities and other interested agencies.
- Develop specific monitoring strategies and reporting requirements for each wastewater treatment facility. These should address performance measures supporting York Region's watershed goals and objectives as well as any regulatory requirements. Reporting on wastewater liquid effluents, air effluents and biosolids residues will be incorporated into York Region's comprehensive water and wastewater sustainability reporting framework.

Respect for Natural and Cultural Heritage

- Develop and implement specific First Nations consultation and traditional use area policy and strategy.
- Develop and implement an archaeological heritage policy and strategy.
- Develop and implement a natural heritage policy and strategy.

Towards Sustainable Water and Wastewater Services

Wise Use of Water

- Finalize the water efficiency plan update and implement further water efficiency measures.
- Develop and implement I/I reduction in partnership with area municipalities.
- Explore the potential for wastewater effluent reuse for very high quality effluents (e.g. those treated using membrane technology) discharging to receiving waters with limited assimilative capacity.
- Identify further opportunities for wastewater product recycle.

Community Well Being

- Develop level of service targets for water and wastewater system continuous operation.
- Develop level of service targets for water supply pressure and for pressure related complaints.
- Develop level of service target for basement flooding and for flooding related complaints.

Full and Equitable Funding and Value-For-Money

- Developing full cost life cycle funding requirements for water and wastewater services over period of Master Plan
- Benchmarking water and wastewater project delivery and developing specific indicators supporting the value for money concept.

Timely and Integrated Service Delivery

- Develop master implementation schedules through the Master Plan process.
- Prepare risk analyses for major stages of major projects so that timely mitigation strategies may be implemented.
- Develop a public communication program regarding the importance of maintaining the schedule and the role that York Region, agencies and the public play in the process.



Climate Change and Energy Efficiency

- Benchmark energy usage in water and wastewater facilities.
- Develop and implement an energy efficiency strategy for water and wastewater facilities.
- Benchmark greenhouse gas emissions from water and wastewater facility operations. If the emissions are significant develop a greenhouse gas emission reduction strategy.
- Incorporate climate change impacts into the design of linear wastewater infrastructure and wastewater treatment facilities.
- Prepare an analysis of climate effects on water resources including water supply availability and assimilative capacity. Depending on the outcome of this analysis develop mitigation strategies.



Communications, Consultation and Engagement

- Develop and implement a communications strategy for water and wastewater sustainability that reaches out to people of all ages, cultural backgrounds and all walks of life.
- Provide a point of public access on up to date information available on water and wastewater issues, ideas and trends.
- Establish interest-based sustainable water and wastewater committees to provide input into water and wastewater planning.
- Engage citizens as volunteers in support of water and wastewater planning and project implementation, for example, by seeking volunteers for water conservation programs, Children's Water Festivals, and the like.
- Track public comments and provide a considered response to the comments.
- Develop social marketing programs promoting wise use of water and water conservation.
- Utilize a broad variety of methods to communicate water and wastewater sustainability

Monitoring, Performance Measurement and Adaptive Management

- Develop a water and wastewater sustainability report and prepare a first year report. The report should integrate all the items, be refined over time, and published annually.
- Establish communications networks on water and wastewater sustainability within the Region, among lower tier municipalities and Regions (locally, provincially, nationally and internationally).
- On an annual basis, through customer service surveys, learn whether Regional water and wastewater services are measuring up to customer expectations.
- Construct internal and external monitoring and reporting mechanisms involving: surveys, focus groups, brochures, outreach during Public Works week, web based customer input, and the like.
- Implement a monitoring, performance measurement, and adaptive management system that will evaluate the effectiveness of York Region's Water and Wastewater Master Plan.

Towards Sustainable Water and Wastewater Services

Performance indicators have been determined for each of the water and wastewater sustainability strategy's ten themes.

Sustainability Theme	Performance Indicators – Illustrative Examples
Safe and Clean Drinking Water	- Number of customer complaints concerning “dirty water” or taste/odour that are not associated with construction or maintenance in the drinking water system - Number of drinking water advisories, boil water advisories and boil water orders
Healthy Watersheds	- Total annual wastewater volume treated as well as per capita and unit area wastewater volumes - Number of odour complaints
Wise Use of Water	- Per capita residential water use - Per capita wastewater generation - Mass or volume of wastewater by-products recycled
Community Well-Being	- Hours per year of continuous water and wastewater service operation - Number of basement or surface flooding complaints resulting from events less than service target
Full and Equitable Funding and Value-for-Money	- Financial indicators of funding capacity in relation to funding need - Value for money indicators
Climate Change and Enhance Energy Efficiency	- Water and wastewater energy reduction targets - Greenhouse gas emission reduction targets
Communications, Consultation and Engagement	- Measures of change in water efficiency habits due to social marketing campaigns - Number of York Region Water and Wastewater public sustainability outreach initiatives - Changes in public attitudes toward water and wastewater sustainability, measured through the survey mentioned above

York Region's Water and Wastewater Sustainability Strategy will rely on adaptive management methods and practices with a view to continual improvement toward sustainability leadership.

The Region will be sensitive and responsive to changes in:

- Socio-economic factors, such as the estimates of population and economic growth, including the rates of growth and the locations within the region where growth is occurring.
- Regulatory requirements, which are external pressures and to which the Region's policies and programs must be able to respond.
- Environmental conditions, notably the potential impacts of climate change, which can affect the quantity and quality of drinking water sources as well as the receiving environments for wastewater effluents and biosolids.

Next Steps

Development of the water and wastewater sustainability strategy represents an important step in the timely delivery of services to accommodate anticipated growth in York Region. Putting the strategy to work is the next step.

The actions contained in the water and wastewater sustainability strategy are directed at specific aspects of York Region's works and services, and implementation of the actions will be carried out by the appropriate Regional unit. The Region is considering third party oversight in order to avoid potential conflicts between implementation of the strategy and monitoring its effectiveness.

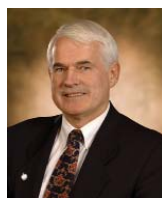
The water and wastewater sustainability strategy represents a long term commitment to servicing in York Region. For this reason, implementation of specific actions will take place over an extended time horizon. As work on performance targets, the master plan update, and the York Region Sustainability Strategy progresses, it is expected that a complete implementation schedule will be developed covering all water and wastewater sustainability strategy actions.



Towards Sustainable Water and Wastewater Services



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Mayor
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Town of Aurora



Mayor
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Town of Whitchurch-Stouffville



Mayor
James Young
Town of East Gwillimbury



Mayor
Margaret Black
Township of King

A Message from York Regional Council

York Regional Council is pleased to present the *York Region Water and Wastewater Sustainability Strategy*. This strategy provides The Regional Municipality of York with a comprehensive framework to manage our water and wastewater resources on a long-term, environmentally-conscious basis.

The *York Region Water and Wastewater Sustainability Strategy* builds upon the strong foundation established by the Region's award-winning water conservation program *Water for Tomorrow* and the Region's *Sustainability Strategy*. Together, we continue to identify ways to deliver high quality water and wastewater services to our growing communities, while protecting our water supply and effectively managing our water and wastewater infrastructure.

Public consultation has been a critical element in the formation of the *York Region Water and Wastewater Strategy*, and ongoing dialogue with all stakeholders will continue as the strategy's implementation unfolds.

We look forward to your continued support as efforts to develop a *Sustainable Water and Wastewater Infrastructure Plan* move ahead.



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