



Lake Erie Source Protection Region Guelph-Guelph/Eramosa Water Quantity Policy Development

Community Liaison Group Workshop Agenda

Tuesday, February 13, 2018
7:00 p.m. – 9:00 p.m.

Victoria Park East Golf Club
1096 Victoria Rd. S., Guelph

Meeting Purpose:

- 1) Review the mandate and role of the Community Liaison Group (CLG);
- 2) Provide an overview of the source protection planning process, identified drinking water quantity threats in Guelph/Guelph-Eramosa WHPA-Q and IPZ-Q;
- 3) Identify questions in to be included in a FAQ resource; and
- 4) Introduce discussion questions for the next meeting (homework assignment).

7:00 p.m. Welcome, Agenda Review and Introductions

Martin Keller, Project Team Lead, GRCA
Susan Hall, Facilitator, Lura Consulting

7:10 p.m. Role of the Community Liaison Group

Susan Hall, Lura Consulting

- *Questions of clarification about the role of the CLG and the Terms of Reference*

7:40 p.m. Overview Presentation

Martin Keller, GRCA

- Review of source protection planning process, water quantity threat activities, scope of the project and roles of key participants
- Review of existing legislation / programs, policy, tools / approaches to protect sources of drinking water quantity



Lake Erie Source Protection Region Guelph-Guelph/Eramosa Water Quantity Policy Development

- 8:15 p.m.** **Discussion - Expectations and Aspirations for this Study**
Susan Hall, Facilitator, Lura Consulting
- *Bearing in mind the study scope and role of the CLG, what outcomes are you hoping to see as a CLG member?*
 - *What additional questions do you have about the process and evaluation of tools?*
- 8:55 p.m.** **Next Steps and Closing Remarks**
 - Issue homework questions
 - Timing for the next meeting and meeting summary review
- 9:00 p.m.** **Adjourn**

Additional Information:

- Guelph-Guelph/Eramosa Water Quantity Policy Development Study - Policy Tools and Approaches for Protecting Drinking Water Quantity Backgrounder (electronic copy and handout)
- Additional information about source protection planning, identified water quantity threats, and previous studies, please visit: www.sourcewater.ca/GGET-Tier3.



Lake Erie Source Protection Region

**Guelph-Guelph/Eramosa Water Quantity Policy
Development Study**

**Policy Tools and Approaches for Protecting Drinking Water
Quantity**

Community Liaison Group Workshop

February 13, 2018

Backgrounder

Glossary of Terms

1. **Aquifer:** An underground saturated permeable geological layer that is capable of holding water in sufficient quantities to serve as a source of groundwater supply.
2. **Clean Water Act, 2006:** Provincial statute to protect sources of municipal residential drinking water systems from contamination and depletion.
3. **Consumptive Water Demand:** The net amount of water that is taken from a source and not returned locally to the same source in a reasonable time.
4. **Drinking Water Quantity Threat:** An existing or possible future activity that adversely affects or has the potential to adversely affect the quantity of any water that is or may be used as a source of drinking water. The Province has identified **21 Prescribed Drinking Water Threats** in Regulation ([O.Reg.287/07](#))
5. **Gasport Formation:** A fractured, dolomite bedrock formation that is used for water supply in an extensive area of Southern Ontario. The Gasport Formation is the deep water supply aquifer for the City of Guelph, Guelph/Eramosa Township and a number of other municipalities. The Gasport Formation has recently been renamed, and is referred to as the Amabel Formation in older reports.
6. **Groundwater:** Subsurface water that occurs beneath the water table in fully saturated soils and geological formations.
7. **Groundwater Discharge:** The movement of groundwater from the subsurface to the surface into features such as lakes, streams, wetlands, and springs.
8. **Groundwater Recharge:** A hydrologic process where water moves downward from surface water to groundwater. Recharge is the primary method through which water enters an aquifer.
9. **Guelph Formation:** A fractured, dolomite bedrock formation that is used for water supply in an extensive area of Southern Ontario. The Guelph Formation is the shallow-most bedrock aquifer underlying the City of Guelph and parts of Guelph Eramosa Township.
10. **Hydrogeology:** The study of the movement and interactions of groundwater in geological materials.
11. **Hydrology:** The study of the movement and interactions of the waters on the earth's surface and its atmosphere.

12. **Lake Erie Region Source Protection Committee:** Multi-stakeholder committee responsible to develop Source Protection Plans for each of the four Source Protection Areas in the Lake Erie Source Protection Region.
13. **Lake Erie Source Protection Region:** Comprised of the Kettle Creek, Catfish Creek, Long Point Region, and Grand River Source Protection Areas. There are 19 Source Protection Regions and standalone Source Protection Areas in Ontario.
14. **Local Area:** Area around a wellhead or surface water intake where increased municipal pumping and reductions in groundwater recharge due to land use development have the potential to cause water levels at the municipal wells and intake to fall below safe water level elevations. Can include one or more water quantity Wellhead Protection Area (WHPA-Q) or Intake Protection Zone (IPZ-Q).
15. **Natural Heritage:** Sum of all elements of biodiversity, including fauna and flora, ecosystems and geological structures inherited from past generations.
16. **Policy Tools:** Set of guidelines and rules provided through the *Clean Water Act, 2006* to address drinking water threats.
17. **Recharge Reduction:** Activity on the landscape that reduces groundwater recharge and can impair the long-term viability of a water supply system.
18. **Risk Management Measures Evaluation Process (RMMEP):** Technical study that uses the Tier 3 model to identify the water takings with the most significant impact on the municipal wells and identifies the most promising measures to reduce the risks to the municipal drinking water supply.
19. **Source Protection Area:** Under the *Clean Water Act, 2006* a watershed is known as a Source Protection Area.
20. **Source Protection Plan:** Provincially approved plan containing policies to protect municipal drinking water sources. Developed in accordance with the *Clean Water Act, 2006*.
21. **Sub-watershed:** An area that is drained by an individual tributary into the main watercourse of a watershed.
22. **Surface Water:** Water that is present on the earth's surface and may occur as rivers, lakes, wetlands, ponds, etc.
23. **Stormwater:** Excess surface water from rain and melting snow that flows over land or impervious surfaces and does not soak into the ground.

24. **Technical Rules:** Provincial rules established under the *Clean Water Act, 2006* that govern the establishment of vulnerable areas and identification of drinking water threats.
25. **Tier 3 Model:** Computer model that incorporates the best available information about local geology, groundwater and surface water resources, precipitation, infiltration and water withdrawals to help evaluate the sustainability of the municipal water supplies.
26. **Tier 3 Water Budget and Local Area Risk Assessment:** A detailed scientific technical study aimed at assessing the water quantity risk to current and future municipal drinking water sources under a variety of scenarios, such as future increased municipal water needs due to growth and a prolonged drought.
27. **Vulnerable Area:** An area identified for the protection of municipal drinking water sources; can refer to wellhead protection area, surface water intake protection zone, a significant groundwater recharge area, or a highly vulnerable aquifer.
28. **Water Budget:** An accounting of the hydrologic cycle that quantifies the additions (e.g., precipitation infiltrating into the ground, runoff to streams and rivers, flow within and between the aquifers) and withdrawals (e.g., surface water and groundwater flowing out of the study area, water taking by municipalities and other users, and groundwater contributions to rivers) from a study area. The groundwater and surface water systems are in balance when the water additions and withdrawals are approximately equal.
29. **Watershed:** The area of land where all of the water that is under it or drains off of it goes into the same place. Its boundaries are defined by ridges of high land.
30. **Water Supply System:** One or more surface water intakes and/or groundwater wells that pump water to supply a municipal water distribution system.
31. **Water Quantity Intake Protection Zone (IPZ-Q):** An area where the municipal drinking water systems could be affected by other existing, new or expanded water takings. The contiguous area of land and water immediately around a surface water intake that is defined to protect the source water for a municipal residential drinking water system, specifically the drainage area that contributes surface water to the intake and the area that provides recharge to aquifers that contribute groundwater discharge to the drainage area.
32. **Water Quantity Threat Discussion Paper:** Document that outlines the current water management legislative framework in Ontario, lays out the possible policy tools under the *Clean Water Act, 2006*, and shortlists the most promising policy tools that could be used to manage significant water quantity threats.

33. Water Quantity Wellhead Protection Area (WHPA-Q): An area where the municipal drinking water systems could be affected by other existing, new or expanded water takings. WHPA-Q is the drawdown from the municipal water supply wells when pumping plus the additional drawdown of other permitted water takings (residential, industrial, commercial, institutional, recreational, etc.) when pumping. It also includes any surface water drainage area that contributes a significant proportion of surface water to the wells and any area where a future reduction in recharge would have a measureable impact on the municipal wells.

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1. Overview of Source Protection Planning in Lake Erie Region

Lake Erie Source Protection Region – Grand River Source Protection Area

Four Source Protection Areas (watersheds) make up the Lake Erie Source Protection Region (LESPR) (Figure 1):

- Grand River
 - Long Point Region
 - Catfish Creek
 - Kettle Creek

There are 50 municipal water systems in the Grand River watershed. About 70 per cent of the water comes from wells, another 28 per cent from the Grand and Eramosa rivers, and about three per cent from the Great Lakes.

The Lake Erie Region Source Protection Committee (SPC) was established in 2007 and has the responsibility to develop source protection plans and report on implementation in all four watersheds.



Figure 1: Map of Lake Erie Watershed Region

Mandatory Policy Content of Source Protection Plans

The provincial [Clean Water Act, 2006](#), established the need to protect Ontario's existing and future drinking water sources as part of an overall commitment to safeguard human health and the environment. A key focus of the legislation is the preparation of locally-developed Source Protection Plans (SPP). The goal of each SPP is to eliminate and/or manage existing significant threats and to ensure no future drinking water threats become significant.

According to the Act, Source Protection Plans must include:

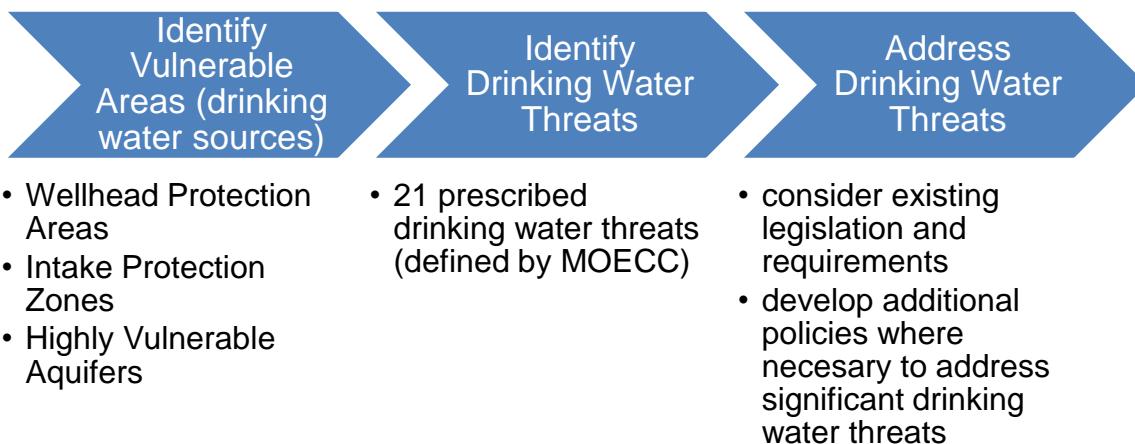
- Policies and programs to eliminate and/or manage existing significant threats
 - Policies and programs to ensure no future activities become significant drinking water threats

These policies might include:

- Rules for activities in wellhead protection areas and intake protection zones, e.g., activities that will be allowed, with conditions (e.g., risk management plans)
- Public education programs
- Programs to promote best management practices for voluntary action

Source Protection Planning Process

The following provides an overview of the source protection planning process as prescribed by the Ministry of the Environment and Climate Change (MOECC) under the *Clean Water Act, 2006*.



With the approval of the Grand River Source Protection Plan in November 2015, source protection policies in the plan address significant water quality threats identified throughout the watershed and water quantity threats identified in Dufferin County. The current work as part of the Guelph-Guelph/Eramosa Water Quantity Policy Development Study addresses the water quantity risks in the Guelph and Guelph/Eramosa area.

Guelph-Guelph/Eramosa Tier 3 Water Budget and Local Area Risk Assessment

Water Budget

Under the *Clean Water Act, 2006* all Source Protection Areas need to complete a water budget study at the watershed scale. A water budget looks at how much water enters a watershed, is stored, and leaves the watershed.

The [Guelph-Guelph/Eramosa Tier 3 Water Budget and Local Area Risk Assessment](#) was completed in March 2017 following the [Province's Technical Rules](#). As part of the Tier 3 Assessment, complex surface water and groundwater computer models were

developed to help evaluate the sustainability of the municipal water supplies for the City of Guelph and Guelph/Eramosa Township. The models developed a water budget for municipal water supplies that quantified additions and withdrawals. The models were also used to determine an area where the municipal drinking water systems could be affected by other existing, new or expanded water takings, referred to as a water quantity wellhead protection area (WHPA-Q) and, a surface water Intake Protection Zone (IPZ-Q) (see Figures 2 and 3 respectively).

Threats Assessment

The final task of the Tier 3 Assessment was to assign a risk level to the groundwater and surface water quantity vulnerable areas. The Tier 3 Assessment scenarios predicted that the City's and Guelph/ Eramosa Township's (GET) municipal wells can meet current needs. However, the assessment predicted that the City's Queensdale municipal well would be unable to meet future needs under normal climate conditions and during prolonged drought. All of the City's other wells and GET's wells are expected to be able to meet future needs under all scenarios, but there is a high level of uncertainty with the results for the City's Arkell Well 1. As a result of these assessments, and since the City's drinking water system is dependent on the contribution of water from the Eramosa River intake, the Guelph/Guelph-Eramosa WHPA-Q and IPZ-Q are assigned a significant risk level.

Under the source protection program ([section 1.1 of Ontario Regulation 287/07](#)), the Province identified 21 activities that are prescribed as drinking water threat activities. For water quantity vulnerable areas with a significant risk level, all existing and new water takings (prescribed drinking water threat #19) located within the areas that draw water from the municipal aquifers or Eramosa River or activities that reduce groundwater recharge (prescribed drinking water threat #20) are classified as Significant Drinking Water Quantity Threats (significant threats) (see Figures 2 and 3). The City and GET municipal wells are significant threats as are other permitted water takings in the Guelph-Guelph/Eramosa WHPA-Q and the IPZ-Q.

Understanding Threat Activities

Prescribed Drinking Water Threat #19: an activity that takes water from an aquifer or surface water body without returning the water taken to the same aquifer or surface water body.

Threat 19 occurs when water is taken and not returned and is no longer available for other users of the same water source. This is called consumptive use. The taking of water from a municipal aquifer or surface water body (without returning it to the same source) could result in a depletion of available supply that could impair the long-term viability of a water system. Unlike water quality threats, where the threat level is a product of the vulnerability score and the hazard score (of the activity), water quantity threats are a function of exposure and tolerance. Consumptive water taking is or would be a significant drinking water threat in WHPA-Qs and IPZ-Qs that are assigned a significant risk level.

Prescribed Drinking Water Threat #20: an activity that reduces the recharge of an aquifer.

Threat 20 occurs when an activity reduces recharge of the water table. Examples of activities that could reduce the infiltration of water into the ground include paving of parking lots, construction of buildings and the pumping of water out of the ground rather than allowing water in, e.g., at a pit or quarry. A reduction in recharge could result in a depletion of available supply that may impair the long-term viability of a water system. Recharge reduction is or would be a significant drinking water threat in WHPA-Qs and IPZ-Qs that are assigned a significant risk level.

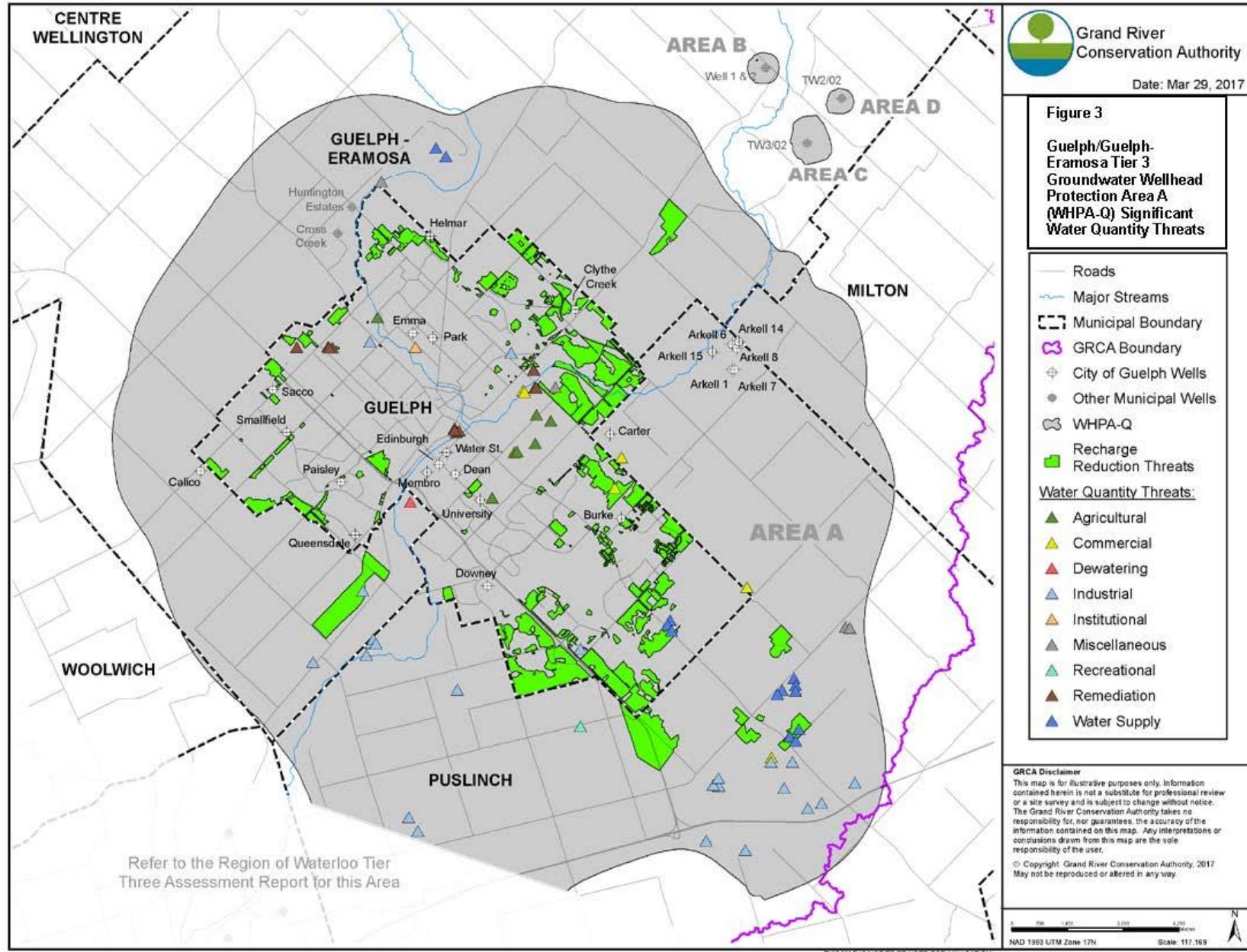


Figure 2: Guelph-Guelph/ Eramosa Tier 3 Wellhead Protection Area A Water Quantity (WHPA-Q) Threats

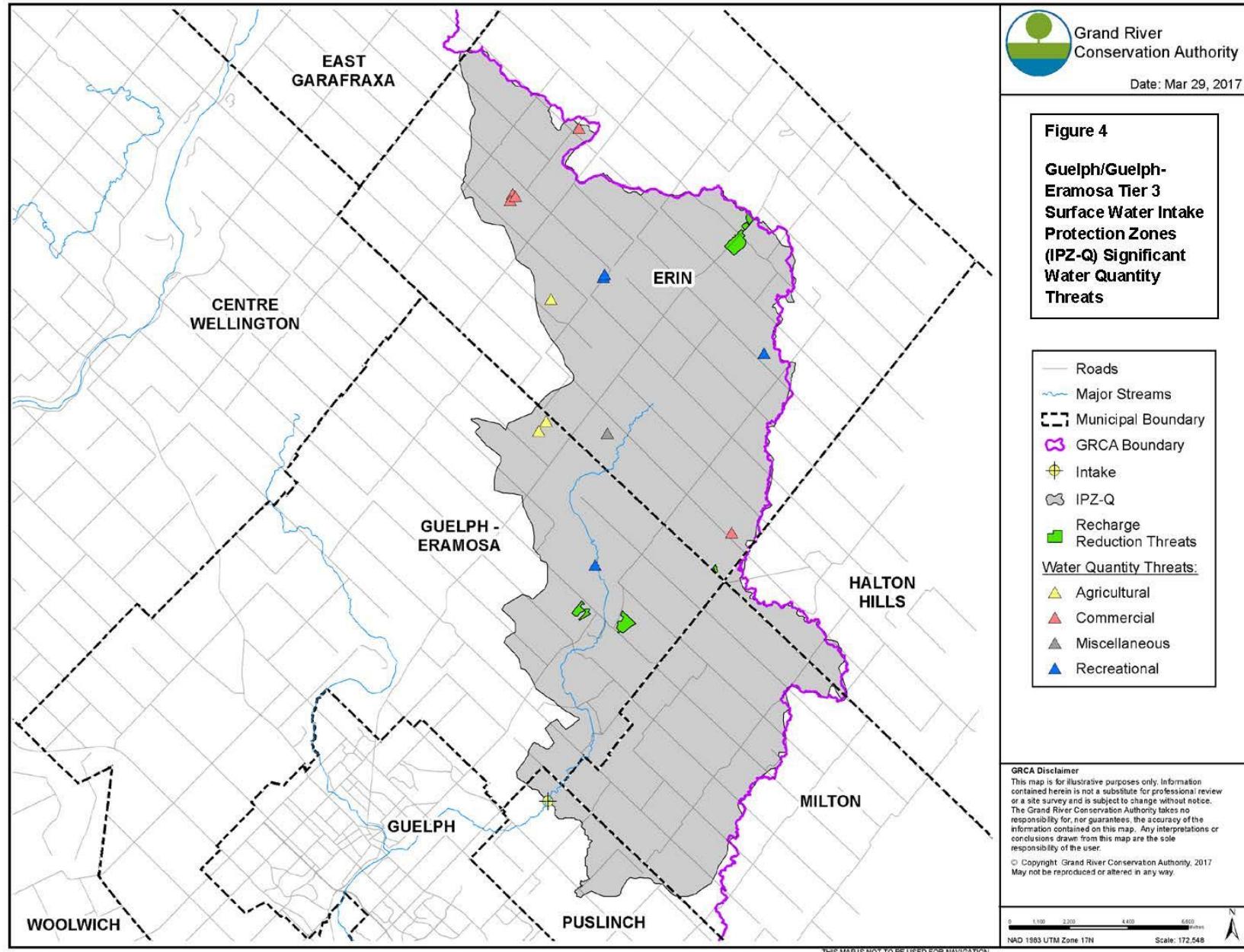


Figure 3: Guelph-Guelph/ Eramosa Tier 3 Intake Protection Zone Water Quantity (IPZ-Q) Threats

Risk Management Measure Evaluation Process (RMMEP)

A Risk Management Measures Evaluation Process (RMMEP) was initiated in August 2017 to assess the sustainability of the municipal drinking water systems by further evaluating significant threat water takings and exploring effective risk management measures. Using the Tier 3 model, risk management measures are being evaluated to determine the most effective approach to address the risk to the municipal systems. Risk management measures that are evaluated include options such as optimized municipal pumping, water conservation, water loss management and education and outreach programs. A complete list of risk management measures that are being considered can be found in the [Water Quantity Risk Management Measures Catalogue](#). The RMMEP is a collaborative project amongst municipal partners and the Lake Erie Source Protection Region.

To this point, through the RMMEP, water quantity threats in the Guelph-Guelph/ Eramosa WHPA-Q and IPZ-Q have been ranked and preliminary and additional scenarios have been developed. Climate change scenarios are scheduled to be developed in spring 2018. The results of the process will also be used to help guide the development of Source Protection Plan Policies.

Steps to Update Source Protection Plans

Under the *Clean Water Act, 2006*, there are three types of plan amendment processes to address major revisions:

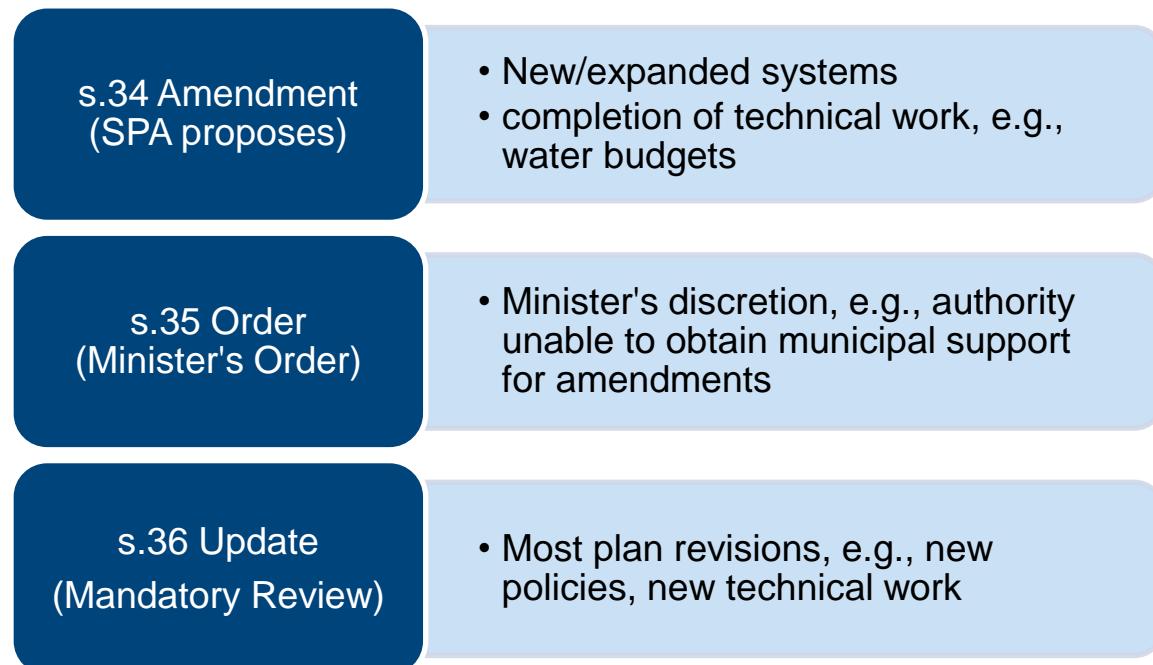


Figure 4: Steps to Update Source Protection Plans

To further protect municipal drinking water sources, the Lake Erie Region SPC, working with the municipalities, and with significant public consultation, will prepare an update to the Approved Grand River Source Protection Plan under s.34 that will include new technical work, including the Guelph-Guelph/ Eramosa Tier 3 study and water quantity policies. Work to update the Grand River Assessment Report and Source Protection Plan is planned to begin in spring 2018; submission to the SPC and release for public consultation is anticipated to take place in January 2019.

Water Quantity Threat Discussion Paper

The development of water quantity policies for Guelph-Guelph/Eramosa will be done in two phases. The first phase will be the development of a water quantity discussion paper - the second will include the selection of the preferred policy options, identification of the policy approaches, and drafting of the policy text. One discussion paper will be developed for both water quantity threats identified in the Guelph-Guelph/ Eramosa WHPA-Q and IPZ-Q.

The Project Team, comprised of members of the Grand River Conservation Authority, City of Guelph, Guelph/Eramosa Township, Wellington Source Water Protection, Wellington County, Ministry of the Environment and Climate Change, and the project consultant (see [Guelph-Guelph/Eramosa Water Quantity Policy Development Study Project Outline](#)) is responsible for the preparation of the phase one discussion paper.

The discussion paper will:

- Outline the current legislative framework in Ontario for managing the prescribed drinking water threats #19 and #20 (identified above)
- Lay out all the possible policy tools that the *Clean Water Act, 2006* provides to manage drinking water quantity threats
- Aim to shortlist the most promising policy tools that could be used to manage the water quantity threats

The discussion paper will be developed using workshops, including this one, to gain input and advice from the SPC, implementing municipalities and the community.

2. Drinking Water Quantity Threat Activities Identified in Guelph-Guelph/Eramosa

A review of the significant drinking water threats identified in the Guelph-Guelph/ Eramosa Tier 3 Water Budget and Local Area Risk Assessment indicates that a number of drinking water threat activities related to consumptive water takings (see Table 1) and recharge reduction (see Table 2) are located/present in water quantity vulnerable areas in the City of Guelph, Guelph/ Eramosa Township, Township of Puslinch (County of Wellington) and the Town of Erin (County of Wellington) within the Grand River Source

Protection Area. Significant threat activities related to consumptive water takings include municipal, non-municipal permitted and non-municipal non-permitted takings. See Figure 2 and 3 for identified water quantity threats in the Guelph-Guelph/ Eramosa WHPA-Q and IPZ-Q.

Table 1: Summary of significant drinking water threats identified in the Guelph-Guelph/ Eramosa Tier 3 WHPA-Q and IPZ-Q related to an activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body

Municipality	Number of Significant Threats	
	WHPA-Q	IPZ-Q
City of Guelph	47	-
County of Wellington - Puslinch	40	1
County of Wellington – Guelph/Eramosa	12	3
County of Wellington - Erin	-	10

Table 2: Presence of significant drinking water threats identified in the Guelph-Guelph/Eramosa Tier 3 WHPA-Q and IPZ-Q related to an activity that reduces the recharge of an aquifer

Municipality	Recharge Reduction Threats Present
City of Guelph	Yes
County of Wellington - Puslinch	Yes
County of Wellington – Guelph/Eramosa	Yes
County of Wellington - Erin	Yes

3. Existing Relevant Legislation, Policies and Programs

The following legislation, policies and programs are in place to address consumptive water taking activities and recharge reduction.

Federal

This section has been included to provide context for water management in Canada. Water management in Canada is a joint responsibility of indigenous peoples, federal and provincial governments, municipalities, conservation authorities, and all water users. Aboriginal rights and treaty rights, including certain customs and practices, became constitutionally protected in 1982; and these rights may take priority over all other uses. Canada's approach to water law varies significantly from province to province, but has a basis in English common law. The *Constitution Act, 1867* (& *Constitution Act, 1982*) lays out the split in responsibilities with respect to water resources between the federal and provincial governments.

International Boundary Water Treaty Act and International River Improvement Act

The federal government is responsible for waters that have inter-provincial or international boundary considerations. Two main federal acts regulate use of waters along the Canada-United States (US) border: the International Boundary Waters Treaty Act and the International River Improvement Act. Within Canada, a number of inter-jurisdictional water boards have been established to focus on specific water issues that have implications for more than one province or territory.

Great Lakes Water Quality Agreement (GLWQA)

The GLWQA includes annexes on groundwater and climate change that speak to increasing understanding of groundwater resources, and coordinating with water quantity management actions taken by the International Joint Commission (IJC).

Federal Water Policy (1987)

The policy encourages the management and use of freshwater in a wise, efficient, and equitable manner consistent with the social, economic, and environmental needs of present and future generations.

Fisheries Act

This Act is the principal federal statute conserving and protecting Canadian fisheries resources.

Species at Risk Act

This Act works on protecting and saving indigenous Canadian species and distinct populations from becoming extirpated or extinct.

Navigation Protection Act

This Act prohibits the dewatering of any navigable water.

Canadian Environmental Assessment Act

This Act focuses on potential adverse environmental effects that are within federal jurisdiction.

Provincial

Ontario Water Resources Act, 1990

To protect the sustainability of the Province of Ontario's water resources, the Ontario Water Resources Act requires those taking greater than 50,000 litres per day to obtain a Permit to Take Water (PTTW) with exceptions for residential use (less than 379,000 litres per day), livestock watering, frost protection and firefighting. No permit can be issued for more than ten years.

The purpose of the Permit to Take Water (PTTW) program is to ensure the conservation, protection and wise use and management of the waters of the province. The chief considerations in the review of PTTW applications are the potential for impacts to the natural and built environment. Guelph currently maintains 22 PTTWs, Guelph/Eramosa Township maintains 3 PTTWs.

Clean Water Act, 2006

The *Clean Water Act, 2006* enables the protection of existing and future sources of municipal drinking water through source protection plans, which contain policies to address activities identified as threats to municipal drinking water sources. Under this Act, PTTWs are provincial prescribed instruments that can be used to manage activities that take water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body. There is no provincial instrument prescribed under this Act that is available to be used in source protection plan policies to address recharge reduction.

Additionally, where a Wellhead Protection Area (WHPA)-Q has been assigned a significant water quantity risk level, the Risk Management Measures Catalogue can be used as part of a RMMEP to help select and evaluate preferred measures to manage water quantity threats and inform the policy development process. A variety of tools are available under the Act to address water taking and recharge reduction, including Part IV tools, prescribed instruments (water taking only), land use planning, incentives, and education and outreach (see section 4).

Environmental Protection Act, 1990

This Act is the primary pollution control legislation in Ontario. Under Part II.2 of the Act – Water Taking Regulation (O. Reg. 63/16) under the Environmental Protection Act, a

registration process has been established for certain lower risk water takings through the Environmental Activity and Sector Registry (EASR). These include takings for construction site dewatering or road construction purposes.

Endangered Species Act, 2007

Works to protect and save species at risk and their habitat in Ontario. Consumptive water taking and recharge reduction activities that damage or destroy such habitat may be prohibited under this Act.

Public Lands Act, 1990

Authorizes the Ministry of Natural Resources and Forestry to acquire land for their purposes while also guiding disposition of Crown land resources via a permitting process (e.g., peat, vegetation removal, etc.).

Conservation Land Act, 1990

Authorizes private land owners to grant easements or enter into a covenant with one or more conservation bodies for the protection of water quality and quantity, including protection of drinking water sources and for watershed protection and management.

Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)

OMAFRA supports programs for the agricultural sector that assist in maintaining potable water supplies, supporting the use of efficient irrigation and drainage methods. OMAFRA also works with Agriculture and Agri-Food Canada on the Environmental Farm Plan (EFP) program, which is delivered by the Ontario Soil and Crop Association.

Building Code Act, 1992

Objectives of the Building Code include limiting the probability that the design or construction of buildings, or supporting infrastructure will cause a resource to be exposed to unacceptable risk of depletion. A number of changes regarding water conservation/reuse were made in 2014.

Water Opportunities and Water Conservation Act, 2010

The Water Opportunities and Conservation Act require municipalities and other public agencies to develop a Water Sustainability Plan. These plans will allow the Minister of the Environment and Climate Change to establish performance indicators and targets for municipal water, wastewater and stormwater services and operations.

Ontario Environmental Assessment Act, 1990

Provides for the protection, conservation and wise management of the environment, generally requiring an environmental assessment of any major public or designated private undertaking. Common and/or important issues identified in Environmental Assessments related to water projects include fish and fish habitat, water levels and

flows, and competing or complementary interests of nearby land owners, water-resource users and water-related natural resource users.

The Act also establishes a "Class Environmental Assessment" process for planning certain municipal projects. For water projects, the purpose of the municipal class environmental assessment is to ensure that projects will be "undertaken to address problems affecting the operation and efficiency of existing water systems, to accommodate future growth of communities, or to address water source contamination problems". Relating to source water protection, once an Environmental Assessment is complete for a planned municipal water supply source, the well/intake is defined as a "planned source" under the *Clean Water Act, 2006*; meaning it must be included in the Assessment Report and Source Protection Plans.

Conservation Authorities Act, 1990

Allows the formation of Conservation Authorities by municipalities, in order to protect and manage natural resources, other than gas, oil, coal and minerals, on a watershed scale. The Act enables conservation authorities to regulate activities that may interfere with a watercourse or wetland, and regulate development in areas prone to water-related hazards (floodplains, shorelines) for impacts to the control of flooding, erosion, dynamic beaches, pollution or conservation of land.

Planning Act, 1990

Requires that the Minister of Municipal Affairs, Ontario Municipal Board and other planning bodies across Ontario have regard to various matters of provincial interest, including but not limited to the protection of ecological systems, conservation and management of natural resources, and the efficient use and conservation of energy and water. The Act provides for and supports the control of land use and development throughout Ontario. The Provincial Policy Statement, 2014 (PPS), which is issued under section 3 of the Planning Act, applies province-wide. Its policies set out the government's land use vision for how land and resources are managed, and all decisions affecting land use planning matters "shall be consistent with" the PPS. The PPS requires wise use and management of resources, including water.

The Act requires that planning authorities (e.g. municipalities) ensure the long-term protection of natural heritage and water resource systems, as well as the conservation and management of natural resources, and the efficient use and conservation of energy and water. Under the Provincial Policy Statement (PPS), planning authorities are required to protect, improve or restore the quality and quantity of water and designated hydrologic functions or features; plan efficient and sustainable water use; and use water conservation practices. Municipalities use the PPS to develop their official plans and to guide and inform decisions on other planning matters. Using the Planning Act, municipalities control planning and development through a variety of tools.

Municipal Act, 2001

Provides municipalities with broad powers to provide “any service or thing that the municipality considers necessary or desirable for the public” and they have broad powers to pass by-laws concerning the “economic, social and environmental well-being of the municipality” and the “health, safety and well-being of persons” as long as they do not frustrate provincial acts and regulations. Municipalities have powers to regulate tree cutting and site alteration which can affect the control of recharge, they can also use offer programs that encourage or incentivize recharge. The City of Guelph regulates tree cutting and site alteration through the development approval process and through related supporting by-laws.

Places to Grow Act, 2005*Growth Plan for the Greater Golden Horseshoe*

Mandates population and employment targets which must be conformed to as part of the next municipal comprehensive review process. The Plan is about accommodating forecasted growth in complete communities. The Plan contains specific density targets for growth and implementing policies to ensure that the growth targets and complete community objectives are achieved. As set out on Schedule 3 to the Growth Plan, the City of Guelph will be increasing in population by 2041 to 191,000 people and 101,000 jobs. The Places to Grow plan is about accommodating forecasted growth in complete communities. As the growth targets are mandated by the Province and must be conformed with, the decision to not accommodate growth to manage the risk associated with this threat is not an option. As set out on Schedule 3 to the Growth Plan, the City of Guelph will be increasing in population by 2041 to 191,000 people and 101,000 jobs. The Plan contains specific policies regarding planning for new and expanded infrastructure, including municipal water systems. These water system-related policies provide direction for the protection, conservation, enhancement and restoration of quality and quantity of water within a watershed.

Provincial Water Quality Objectives, 1994

The Ontario Ministry of Environment and Energy issued the Provincial Water Quality Objectives in 1994, which gives direction on the management of the province's water resources. The inter-relationship of and between surface and ground water quality and quantity is to be recognized in water management decision making processes. The guidelines speak to water quantity management principles including: avoiding interference between users, water conservation, and protection of significant infiltration areas.

Lakes and Rivers Improvement Act, 1990

Regulates the public and private use of Ontario's lakes and rivers, and the land under them, including for the construction, repair and use of dams. It empowers the Ministry of

Natural Resources (MNRF) to regulate the construction and operation of water works, and requires that new water works be approved.

Drainage Act, 1990

Allows for the construction of drains to serve as a communal drainage system for an area of landowners.

Tile Drainage Act and Tile Drainage Installation Act, 1990

Both acts enable improvement of agricultural land productivity via drainage systems. While drainage may allow for increased surface recharge, it can also lessen the amount of water available for taking, through drainage of surface and groundwater.

Ontario Low Water Response (OLWR)

This program is a mitigation strategy, intended to reduce the effects of low water or drought periods. Under OLWR, watershed-based water response teams (WRT) coordinate local activities, with these teams consisting of local water users and local and provincial water managers.

Environmental Bill of Rights, 1993 and Environmental Registry

Serves to notify the public of important environmental decisions and to solicit public comment. Through the EBR, the public has the right to request reviews of inadequate laws, regulations, policies or instruments as well as to comment on proposed legislation and regulations.

Great Lakes Strategy, 2012

Lays out a vision for drinkable, swimmable and fishable Great Lakes.

Great Lakes Protection Act, 2015

Reflects the goals and principles of the Strategy. The Act supports: economic opportunities and innovation through environmentally sustainable use of natural resources; and allows public bodies to target actions on priority issues and problem areas through the Great Lakes Guardian Community Fund.

Assessment Act, 1990

The Assessment Act sets out eligibility criteria for lands that can receive property tax exemptions under the Conservation Land Tax Incentive Program (CLTIP) and the Managed Forest Tax Incentive Program (MFTIP). Under the CLTIP, provincially significant conservation lands, such as wetlands and community conservation lands, are eligible for property tax relief.

Municipal

At the local level, municipalities and local bodies such as conservation authorities also have discrete water management responsibilities, many which have been mandated or

delegated to them by the province, such as through the Municipal Act, Planning Act, regional planning initiatives, *Clean Water Act, 2006*, Building Code Act, and Conservation Authorities Act. Other initiatives and programs undertaken at local levels can include: integrated watershed management, watershed planning, local drought contingency projects and planning, and stewardship and education/outreach initiatives.

City of Guelph

Water Efficiency Strategy Update, 2016

Includes a number of plans, initiatives and strategies, e.g., 2014 Water Supply Master Plan, 2009 and 1999 Water Conservation and Efficiency Strategies, and the Guelph Official Plan, that work together to help protect the City's water supply by reducing water demand on a daily basis which ensures that more water is made available for future use. From 2006 to 2014, the City's water efficiency programs have reduced demands by about 6.6 million litres per day with about 42 percent of this savings (2.8 million litres per day) attributable to the City's water loss reduction program. The reduction in Guelph's residential water demands has been the result of the effectiveness of the City's water efficiency programs combined with changes to the Ontario Building Code, more efficient plumbing fixtures and appliances, public awareness of the need to use our natural resources wisely, and customer response to annual water/wastewater user rate price increases.

Water Supply Master Plan, Updated in 2014

Aims to ensure the long-term water supply capacity and update the documents on a five year cycle. The Plan evaluated water needs associated with community growth over a 25-year planning period and identified a series of preferred water supply projects to meet the City's future community water supply requirements. Through this detailed Master Plan, water capacity reclaimed through water conservation and efficiency was identified as the most cost-effective and immediate source of available water supply. While the City's overall water demands will continue to increase because of the growing population, per capita demands are projected to decline on an annual basis.

Water and Wastewater Servicing Master Plan, 2008

Assessed each system to enhance reliability, efficiency and capability to service existing and new city residents. The Plan identified preferred servicing strategies and related system improvements for water distribution/ storage and wastewater conveyance and identified the need for the development of a water distribution hydraulic model to assist water loss management. Additional recommendations included a study of a large scale wastewater reuse initiative. The 2009 Wastewater Treatment Master Plan identified water conservation initiatives as a key component of the master plan and as a non-expansion, source control alternative.

Stormwater Management Master Plan

To satisfy the first phases of an Environmental Assessment and to create a framework for the future development, the City of Guelph has prepared a Master Plan for stormwater management. The Stormwater Management Master Plan is a long-term plan for the safe and effective management of stormwater runoff from existing urban areas, while improving the ecosystem health and ecological sustainability of the Eramosa and Speed Rivers and their tributaries. The Plan's overall objective is to integrate flood control and stormwater drainage with opportunities to improve and protect groundwater and surface water quality and the natural environment. Three key areas are addressed in the plan. These include management of stormwater runoff as it related to aquifer recharge, low impact development to increase the efficient use of outdoor water and water sensitive urban design to minimize impacts to water quality.

Urban Forest Management Plan, 2012

Ensures a healthy urban forest which cleans air, conserves energy, decreases water use, increases property values and makes Guelph's neighbourhoods more beautiful and enjoyable. Guelph is committed to having the highest tree canopy among comparable municipalities.

Official Plan

Establishes a statement of goals, objectives and policies for growth and development for the next 20 years. The Official Plan is focused on sustainability and establishes policies that have a positive effect on the social, economic, cultural and natural environment of the city. It includes policies for the protection of water resources including the City's drinking water sources, as well as, surface water and groundwater features.

The City of Guelph has been proactive in addressing issues relating to aquifer recharge through the Official Plan. The City of Guelph has current Official Plan policies recognizing the entire City as a recharge area. For newly developing communities, a secondary plan process is undertaken by the City, as is currently underway for the Clair Maltby Area. This secondary plan process includes an assessment of infrastructure including stormwater to inform the policies for development within the area.

Natural Heritage Action Plan

Looking at potential opportunities for review and update of existing subwatershed plans. As part of development approvals, the City requires pre to post water balance on site as the minimum storm water management criteria unless subwatershed studies provided alternative targets. For any development applications which are proximate or within the Natural Heritage System, an environmental impact study is required. "Sensitive ground water features" identified to date include those areas to support recharge/discharge as

identified through subwatershed studies relating to streams and wetlands or significant landform as set out within the Natural Heritage System.

Outside Water Use Program

The Outside Water Use Program (OWUP) was created in 2002 in response to the Ontario Low Water Response Plan. The OWUP program objectives are to conserve Guelph's groundwater supply and protect against the impact of drought during the hot, dry summer months. The Program has three levels that affect residential outside water use. These levels are triggered by dry weather and local watershed conditions, and range from every other day lawn watering (level blue and yellow) to banning of lawn watering during drought conditions (level red) along with other water uses. A large education and outreach component of this program is the Healthy Landscapes Program. This program provides a method in which the City can communicate with water customers about their outdoor water use while showing them how to improve their landscaping to ensure it is water efficient and suitable for the City's climate and soil conditions. This includes the promotion of trees to assist with the urban tree cover, the planting of non-invasive plants and best irrigation practices. Further, the program forges relationships with the community and local businesses.

Water Conservation Program

The City has undertaken and implementation an extensive water conservation program and has achieved a benefit of approximately \$2.70 for each dollar they spent on their water efficiency programming between 2006 and 2014. While the potential to save money by deferring or downsizing infrastructure expansion projects is often one of the primary drivers for communities to implement water efficiency programs, there are also many other co-benefits to municipalities such as reducing operational costs (i.e., energy costs) and greenhouse gas emissions.

The City's water conservation program is also considered in the MOECC's application review process for a new or renewed PTTW. Not maintaining a robust conservation program could jeopardize the City of Guelph's ability to obtain new water supplies. Furthermore, if the PTTW is approved, the City of Guelph conservation programs become a regulatory requirement of the PTTW upon issuance. Any revisions to current conservation programs will need to be incorporated in renewals to PTTWs to ensure ongoing compliance.

Incentive Programs

The City of Guelph offers a number of incentive programs for residential, multi-residential, industrial, commercial and institutional sectors. Examples of incentive programs include: the Royal Flush Rebate Program, Water Efficient Landscaping Incentives, Multi-residential Audit Program, Industrial, Commercial, and Institutional Capacity Buyback Program and, the Water Loss Management Program. Additionally,

the City of Guelph have developed a credit program for industrial, commercial, institutional (ICI) and multi-residential properties of six units or more where land owners who reduce stormwater runoff on private property can obtain a credit towards the stormwater service fee they are required to pay.

Municipal Facility Upgrades Program

The City will continue to lead by example and make water saving upgrades in City buildings and conducting pilot and research projects within municipal facilities (e.g., rainwater harvesting and wastewater reuse).

Water Loss Management Program

The City's goal is to achieve and maintain distribution system leakage at the lowest economically viable level. The City utilizes District Metered Areas where possible to manage system leakage. The City will continue its current leak detection and sounding programs and it has commissioned an additional 20 district metered areas between the years of 2016-2018, bringing the total number to 27.

Public Outreach/Education Programs

The City provides public education programs/activities to support and facilitate a number of program initiatives, including the Mobile Water Engagement Application which allows users to track their water consumption data, and the Outdoor Water Use Program which ensures community members are aware of the summer outdoor water use by-law and how they can reduce their outdoor water use.

Research

There are a number of ongoing and planned studies the City is engaged in related to water management and conservation. A few examples of these studies include: Distribution System Pressure Management, Water Conservation and Rebound Effects, Water Softener Pilot, Automated Meter Reading and, Municipal Upgrades Best Practices.

Wellington County

Official Plan

Section 4.9 of the Wellington County Official Plan pertains to Water Resources and includes policies on watershed planning, surface and groundwater protection, source water protection and specific policies on the protection of the Paris and Galt Moraine. The Paris and Galt Moraine is protected through Policy Area policies in Section 4.9.7 and shown on Schedules B-2, 3 and 7.

Township of Puslinch**Municipal Servicing Feasibility Study**

In 2017, the Township of Puslinch initiated a feasibility for municipal servicing (water and wastewater) within the GGET Tier 3 study area. More information can be found at www.puslinch.ca as the study is ongoing.

Puslinch Groundwater Monitoring Network

The Township has been measuring sixteen groundwater monitoring wells for quality and quantity since 1994. These wells provide ambient groundwater conditions unassociated with development within the Township. The groundwater monitoring network includes overburden wells completed in the Paris Moraine, Galt Moraine and the Aberfoyle Outwash deposits. The network also includes wells drilled into the Guelph and Gasport bedrock aquifers. The results of the monitoring can be found at www.hardenv.com\mill_creek.html.

The monitoring program provides the Township of Puslinch with quarterly groundwater levels and annual groundwater quality and is used to evaluate impacts from major water taking in the Township including that from the City of Cambridge and the City of Guelph.

Guelph/Eramosa Township**Water Conservation**

The Township of Guelph/Eramosa municipal water system has a water supply that relies heavily upon the use of groundwater. As a result, the Township has established outside water use restrictions to balance demand with the available water supply. Restrictions are in place for residents using the Municipal Water Supply. The Township also operates a toilet rebate program for Rockwood residents that upgrade their toilets to approved high efficiency (3.0L and 4.8L) and dual flush (3/4.8L or 3/6L) models.

Other Programs**Integrated Watershed Management (IWM)**

Establishes a process of managing human activities and natural resources in an area defined by watershed boundaries. It is an evolving and continuous process through which decisions are made for the sustainable use, development, restoration and protection of ecosystem features, functions and linkages. While yet to be formally adopted in Ontario, it is firmly established in the initiatives of conservation authorities and within the limited scope of drinking water source protection planning.

4. Overview of Policy Tools

This section provides an overview and description of all the policy tools available to the Lake Erie Region SPC to address water quantity threats in the Guelph-Guelph/Eramosa WHPA-Q and IPZ-Q. Evaluation of these policy tools and their usefulness in eliminating and/or managing drinking water threats will be a key component of the workshop discussions.

- **Clean Water Act Tools** (under Part IV of the Act) – The Act establishes powers (or tools) to regulate significant drinking water threats. Because they fall under Part IV of the *Clean Water Act, 2006* they are often referred to as Part IV tools. They include:
 - **s. 57 Prohibition:** designates an activity in an area as prohibited and prohibits any person from engaging in that activity at any location in the area. It can be used to address both existing and future threats, but can only apply to significant threat activities that occur either within a WHPA-Q or an IPZ-Q.
 - **S. 58 Risk Management Plans:** site-specific plans that address significant threat activities by formally setting out actions that will be taken by the person(s) who is engaging in the activity (or in the case of future threats, proposing to engage) in order to reduce the level of risk. The details of the risk management plan are intended to be agreed on cooperatively by the person(s) engaging in the activity and a risk management official.
 - **S. 59 Restricted Land-Use:** links s. 57 Prohibition or s. 58 Risk Management Plan activities to land uses in an area. It cannot be used without these other policies. It is a way to impose conditions where planning or building permit applications within the designated land use areas relate to activities that could be a significant threat. It acts as an early warning system for municipalities to avoid inadvertently approving applications involving potential drinking water threats, ensuring applicants abide by the applicable source protection policies.
- **Prescribed Instruments** – a list of instruments identified in Ontario Regulation 287/07 under the Act, such as a permit, licence, approval, authorization, direction or order issued or otherwise created under Ontario legislation, e.g., Permit To Take Water (PTTW) under the Ontario Water Resources Act. It is the responsibility of those persons or bodies with authority to issue or amend instruments to ensure, where appropriate, that such instruments satisfy policy obligations outlined in the Grand River Source Protection Plan.

- **Land Use Planning** – involves use of municipal planning tools such as official plan amendments, zoning by-laws and site plan agreements. Decisions on planning matters will need to conform with significant threat policies. When using this policy approach, the level of detail and content of the policy must fall within the authority of the Planning Act or Condominium Act, 1998. Decisions under these acts may not be retroactive and therefore can only have an effect on *future* occurrences of an activity posing a source water threat.
- **Incentives** – programs to encourage an action by means of support. They are usually financial but can also include other rewards, such as discounted products and program fees or community recognition.
- **Education and Outreach** – programs that inform the identified residents/owners of the significant threat associated with their property. The goal of these activities is to elicit a positive response, by motivating stakeholders to voluntarily change their current practices.
- **Stewardship Programs** – programs that partner the landowner and the regulating authority, which usually provide financial assistance to mitigate risks. The intent is to elicit behaviour change.
- **Pilot Programs** – programs implemented to determine best practices.
- **Research** – gathering information for the purpose of initiating, modifying or terminating a particular project.
- **Specify Actions** – determining what actions would be completed to mitigate the risk. It is a catch-all tool which allows policy makers to come up with approaches/actions to address source water risk which are not included under other policy tools. To use this tool the actions resulting from the policy must fall within existing powers of authority granted to the implementing body.