

The Freelon Municipal Well Field

The municipal drinking water system for Freelon is included in the Halton-Hamilton Drinking Water Source Protection project under the Ontario *Clean Water Act, 2006*.

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 Freelon municipal system is owned and operated by the City of Hamilton. The system currently uses two wells - FDF01 and FDF03 - to extract groundwater to service 780 homes and businesses. These wells were constructed in 1971 and 2011 and extend to depths of about 18 and 21 metres. Both wells tap into a bedrock aquifer.



and determining the vulnerability of the area to contamination from activities. A groundwater flow model developed for the City of Hamilton was used to assess the Freelon municipal well field.

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 wellhead protection areas for the two Freelon wells are divided into the following parts.

- WHPA-A – an area of 100 metre radius around the 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

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 groundwater flow model is considered one of the best science-based methods for identifying wellhead protection areas

The entire wellhead protection area for well FDF01 is located within the Halton Region Source Protection Area. Portions of WHPA-C and WHPA-D of the wellhead protection area for well FDF03 extend into the neighboring Hamilton Region and Grand River Source Protection Areas.

Based on the results of groundwater and treated water analyses between 2002 and 2009, as measured at the Freelon well FDF01, no drinking water issues have been identified. The quality of the source water is good and the treated water meets the provincial standards. The source water of FDF03 is also of good quality.



Drinking water quantity conservation is critical

The City of Hamilton holds two Permits To Take Water (PsTTW) that allow the taking of up to 873 cubic metres per day from well FDF01 and up to 1,607 cubic metres per day from well FDF03. The operators manage the water taking at FDF01 to maintain a sustainable supply at much less than the permitted rate. In 2009, the Freelton municipal well FDF01 pumped a total of 135,826 cubic metres of water.

The Freelton well field is located in the Upper Main Branch subwatershed of Bronte Creek watershed that drains to Lake Ontario. Well FDF03 is located near the surface water divide between the

Upper Main Branch and Strabane Creek subwatersheds, both within the Bronte Creek watershed. Surface water and groundwater stress assessments, completed for the year 2007, compared the supply and the demand on water resources. Users of water in the subwatershed include municipal, domestic, communal, water bottling, agriculture, and campgrounds. Based on the assessment completed, the current surface and groundwater needs can be managed within the Flamboro Creek subwatershed, as long as conservation is practiced by all.

Drinking water threats

The Ministry of the Environment and Climate Change has 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 threats in the Freelon wellhead protection areas include

- Sewage systems
- The storage of fuel
- The use of land for grazing or confinement, such as a feedlot.

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



A close-up photograph of a person's hand holding a clear glass filled with water. The background is a soft, out-of-focus blue.

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. 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

