

Village of Tweed Drinking Water Source - System Summary

Drinking Water from Municipal Wells

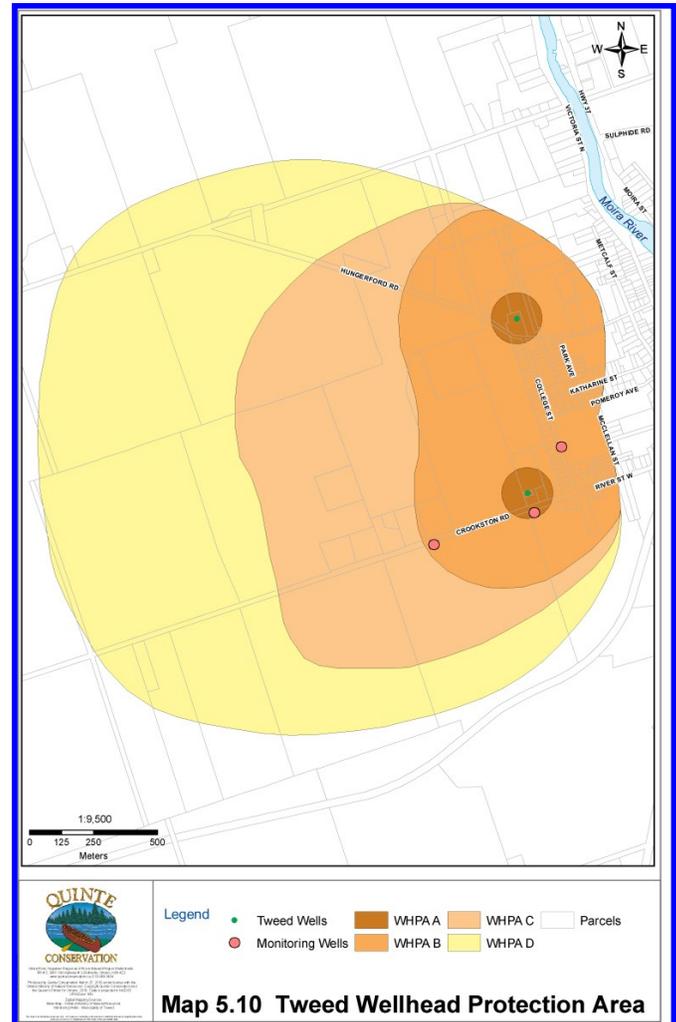
Groundwater is the source of drinking water for the Village of Tweed. This community of about 1,500 people is located on the southern fringe of the Precambrian shield along the western shore of Stoco Lake in the Municipality of Tweed. Land use in the village is a mixture of residential, commercial and open space with some areas of industrial land. Outside the village, particularly to the west, the land use is primarily agricultural and undeveloped rural land.

Water supply is provided by two wells and sewage is collected and treated in a municipal sewage treatment facility. The two wells are on the western edge of the community. The first well, off the Hungerford Road, was installed in 1954 to a depth of 132.6 m. The well was drilled through 12.5 m of sand and gravel into the underlying Precambrian bedrock, finding water at a depth of 130.5 m. The yield is in the order of 755 L/min, however the water contains elevated levels of uranium and so the well is used for backup purposes only. Prior to use the water is treated to reduce uranium levels. The other well is about 700 m to the south of Well # 1 along the Crookston Road. This well was installed in 1995 to a depth of 122.2 m through 10.1 m of sand and gravel into Precambrian Bedrock, finding water at depths of 15.5 and 47.2 m. This well is classified as Groundwater Under the Direct Influence (GUDI) of surface water. This classification is related to the shallow depth of the aquifer as opposed to the presence of nearby surface water features.

Vulnerable Areas

Through the science of the Assessment Report (available at www.quintesourcewater.ca), zones were mapped that show which areas surrounding the well are most vulnerable to pollution and contamination. These are called Wellhead Protection Areas (WHPAs) and include the land above and below ground where land use activities could affect the quality of water flowing toward the well. The location and size of a WHPA is determined in part by the direction the groundwater moves, the speed/rate it moves, and the volume of water that is pumped from the wells. There are four zones of vulnerability:

- **WHPA A** is a 100 metre radius around the well .
- **WHPA B** is the zone in which it would take a contaminant 2 years or less to reach the well; the two year time of travel zone
- **WHPA C** is the zone in which it would take a contaminant 5 years or less to reach the well; the 5 year time of travel zone.
- **WHPA D** is the zone in which it would take a contaminant 25 years or less to reach the well.



Vulnerability Scores

Vulnerability scores help to quantify how vulnerable the drinking water source is to contamination. Scores are calculated based on the ground conditions around the well, taking into account how contaminants might move. An area with a higher vulnerability score is more likely to allow contaminants from that area to reach the drinking water intake. The vulnerability score of the highest concern is 10. The vulnerability scores for the Tweed wells are: **WHPA A & B = 10, WHPA C = 8, WHPA D = 6.**

Drinking Water Issues

Drinking water issues are chemicals or bacteria in the untreated water that exceed allowable values. The raw water quality data that represent conditions at the Village of Tweed wells was screened to identify issues in the source water. Using a 4-step screening process it was confirmed that no issues in the raw water exist.

Drinking Water Threats

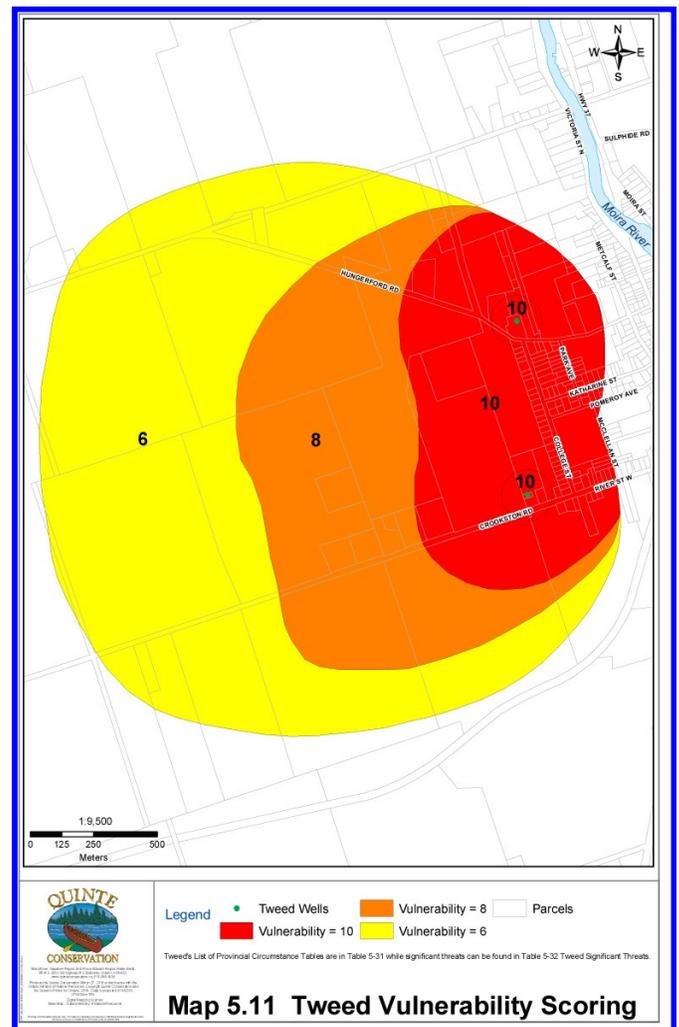
Threats to the drinking water source within the WHPAs were evaluated based on categories prescribed by the Ministry of the Environment and Climate Change. Threats were inventoried by field observations, air photos and satellite images, existing databases and landowner contact. The threats were then ranked as significant, moderate or low. Thirty-nine parcels of land were found to have one or more of the following significant threats types:

- handling and storage of fuels (home heating oil and fuel for agriculture)
- use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard
- residential and commercial septic systems and municipal sanitary sewer
- handling and storage of organic solvent
- handling and storage of non-agricultural source material
- application of commercial fertilizer to land
- application of pesticide to land for areas greater than one hectare
- storage of agricultural source material (manure)
- application of agricultural source material to land

No threats have yet been identified based on the presence of any past land uses or pre-existing conditions. Moderate and low threats are shown in tables in the Assessment Report.



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Source Protection Plan

The Approved Quinte Region Source Protection Plan includes policies, developed by the Source Protection Committee in consultation with the local community. The 63 policies in the plan address the drinking water threats identified in the science-based Assessment Report. The Assessment Report, identified the vulnerable areas surrounding the 11 municipal drinking water sources in the Quinte Region and ranked the threats as significant, moderate or low.

The source protection planning process is governed by the *Clean Water Act, 2006* and directed and funded by the Ontario Ministry of the Environment and Climate Change. The Quinte Region Source Protection Plan comes into effect January 1, 2015.

For more information, including the complete Assessment Report and the Source Protection Plan, visit:

www.quintesourcewater.ca

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