



Environmental Services

MEMORANDUM

TO: Committee of the Whole
FROM: Erin Mahoney, Commissioner of Environmental Services
DATE: January 10, 2017
RE: **2016 Annual Report on Source Protection implementation as required under the *Clean Water Act, 2006***

This memo provides Council with a copy of the Annual Report (Attachment 1) that summarizes York Region's efforts in 2016 to implement source water protection. The report will be submitted to the Toronto and Region Source Protection Authority and the Lakes Simcoe and Couchiching/Black River Source Protection Authority on February 1, 2017 per *Clean Water Act, 2006* requirements. Copies of this report are provided for information to all members of Council. Those Council members participating as Conservation Authority Board members will also receive copies of this report at upcoming Source Protection Authority meetings.

The 2016 annual report summarizes the Region's work to implement a number of requirements in the Source Protection Plans to address potential threats to Regional drinking water supplies. The Region of Peel, City of Toronto and Ministry of Environment and Climate Change are undertaking similar work to safeguard Lake Ontario intakes, where approximately eighty-five per cent of our drinking water comes from.

Erin Mahoney, M. Eng.

SL/sl
Attachment

Copy to: Dr. Karim Kurji, Medical Officer of Health, Community and Health Services, Public Health
Adelina Urbanski, Commissioner, Community and Health Services
Dino Basso, Commissioner, Corporate Services
Valerie Shuttleworth, Chief Planner, Planning and Economic Development, Corporate Services

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SYSTEM 4

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SOURCE WATER IMPLEMENTATION

2016 ANNUAL REPORT



2016 Lake Simcoe Conservation Authority Watershed Heroes Conservation Award Winner

Mr. Eun Young Lee
DRY CLEANERS +

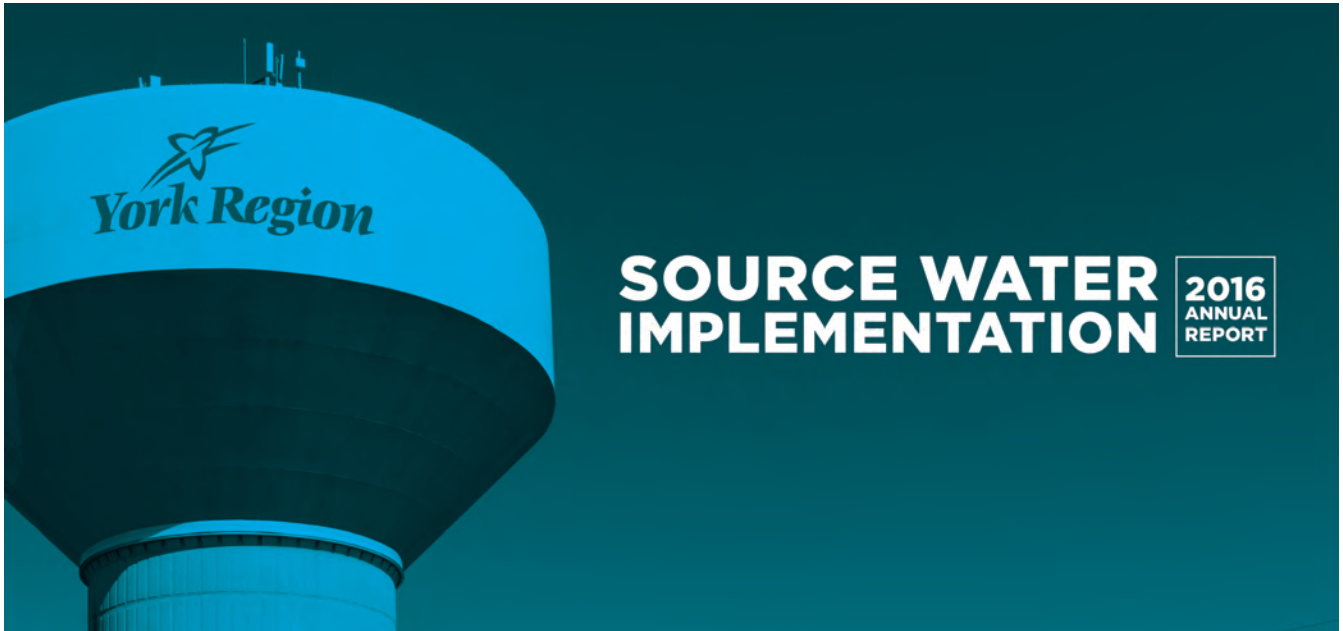
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York Region

Keeping our water safe



Introduction

This fifth annual report summarizes information requested from the Risk Management Official by the Source Protection Authorities, as required under section 81 of the Clean Water Act, 2006 (the Act).

The Source Protection Authorities will receive the information in the format they have requested by February 1, 2017. This information may also be requested by the Director of the Ministry of the Environment and Climate Change (the Ministry). The report outlines activities undertaken by York Region in 2016 to protect municipal drinking water sources. Source Protection is one component of the multi-barrier approach to ensure clean and safe drinking water. The comprehensive multi-barrier approach used by York Region also includes operator training, water treatment, extensive monitoring and testing, as well as emergency preparedness (see **Figure 1**).



Figure 1 – Water Treatment is an Important Component of the Multi-barrier Approach





York Region Internationally Recognized for Source Protection

In 2016, York Region was awarded the American Water Works Association Exemplary Source Water Protection Award for Metropolitan Systems (see **Figure 2**). Award winners “establish and maintain source water protection programs that account for their unique local conditions, incorporate the interests of local stakeholders, and reflect sustainable long-term commitments to the process by all parties.” Established in 1881, the American Water Works Association is the largest and oldest non-profit, scientific and educational association dedicated to managing and treating water. There are approximately 50,000 members worldwide.

Figure 2 – American Water Works Association Exemplary Source Water Protection Award for Metropolitan Systems



MOST RISK MANAGEMENT PLANS IN THE PROVINCE

INCENTIVE PROGRAM

OVER 700 SITES ASSESSED

OVER HALF OF SITES WITH RISK MANAGEMENT PLANS INSPECTED

TEMPLATES FOR RISK MANAGEMENT PLANS

DEVELOPMENT PROPOSALS IN VULNERABLE AREAS REVIEWED

ENGAGING SUBJECT MATTER EXPERTS

CONDITIONS OF APPROVAL ENFORCED TO MAKE GROWTH COMPATIBLE WITH DRINKING WATER PROTECTION

Source Protection Committee Representation and Risk Management Official Update

Don Goodyear (Risk Management Official) represents the Region as a member of both the South Georgian Bay Lake Simcoe, and the Credit Valley, Toronto and Region and Central Lake Ontario Source Protection Committees. Regional representation on both Source Protection Committees helps ensure municipal concerns are reflected when future Source Protection Plan amendments are considered, and helps bring consistency across the Region. Scott Lister was appointed by Council in 2016 as the alternate Risk Management Official.

Negotiating Risk Management Plans

York Region continued to work with a number of businesses and farmers to verify and manage threat activities at their sites. In 2016 verification of all sites with threats identified in the 2010 Assessment Report was completed. Verification work between 2011 and 2016 identified an additional two hundred and ninety-one sites with potential drinking water threats. In total one hundred and forty sites have been confirmed, five hundred and thirty-seven have been removed, with fifty-nine remaining to be verified (see **Figure 3**). This included sites in Bradford and Durham since three wellhead protection areas extend across York Region’s boundary (see **Figure 4**).

Figure 3 – Summary of Risk Management Efforts in York Region



In 2016, Region staff continued developing Risk Management Plans for sites with threats, including evaluating existing practices and identifying potential gaps in drinking water protection. In 2016, Risk Management Plans were completed for one farm, the Aurora Leisure Complex, and twenty-three businesses. There are now a total of fifty-eight Risk Management Plans in place. A detailed breakdown of the risk management work completed in each local municipality (with the exception of the Towns of Richmond Hill and Georgina, and the City of Markham which have no significant threats) is shown in **Figures 5 – 10**. A template developed by the Region was used to make the risk management plan process less onerous for businesses and farmers. Regional staff completed or assisted with completing Risk Management Plans using the template. Inspections have been completed at thirty-five sites with previously completed Risk Management Plans (see **Figure 11**). Information related to the Source Protection Program is managed in the Regional data management system.

Figure 4 – York Region Source Protection Areas

Legend

Intake Protection Zone

- Intake Protection Zone 1
- Intake Protection Zone 2

Wellhead Protection Area (WHPA)

- WHPA-A (100m radius)
- WHPA-B (2 year zone)*
- WHPA-C (5 year zone)*
- WHPA-C1 (10 year zone)*
- WHPA-Q (Recharge Management Area)

*Zones are based on time for water to travel to well

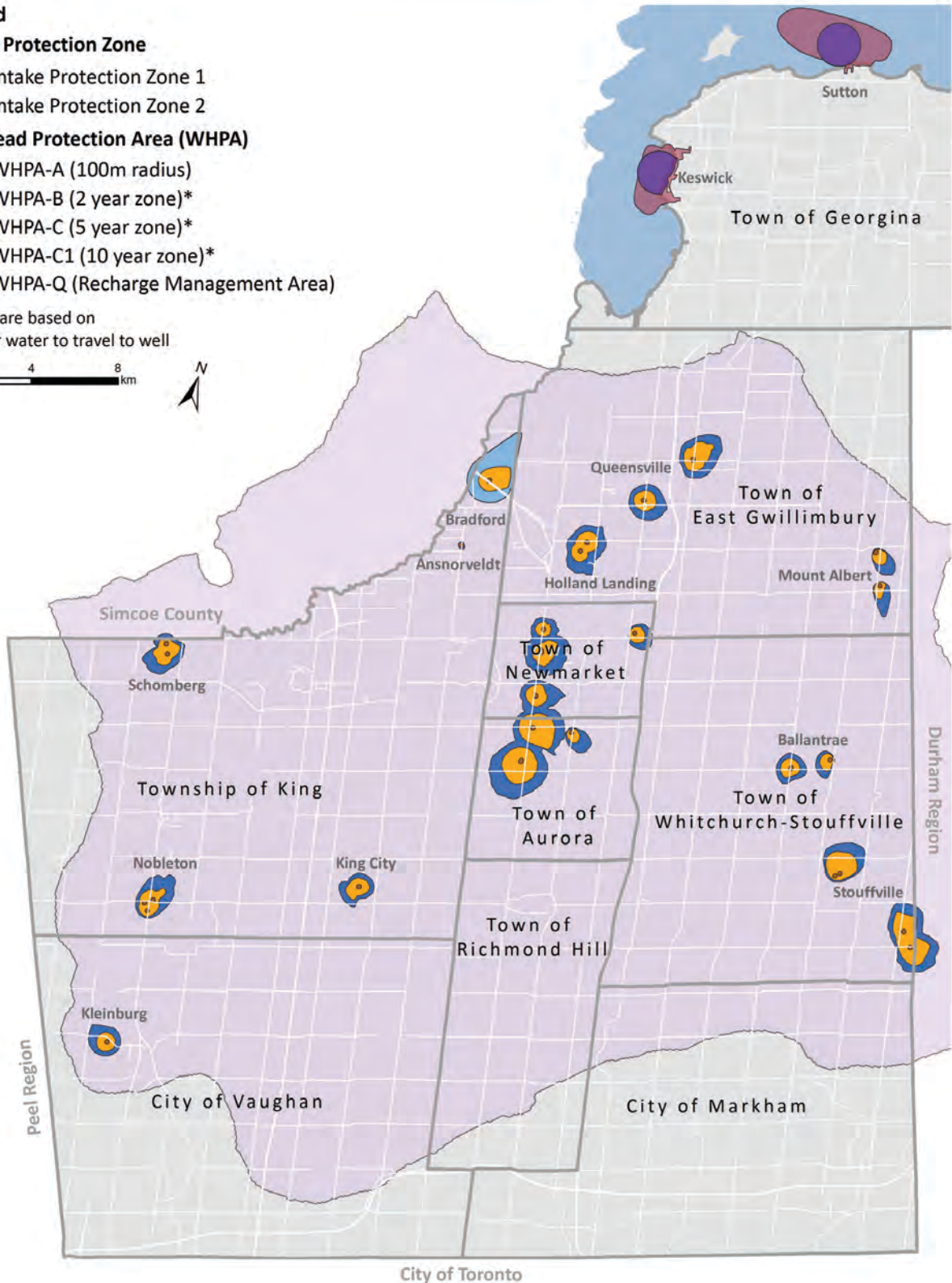
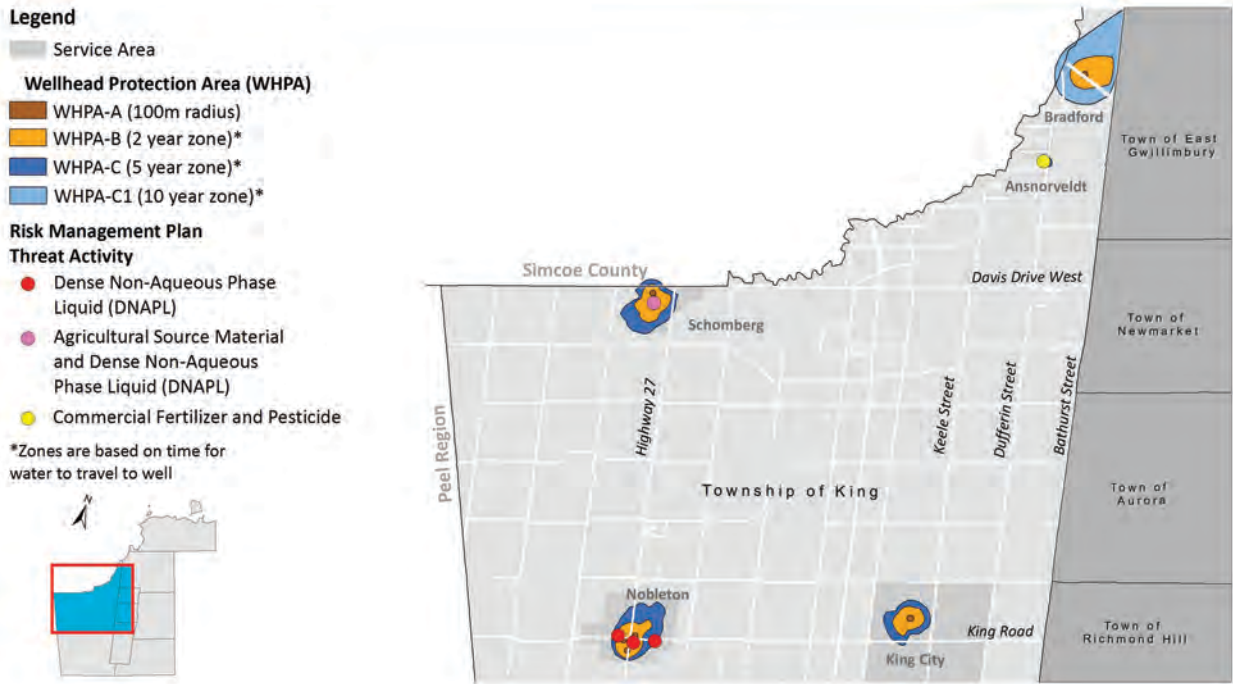


Figure 5 – Township of King



Significant Threat Site Verification

Community	Threat Sites Identified	Threat Sites Removed	Threat Sites to be Verified	Threat Sites Confirmed
Ansnorveldt	5	3	0	2
King City	5	5	0	0
Nobleton	36	23	2	11
Schomberg	36	28	2	6
Bradford**	19	12	0	7
Total	101	71	4	26

**York Region is completing Risk Management work on behalf of Bradford for their well located in York Region.



Figure 6 – Town of Newmarket



Significant Threat Site Verification

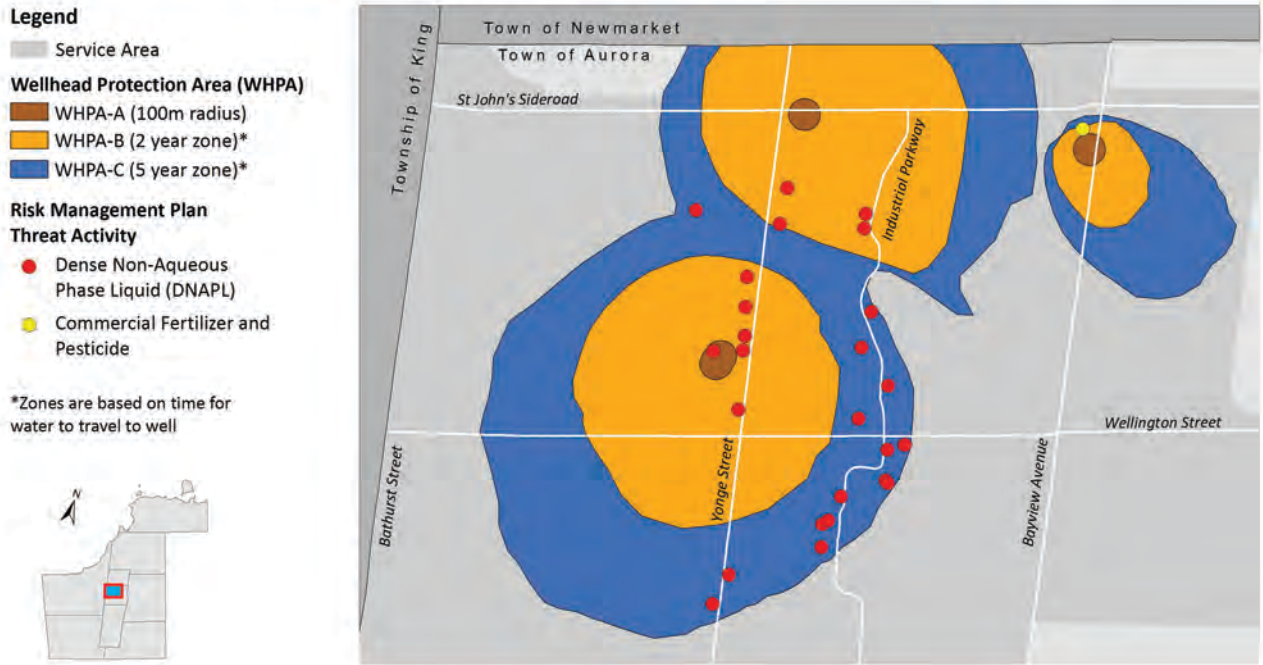
Community	Threat Sites Identified	Threat Sites Removed	Threat Sites to be Verified	Threat Sites Confirmed
Newmarket	328	270	18	40

270 THREAT SITES REMOVED
24 COMPLETED RISK MANAGEMENT PLANS



16 OUTSTANDING RISK MANAGEMENT PLANS
18 TO BE VERIFIED

Figure 7 – Town of Aurora



Significant Threat Site Verification

Community	Threat Sites Identified	Threat Sites Removed	Threat Sites to be Verified	Threat Sites Confirmed
Aurora	209	134	32	43



Figure 8 – Town of Whitchurch-Stouffville



Significant Threat Site Verification

Community	Threat Sites Identified	Threat Sites Removed	Threat Sites to be Verified	Threat Sites Confirmed
Ballantrae	8	6	0	2
Stouffville	45	23	4	18
Total	53	29	4	20

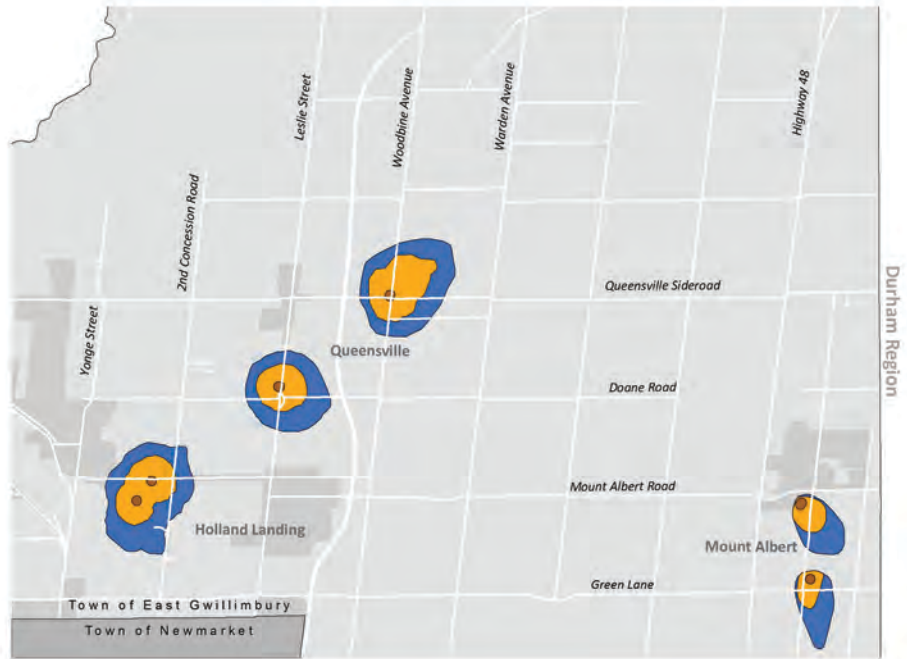


Figure 9 - Town of East Gwillimbury

Legend

- Service Area
- Wellhead Protection Area (WHPA)**
 - WHPA-A (100m radius)
 - WHPA-B (2 year zone)*
 - WHPA-C (5 year zone)*

*Zones are based on time for water to travel to well



Significant Threat Site Verification

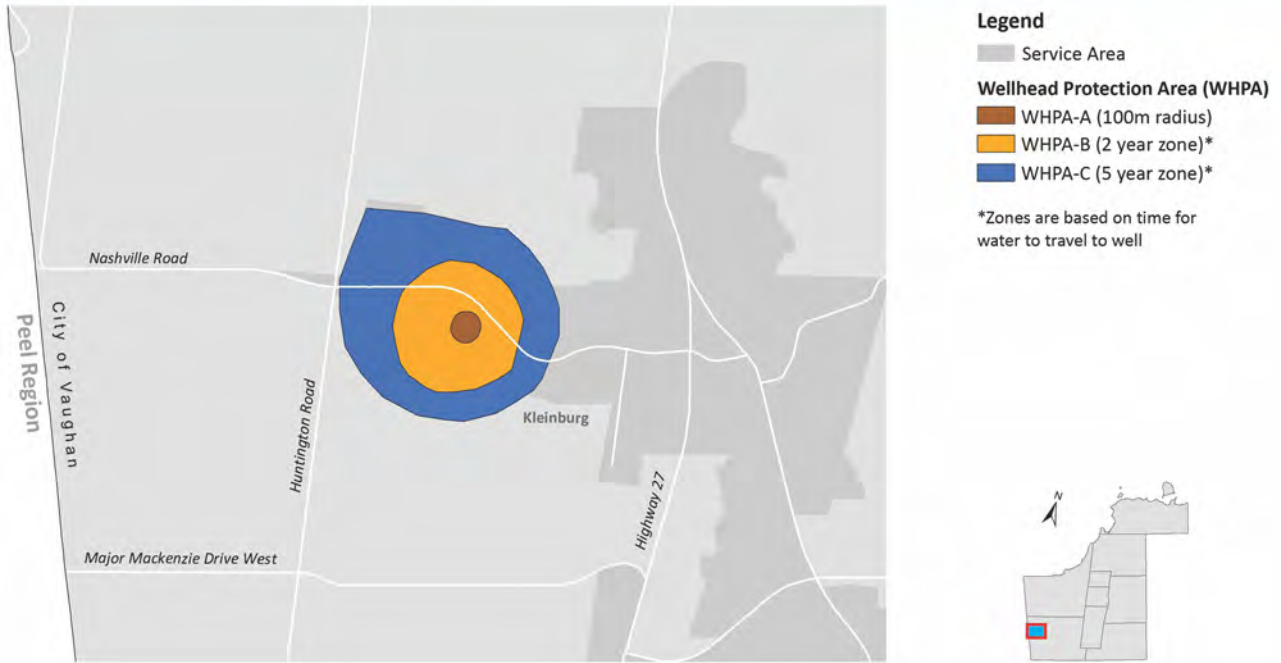
Community	Threat Sites Identified	Threat Sites Removed	Threat Sites to be Verified	Threat Sites Confirmed
Holland Landing	13	13	0	0
Queensville	19	11	0	8
Mount Albert	5	4	0	1
Total	37	28	0	9

28 THREAT SITES REMOVED
0 COMPLETED RISK MANAGEMENT PLANS



9 OUTSTANDING RISK MANAGEMENT PLANS
0 TO BE VERIFIED

Figure 10 – City of Vaughan



Significant Threat Site Verification

Community	Threat Sites Identified	Threat Sites Removed	Threat Sites to be Verified	Threat Sites Confirmed
Kleinburg	8	5	1	2





Figure 11 - Risk Management Plan Inspection

Farmers and business owners in York Region are good environmental stewards. When negotiating Risk Management Plans, staff continue to find that sites with confirmed threats already have many of the appropriate measures in place to manage chemicals and, in the case of a farm, nutrients and pesticides. Risk Management Plans include maintaining the existing risk management measures in place and implementing new risk management measures to address small gaps that were identified. Additional risk management measures typically include secondary containment for chemicals, more substantial spill response equipment, a spill response plan and annual spill response training for staff. Some examples of risk management measures implemented in the Region are shown in **Figure 12**. External safety contractors, International Safety and Loraday Environmental Products Limited, were consulted to recommend appropriate spill containment equipment for confirmed sites.

Collaborating with Operations, Maintenance and Monitoring

Source Protection staff worked in conjunction with the Operations, Maintenance and Monitoring branch to complete a Region-wide drinking water system assessment for the handling and storage of fuel at municipal well sites, as requested by the Ministry. As a result, one municipal well site was found to have a significant drinking water threat activity that requires a Risk Management Plan. Staff have initiated a Risk Management Plan that will ensure the continuation of appropriate risk management measures, which are already in place.

Staff continued to work in conjunction with York Region’s Sewer Use Bylaw enforcement team to share information on industrial sewer users in wellhead protection areas. Enforcement of the bylaw helps protect the Region’s drinking water sources by protecting assets, such as sewer lines, and by providing information on chemical use and storage in industrial facilities.

Figure 12 – Risk Management Measures Implemented



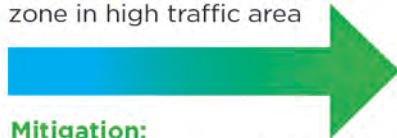
Threat:
Waste oil storage

Mitigation:
Secondary containment



Threat:
Chemical storage transfer zone in high traffic area

Mitigation:
Designated chemical transfer zone out of high traffic area



Threat:
Hazardous chemical use

Mitigation:
Environmentally friendly alternative



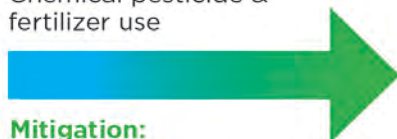
Threat:
Unsecured waste oil storage outdoors

Mitigation:
Indoor storage with secondary containment



Threat:
Chemical pesticide & fertilizer use

Mitigation:
Spill response equipment



External Expertise Sought for Complex Risk Management Plans

Environmental consultants with industrial expertise assisted in developing Risk Management Plans for a complex pharmaceutical operation and a plastics manufacturing facility. Although many existing risk management measures were already in place, a few critical additional measures, including additional secondary containment and spill response equipment were implemented. Risk Management Inspectors worked with these companies and their consultants throughout the process, and ensured the finalized Risk Management Plans appropriately managed all of the threat activities on-site.

Incentives Provided to Businesses

Incentive programs have been instrumental in encouraging businesses to make changes to protect municipal drinking water sources. In 2016, over ninety thousand dollars was spent to implement risk management measures outlined in approved Risk Management Plans within York Region. The Council endorsed incentive program expedited timelines for implementing risk management measures. Forty-nine of the fifty-eight Risk Management Plans required minor new risk management measures, and were covered in full by the incentive program at a total cost of approximately twenty thousand dollars. The remaining nine Plans requiring more significant measures were funded at eighty-five per cent of the total cost of the measures to a maximum of twenty-five thousand dollars. As an example of a significant amount of funding provided, staff worked with a local dry cleaner to switch its equipment to a new environmentally friendly alternative (see **Figure 13**). Although York Region provided the maximum amount of funding allowed under the program, the owner contributed over forty-four thousand dollars to the project. As a result of this work the business owner won a 2016 Lake Simcoe Conservation Authority Watershed Heroes Conservation Award.

Figure 13 – 2016 Lake Simcoe Conservation Authority Watershed Heroes Conservation Award Winner



Another example of a large amount of funding provided is a local automotive repair shop that received funding to replace older single walled waste oil tanks with a new double walled tank system with additional risk management measures (see **Figure 14**).

Figure 14 – New Tank System With Improved Risk Management Measures



Inspections Completed at Businesses with Risk Management Plans

Follow-up inspections are conducted within two years to ensure Risk Management Plans are effectively implemented and all risk management measures have been executed. Failure to implement the plans can lead to formal enforcement action by York Region. This can include, if necessary, the issuance of orders to complete work and to pay for any work completed by the Risk Management Official. Out of twenty-three inspections completed in 2016 for the Risk Management Plans, six sites had not fully implemented the required risk management measures, and required corrective actions. Corrective actions were subsequently initiated without any formal enforcement and included the following:

- Confirmation of staff training on risk management measures and spill response plan
- Posting of spill response equipment signage
- Acquiring material safety data sheets on-site
- Installation of secondary containment and spill response equipment

At two additional sites, inspections found a small increase in the volume of chemicals used at the site that required additional secondary containment equipment to be installed.

Protecting Lake Ontario Sources of Drinking Water

As a member of the Credit Valley, Toronto and Region, and Central Lake Ontario Source Protection Committee, York Region has worked to ensure policies in the Source Protection Plan protect the Region's main source of drinking water - Lake Ontario. Spill prevention, contingency and emergency response plans for sites with significant threats are required through various Source Protection Plan policies. Although the majority of Lake Ontario policies in the Source Protection Plan must be implemented by the Ministry, there are sewage policies that impact York Region. Regional staff continued to liaise with Durham Region staff to review Environmental Compliance Approvals and operating procedures for sewer infrastructure near Lake Ontario to ensure appropriate measures are in place to prevent releases.

Incorporating Source Protection Plan Policies into the Regional Official Plan

A conformity exercise is underway to integrate Source Protection Plan policies into the York Region Official Plan in order to comply with the Act. The two Source Protection Plans affecting York Region contain very similar policies. As a result, most of the conformity exercise was possible through a single set of Official Plan policies that are applicable across all of York Region. In the rare cases where Source Protection Plan policies were different, there are two sets of policies drafted that apply to the respective watershed as opposed to York Region wide. The draft amended Regional Official Plan will be released for public comment in late 2017.

Including Climate Change in Source Protection

As part of the Act's requirements a water quantity risk assessment was completed in York Region. Computer models were used to predict long-term viability of water supplies considering growth in (groundwater) demand from population expansion, reduction in recharge related to development, and drought due to climate change. The technical assessment indicated that Regional wells could meet demand under all of the scenarios tested. Impacts to "other water users", however, were predicted under the extreme drought scenario, resulting in a 'moderate risk' assignment, and inclusion of Source Protection Plan policies to prevent future risks to water quantity.

Policies require groundwater recharge to be maintained for future development and ensure future groundwater taking does not impair municipal water supplies within the vulnerable area. Additionally, York Region developed a drought management plan to redistribute water taking from wells susceptible to drought to more resilient wells. Interconnectivity of the supply system allowed for this redistribution, which has been modeled and is predicted to mitigate impacts of extreme drought due to climate change.

Reviewing Planning Applications in Vulnerable Areas

One of the objectives of York Region's source protection program is to work with local municipalities and other Regional departments to ensure development review considers source protection vulnerable areas (see **Figure 15**). One hundred and eighty-three development applications within vulnerable areas were reviewed by York Region in 2016. Source Water Impact Assessment and Mitigation Plans established under the Official Plan mitigate source protection concerns beyond the requirement of the Act. In 2016, four Source Water Impact Assessment and Mitigation Plans were approved for sites in wellhead protection areas and one Contaminant Management Plan was approved for a site in a Highly Vulnerable Aquifer. In order to inform proponents of source protection requirements, one hundred and twenty-two pre-consultation meetings were held by Region staff in 2016. Furthermore, staff reviewed hydrogeological reports for six development sites to ensure on-site dewatering would not interfere with municipal water supplies.

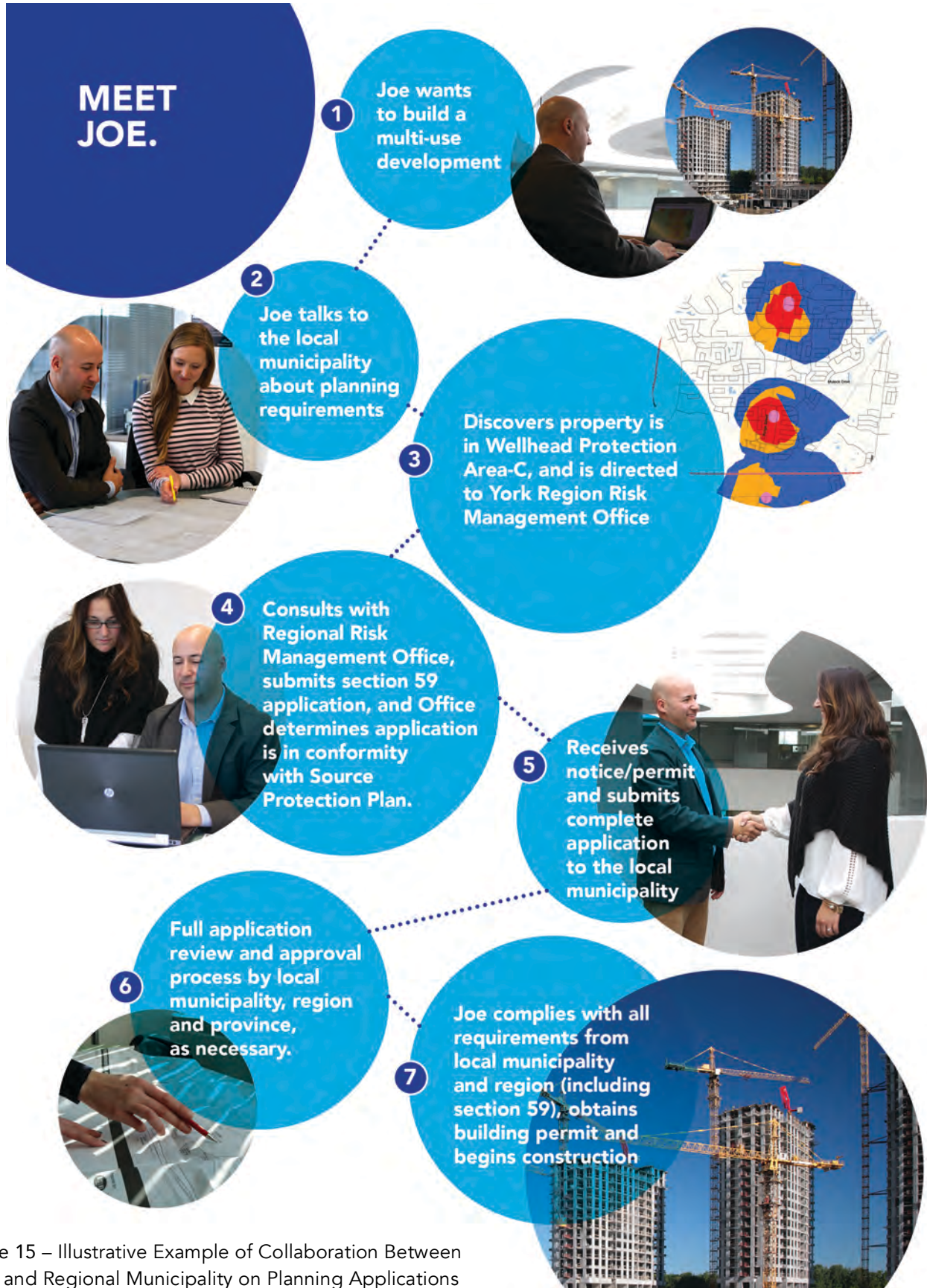


Figure 15 – Illustrative Example of Collaboration Between Local and Regional Municipality on Planning Applications

Source Protection Plans require a section 59 notice for developments near municipal wells to determine if an application has the potential to introduce a new threat to drinking water. A notice is required before planning and building applications can be deemed complete. Nine notices were issued and thirteen pre-consultation meetings were held by York Region in 2016. A total of thirteen notices have been issued to date. The interaction between Source Protection staff and development proponents resulted in proactive refinement to development proposals to eliminate policy conflicts and ensure appropriate development in vulnerable areas.

Helping Local Municipalities Implement Source Protection Requirements

Collaboration with our local municipalities is instrumental in implementing source protection across the Region.

Provincial Implementation Funding

Four local municipalities in York Region (the Towns of Georgina, East Gwillimbury, Whitchurch-Stouffville and the Township of King) received provincial funding for source protection implementation. York Region facilitated a working group for these municipalities to collaborate and develop consistent approaches to implementation. Outcomes from those provincially funded efforts (e.g. refined template policies for Official Plan and Zoning Bylaw amendments) were shared across York Region.

Planning Conformity

York Region assisted the Town of Georgina with updating their Official Plan to conform to the South Georgian Bay Lake Simcoe Source Protection Plan. The Town of Georgina Official Plan received Regional Council approval in fall 2016. The Region also worked with the Towns of East Gwillimbury and Whitchurch-Stouffville, as well as the Township of King to prepare updates to their Official Plans.

The Township of King has also implemented the municipal working group's zoning template to successfully bring Nobleton's bylaw into conformity with the applicable Source Protection Plan, and used the templates for similar draft amendments for King City and Schomberg.

Protecting Water Quantity

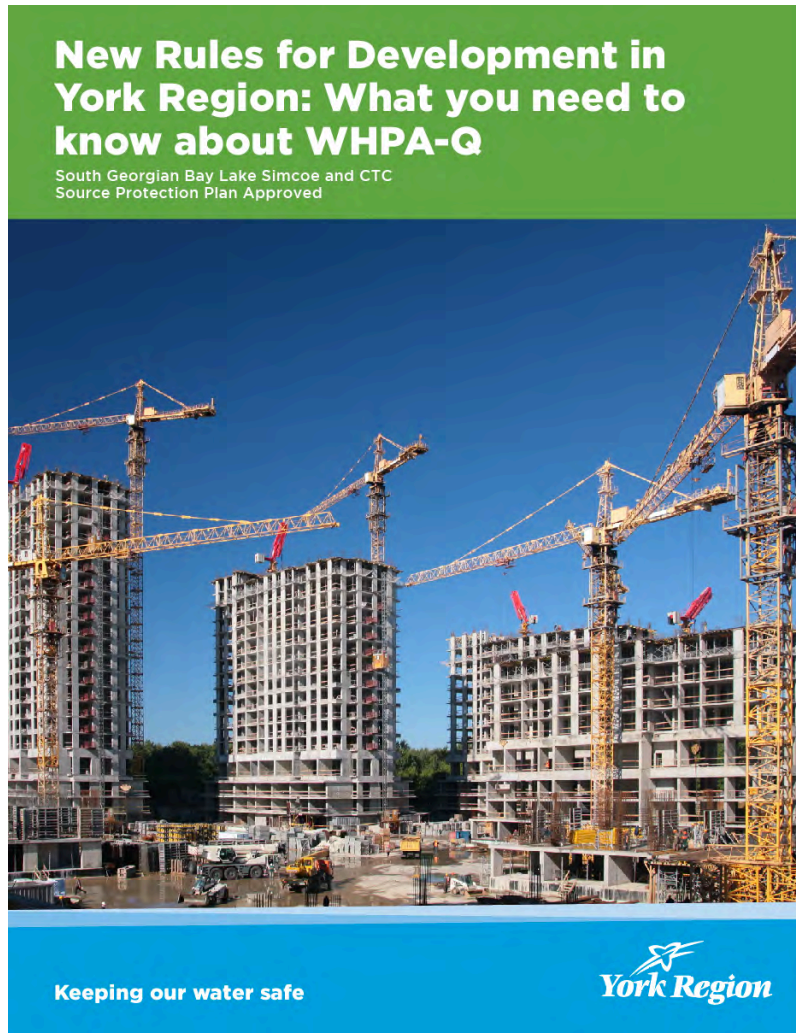
As noted earlier, in addition to requirements for the protection of groundwater quality, Source Protection Plans include requirements for the protection of the quantity of groundwater available for municipal water sources in the Recharge Management Area (see **Figure 4**). Recharge policies require local municipalities to ensure new major developments do not reduce the amount of water that infiltrates into the ground. In order to ensure large groundwater takings are sustainable, policies now require developments to obtain a Permit to Take Water from the Ministry before final municipal planning approval is granted.

Recharge maintenance policies are being implemented jointly by local municipalities as the front lines of planning approval, and Conservation Authorities who provide technical assessment of the development proposal and associated water balance. If all options have been explored and on-site recharge maintenance is impossible there is the option to transfer outstanding water balance requirements to an alternate site within the Recharge Management Area.

Regional staff held meetings with local municipal and Conservation Authority staff throughout the year to prepare for implementation of these policies. Over fifty municipal and conservation authority staff were engaged through the meetings. A guidance document was also developed by York Region

for local municipal staff that outlines a process to assist them in implementing the new requirements to maintain recharge in the water quantity vulnerable area (WHPA-Q) (see **Figure 16**).

Figure 16 – Source Protection Educational Materials on Wellhead Protection Area Q (WHPA-Q) for Local Municipal Staff



Local Municipal Septic Inspections

Local municipalities have been working since 2012 to complete septic inspections at sites near municipal wells by late January 2017 as prescribed under the *Building Code* and the Act. Two of the six municipalities required to complete inspections (Township of King and Town of Newmarket) have inspected all of the sites. Only one out of thirty-eight of these inspections was found to be not in compliance and required a replacement septic system. The Region is working with the City of Vaughan to help them implement a plan to complete their inspections as soon as possible. The remaining municipalities (Towns of Aurora, East Gwillimbury and Whitchurch-Stouffville) plan to complete the required inspections by the deadline.

Education and Outreach

York Region staff performed source protection outreach through a number of related campaigns including Water Is, Water for Tomorrow and I Don't Flush (refer to **Figure 17**).

Figure 17 – Water Is Campaign Featuring Sewer Use Bylaw Enforcement Officer Jen Ryan.



In 2016, the Water Is campaign highlighted staff behind the scenes of York Region's drinking water. It allows residents to understand how their water is kept safe and clean, and provided a glimpse into the hidden infrastructure that brings water from its source to their homes and back again. The I Don't Flush campaign educates residents about what does and does not go down the drain. The 2016 campaign continued to provide information at Regional events about the importance of properly disposing of waste, including unwanted pharmaceuticals, flushable wipes and personal hygiene products. Water for Tomorrow includes a broad range of water education programs that inform the public about water conservation, water protection, and our urban water system. In 2016, Water for Tomorrow staff attended forty-eight events, held twenty-four Greener Home and Garden seminars, engaged almost five thousand participants in the York Children's Water festival, delivered a new in-class elementary water education program, and produced and distributed fifteen thousand copies of the Water for Tomorrow student calendar throughout York Region. Staff also shared water system key messages with Conservation

Authorities to include in their education delivery programs and through community partnerships they continued to maintain eight water efficient demonstration gardens around the Region. Additionally, staff supported the installation of a new water efficient garden and landscape space at the East Gwillimbury Civic Center.

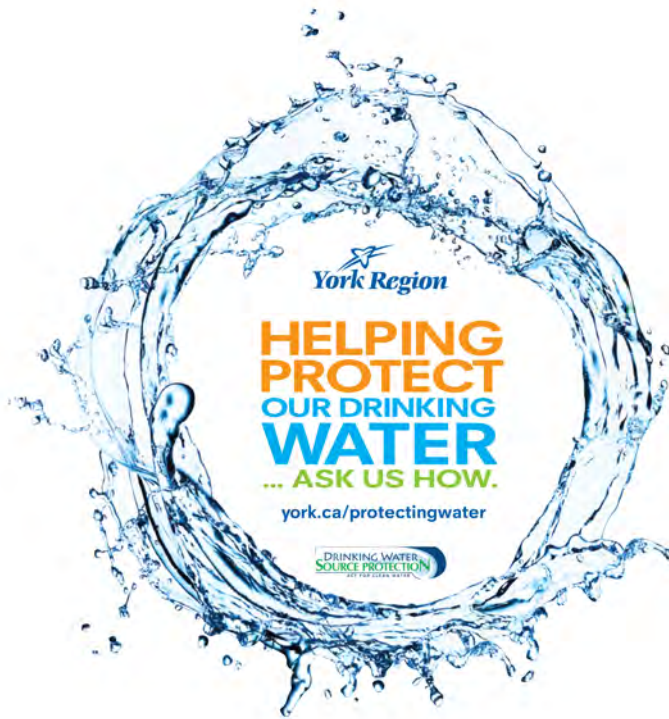
Under the Fusion Gardening pilot project, staff reviewed water consumption data to identify key areas where outdoor water savings could be achieved. Using that data, staff focused on one key area. Within this area staff hosted an 'Ask the Expert' event providing landscape advice to residents, established four retail partners to advance program messaging, and delivered a targeted marketing and outreach campaign.

Adding New Wells

York Region's Water Resources Group and Capital Planning and Delivery staff identified a small declining capacity in some Yonge Street Aquifer wells due to their age. As a result, York Region's Ten-year Infrastructure Improvement Plan includes adding two replacement wells to the system. A Class Environmental Assessment to add a new well in East Gwillimbury (on Green Lane between Yonge St. and 2nd Concession - outside of the existing wellhead protection areas), and a new well located in Aurora (at St. John's Sideroad and Old Yonge St. - within 15m of an existing well) was submitted to the Ministry of the Environment and Climate Change in late 2016. It is important to note that no increase in water taking is being sought. This process will result in the redistribution of the current taking from older wells that have lost some capacity over time. Minimal change is anticipated to the wellhead protection areas in the vicinity of the Aurora well. Changes associated with both wellhead protection areas are likely to result in new sites with potential threats, which is being considered in the Environmental Assessment. The applicable local municipalities and the Lakes Simcoe and Couchiching / Black River Source Protection Authority have been made aware of these changes and potential minimal impacts to development near the wells.

Moving Forward in 2017

Plans for the Source Protection Program in 2017 include on-going review of development proposals in vulnerable areas, establishment of a minimum of twenty new Risk Management Plans, completion of twelve inspections of risk management measures established in Risk Management Plans, verifying at least twenty sites with potential drinking water threats, and best practice education efforts for sites within vulnerable areas that do not require a Risk Management Plan. York Region staff will continue collaborating with Lakes Simcoe and Couchiching / Black River Source Protection Authority technical staff on the process to add two new wells to the system. York Region will be delineating wellhead protection areas, completing groundwater vulnerability assessments, and completing threats assessment and verification for the two new production wells. Once this technical work is complete, the Lakes Simcoe and Couchiching / Black River Source Protection Authority will lead Assessment Report and Source Protection Plan updates. This will include collaborating to complete consultation requirements (including consultation with the public, local municipalities and the Source Protection Committee).



WATER IS SAFE

SOURCE WATER IMPLEMENTATION 2016 ANNUAL REPORT

The Regional Municipality of York
Environmental Services Department
Administrative Centre – 2nd Floor
1-877-464-9675
york.ca

Accessible formats or communication supports
are available upon request.