

## The Milton Municipal Well-based Water System

The municipal drinking water system for Milton is included in the Halton-Hamilton Drinking Water Source Protection project under the Ontario *Clean Water Act, 2006*. The Milton system is part of the South Halton Drinking Water System, which is owned and operated by Halton Region. Halton Region uses two water sources – groundwater and Lake Ontario – to supply the Town of Milton.

Source protection is the first step toward safeguarding our drinking water, followed by adequate treatment, safe distribution and regular testing. Protecting sources of drinking water – whether groundwater or the lake – eases the strain on costly treatment processes and reduces the need to find alternate sources.



The Kelso and Walkers Line well fields supply drinking water to approximately forty percent of the population of the urban area of Milton. The Kelso well field comprises four wells constructed between 1964 and 1993 that extend up to 68.9 metres deep. The wells draw water from the sand and gravel deposited in a valley carved into the shale bedrock. The Campbellville wells also take water from this aquifer.

The Walkers Line well field comprises two wells constructed in the 1950s. The wells extend up to 27.7 metres and draw water from another bedrock valley that lies beneath the Nassagaweya Canyon. One of the wells is capped and no longer in use.

## Drinking water quality to preserve and protect

A wellhead protection area (WHPA) is the surface area under which water flows through an aquifer to a pumping well. WHPAs are mapped to identify the areas to be protected. Existing and potential activities that could contaminate the groundwater supplying municipal wells have been listed.

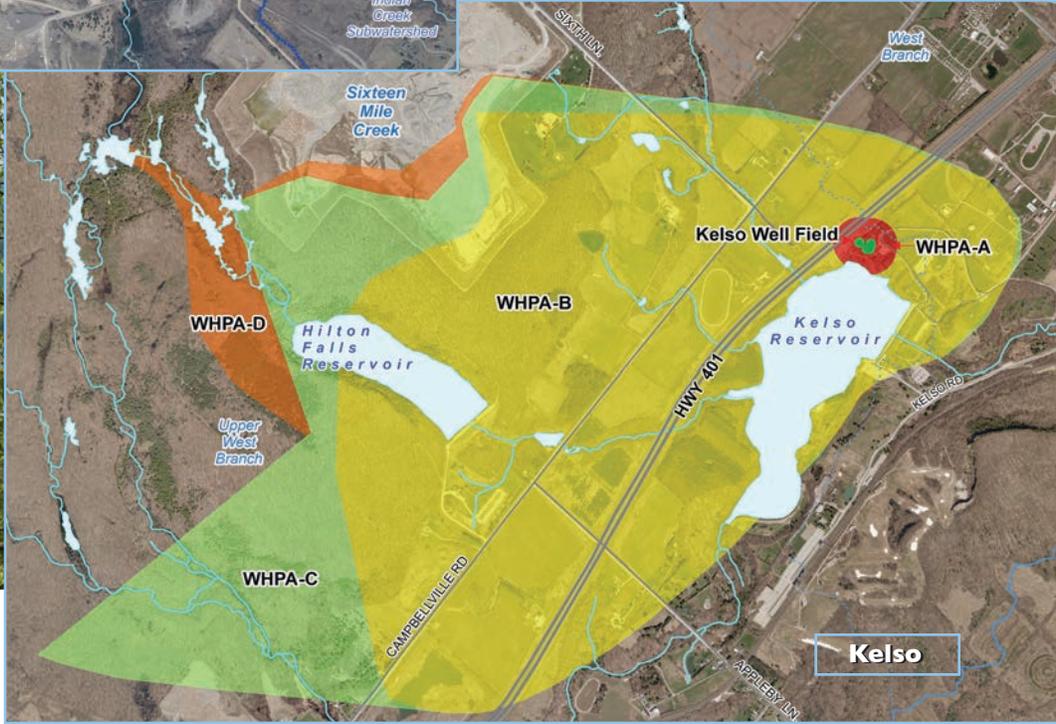
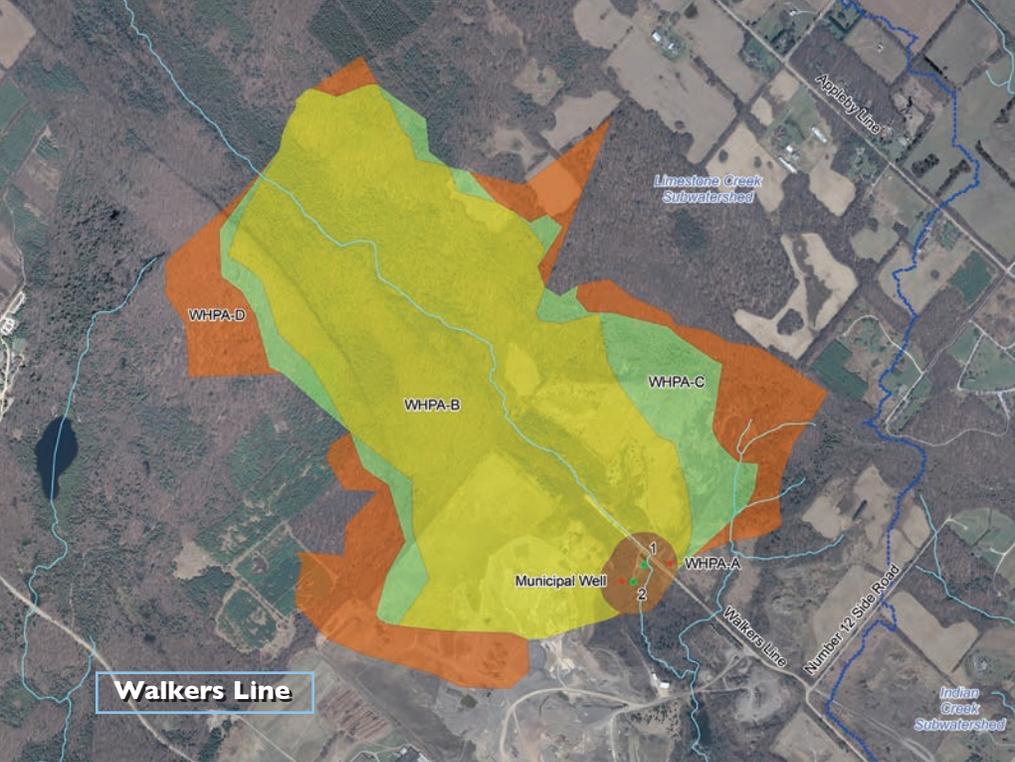
A calibrated integrated groundwater/surface water model is considered the best science-based method for identifying wellhead protection areas and determining the vulnerability of the area to contamination from activities. An integrated flow model was used to assess the Kelso and Walkers Line municipal well supplies.

The level of risk to the water quality at a well reflects the time it takes for a contaminant to travel to the well and the time for authorities to react. The Kelso wells are located close together, so one wellhead protection area is used for all wells. Similarly, the Walkers Line wells have one wellhead protection area. Each wellhead protection area is divided into the following parts.

- WHPA-A – an area of 100 metre radius around each wellhead
- WHPA-B – the zone through which it takes groundwater up to two years to reach the well
- WHPA-C – the zone through which it takes groundwater two to five years to reach the well
- WHPA-D – the zone through which it takes groundwater five to 25 years to reach the well.

Based on the results of groundwater and treated water analyses between 1985 and 2008, as measured at the Kelso well supply, no drinking water issues under the *Clean Water Act* were identified. The quality of the source water is good and the treated water meets the provincial standards. The water treatment system includes specialized filtration to remove iron and manganese concentrations that are naturally high in the source water. These parameters can stain laundry and plumbing fixtures and affect the taste of the water. The concerns associated with elevated levels of iron and manganese are aesthetic in nature and do not constitute a risk to public health.

Water analyses data for the period 1985 through 2008 were reviewed for Walkers Line source water. No drinking water issues were identified. The quality of the source water is good and the treated water meets the provincial standards.



## Drinking water quantity conservation is critical

Halton Region holds two Permits To Take Water that allow the taking of water from the two well fields. From the Kelso wells, a standard rate of 13,635 cubic metres per day is permitted and from the Walkers Line wells 3,180 cubic metres per day. Both well fields are permitted excess taking for short periods of time. The operators manage the water taking to maintain a sustainable supply at much less than the permitted rate. In 2009, the Kelso wells pumped a total of about 2.6 million cubic metres of water. The Walkers Line well pumped about 318,000 cubic metres.

The Kelso municipal wells are located in the Upper West Branch subwatershed, part of the Sixteen Mile Creek watershed that drains to Lake Ontario. The Walkers Line wells are located in the Limestone Creek subwatershed, part of the Bronte Creek watershed that

also drains to Lake Ontario. Surface water and groundwater stress assessments, completed for the year 2007, compared the supply and the demand on water resources within the Source Protection Region. Users of water in these subwatersheds include municipal, domestic, commercial, agriculture, aggregate operations, reservoirs, a skiing operation and golf courses.

Based on the assessments completed, the Limestone Creek subwatershed is at a low stress level. The Upper West Branch subwatershed is also at low stress regarding surface water demands. However, the groundwater demands within the Upper West Branch subwatershed place stresses on the resources. A focused assessment of the sustainability of the Kelso municipal well supply during planned water use, planned land use changes, and a 10-year drought was

# Drinking water threats

completed using an integrated groundwater/surface water model. The well field was able to meet peak demand under all scenarios. The well field does have a moderate risk, however, because water use could decrease groundwater discharge to local creeks.

The Ministry of the Environment and Climate Change legislated specific activities as drinking water threats at low, moderate and significant levels. Significant threats are addressed through policies in the Source Protection Plan.

There are 19 prescribed drinking water threats to water quality. They are related to

1. Waste disposal sites – their establishment, operation or maintenance
2. Sewage systems – their establishment, operation or maintenance
3. Agricultural source material – application to land
4. Agricultural source material – storage
5. Agricultural source material – management
6. Non-Agricultural source material – application
7. Non-Agricultural source material – handling and storage
8. Commercial fertilizer – application
9. Commercial fertilizer – handling and storage
10. Pesticide – application
11. Pesticide – handling and storage
12. Road salt – application
13. Road salt – handling and storage
14. Snow – storage
15. Fuel – handling and storage
16. Dense non-aqueous phase liquid – handling and storage
17. Organic solvent – handling and storage
18. Chemicals used to de-ice aircraft – management of runoff
19. Land associated with livestock – for grazing, or confinement such as a feedlot.

There are also two prescribed threats that relate to water quantity.

1. An activity that reduces the recharge of an aquifer.
2. 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.

Existing activities assessed as significant water quality threats in the Kelso and Walkers Line wellhead protection areas include

- Sewage systems
- The application of agricultural source material
- The storage of agricultural source material
- The storage of commercial fertilizer
- The application of pesticide
- The storage of fuel, and
- The use of land associated with livestock.

There are no existing water quantity threats for the Kelso well field.



A close-up photograph of a hand holding a clear glass filled with water. The background is a soft, light blue gradient.

It's time to  
get involved.

For more information about Drinking Water Source Protection in the Halton-Hamilton Region, please visit our website [www.protectingwater.ca](http://www.protectingwater.ca). The site contains a wealth of information including advice about how you can ask questions and become involved in the Halton-Hamilton Source Protection project. We encourage you to do so.

You may also call us at 905-854-9229 ext. 223 or reach us by email at [sourceprotection@hrca.on.ca](mailto:sourceprotection@hrca.on.ca)

