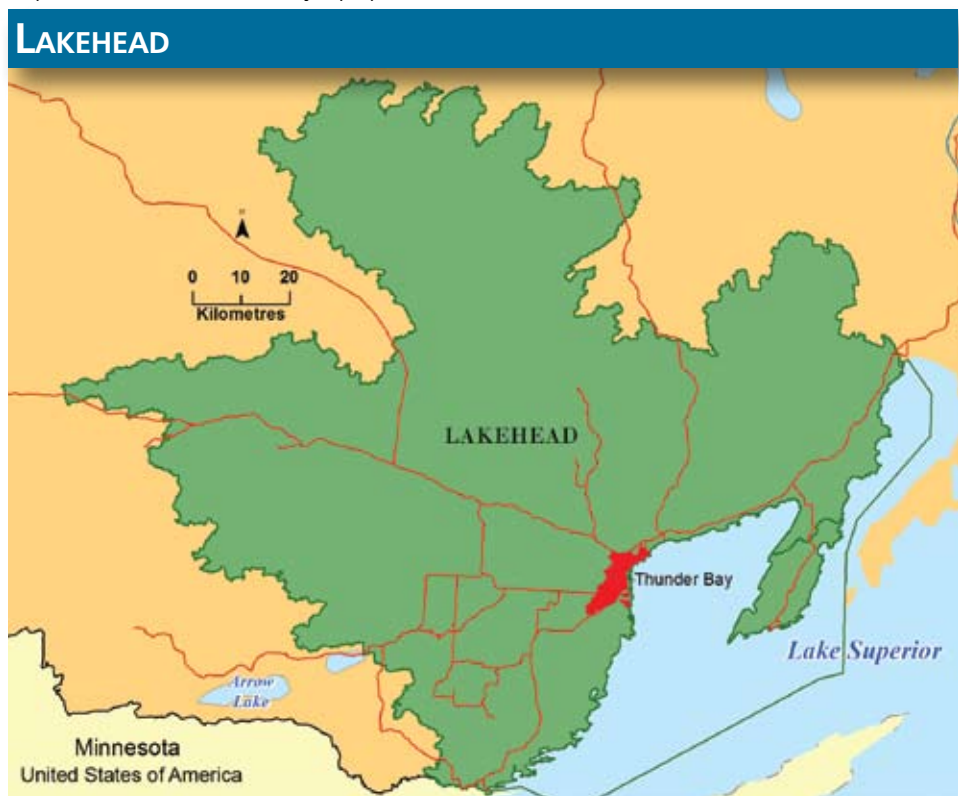


# Lakehead

The Lakehead Source Protection Area covers about 11,500 km<sup>2</sup> and has a population of approximately 120,000 people. Its physical geography was created by two geologic eras. Underlying the watershed are the ancient Precambrian rocks of the Canadian Shield, on top of which are surface materials deposited from glacial events during the Pleistocene period (sands and gravels with esker outwash systems and moraines). As a result of past glaciation, exposed bedrock is common throughout the watershed and the area continues to experience isostatic rebound.

There are eight municipalities in the area. The great majority of area residents live in the City of Thunder Bay. Approximately 8 per cent of Thunder Bay's population obtain their water from private wells, while the majority are serviced by the city's municipal intake pipe on Lake Superior. It is estimated that a further 20,000 area residents obtain their drinking water from private wells. The Fort William First Nation is located south of and adjacent to Thunder Bay and has an on-reserve population of about 800 residents. The community also draws its drinking water from the Thunder Bay water treatment and distribution system.

Although the threat assessment process for the area has not been formally completed, a range of *plausible* threats to Thunder Bay's drinking water have been identified. Potential threats within the intake protection zone could include transportation corridors, low water levels on Lake Superior, brownfield sites and stormwater runoff from urban lands.



#### Ontario Source Protection Areas & Regions, and Lakehead Maps:

Water Guardians Network ([www.thewaterhole.ca](http://www.thewaterhole.ca)), November 2009  
Sources: Geographic Data, Great Lakes Information Network, 2008; Ontario Source Protection Areas, Ontario Ministry of the Environment, 2008.

For more information on the area's drinking water source protection efforts, contact:

#### Lakehead Region Conservation Authority

PO Box 10427  
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Thunder Bay, ON P7B 6T8  
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#### Source Protection Programs Branch Ministry of the Environment

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## WHAT IS SOURCE WATER PROTECTION AND WHAT DOES THE CLEAN WATER ACT, 2006 DO?

**Source water protection, or source protection, is the safeguarding of water resources in the natural environment, such as lakes, streams, rivers and groundwater against chemical pollutants, pathogens and unsustainable water extraction.**

When source protection is practised simultaneously with monitoring and mitigating threats to water distribution systems and water processed at water and wastewater treatment facilities, the result is a multi-barrier approach to the protection of drinking water. This approach is by far the best way to ensure that drinking water sources are protected from chemical pollutants and pathogens, and are not being tapped at unsustainable rates.

A multi-barrier approach to protecting drinking water was taken up in earnest by the province of Ontario in the wake of the tragedy at Walkerton in May 2000. During this event, seven people died and approximately half the town's 4,200 residents became sick; hundreds continue to live with severe health problems and social impacts. This tragedy resulted from the failure of an entire regulatory

framework and oversight system responsible for protecting water sources, a failure to address threats to the quality of drinking water, and poor communication among decision makers at the provincial government, the municipality's water system managers and the region's water treatment laboratory.

In response to the results of the Walkerton Inquiry, which was established to determine the cause of the tragedy, and the final recommendations made by Justice Dennis O'Connor, the province moved towards a multi-barrier approach to drinking water protection. In 2002 the government passed the *Safe Drinking Water Act*, which addresses water treatment and distribution systems. In 2006, the *Clean Water Act*, a source protection law, was passed. These Acts are now being implemented.

The *Clean Water Act, 2006* (CWA) is the Ontario law under which source protection efforts are being undertaken in the province. At present, source protection activities in Ontario are primarily focused on the protection of sources of municipal drinking water. Source protection is being implemented on a local scale, by Source Protection Area (SPA) – areas

which correspond to the watersheds of Southern, Central and parts of Northern Ontario. The Ontario Ministry of the Environment (MOE) and the province's Conservation Authorities are currently identifying potential threats to drinking water located in each SPA, as well as gauging the severity of these threats. Geographic information systems are being used to store and map data on water quality, water quantity, and threats to source water. These data will be used to help identify, address and mitigate potential threats to drinking water. Nineteen Source Protection Committees (SPCs), comprising stakeholders representing municipal, business, industrial, agricultural, environmental and broader community interests, are ensuring the source protection planning process is sufficiently tailored to the unique geology and human and natural geographies of each of the province's SPAs.

As a result of the implementation of the CWA and the practice of source protection in Ontario, the drinking water on which the great majority of Ontarians rely will be better protected against chemical, pathogenic, and water quantity threats.

# ONTARIO'S SOURCE WATER PROTECTION EFFORTS AND PRIVATE DRINKING WATER SYSTEMS

**Between one and two million Ontarians who live in Source Protection Areas (SPAs) obtain their drinking water from non-municipal drinking water systems. Non-municipal systems can include private wells and surface water intakes servicing individual or multiple households, and wells and intakes servicing institutional facilities such as retirement homes. Most Ontarians on non-municipal systems rely on private wells servicing individual households, although these wells may obtain water from the same aquifers.**

At present, source protection efforts under the *Clean Water Act, 2006* (CWA) are concerned principally with protecting municipal sources of drinking water. However, protection of private drinking water systems takes place, or can take place, in several ways under the CWA.

**(1)** Certain potential threats to drinking water identified at private systems in some wellhead protection areas, intake protection zones, significant groundwater recharge areas, and on highly vulnerable aquifers, are automatically considered "moderate" threats under the technical rules of the CWA. Such drinking water issues will be subject to mitigation measures.

**(2)** Groups of six or more households which are serviced by the same well or surface water intake, or a group of households serviced by six or more private wells that draw their water from the same aquifer, can receive the same coverage as municipal systems. Decisions to extend coverage to such a group, or "cluster", are based on the discretion of the Ontario Ministry of the Environment (MOE) and municipalities. It is anticipated that clusters of drinking water systems

covered by the CWA will be managed as components of an adjacent municipal drinking water system.

**(3)** Some Ontarians who reside outside of SPAs, and who get their water from private drinking water systems, may be eligible for funding under the province's Ontario Drinking Water Stewardship Program. Funds can be sought to help cover costs of such projects as the upgrading and repairing of septic systems and the decommissioning or upgrading of wells.

In addition, the MOE has been providing funding to Well Aware, a project of Green Communities Canada that provides well owners with information on protecting their wells and groundwater. More information on Well Aware can be found at [www.wellaware.ca](http://www.wellaware.ca).

These measures have been included in the Ontario source protection planning process to ensure that both municipal and private drinking water systems are better protected against threats.

Homeowners can also take private well samples to public health laboratories for bacteriological analysis. This service is free of charge. More comprehensive analyses of private well water can be obtained through commercial laboratories.



## Source Water Protection and the Great Lakes

The Great Lakes are Ontario's most important source of drinking water, used by 85 per cent of the population of the province. Several threats to Great Lakes drinking water quality are known to exist. These include toxics and pathogens from specific emission sources or point sources, as well as pollution from non-point sources (pollutants that accumulate from a variety of sources). These pollutants can accumulate in the Great Lakes and reach levels that may be threats to drinking water systems. However, they do not always reach the thresholds in place under current source protection rules and regulations, and therefore may not trigger immediate action.

Sections 83 and 85 of the *Clean Water Act, 2006* give the Ontario Minister of the Environment the authority to form an advisory committee to examine threats to drinking water, and to set targets for pollutants, in the Great Lakes. Targets could be set to address non-point sources of drinking water threats. In addition, Source Protection Plans could be required to include measures or instruments for reaching or maintaining such targets.

To ensure that the Great Lakes remain a reliable and safe source of drinking water, the Canadian Environmental Law Association and Environmental Defence advocate that targets must be set for: toxic pollutants from industrial activity and resource extraction; pesticides from agricultural operations; chemicals from commercial operations that are not treated by conventional effluent treatment; road salts and other chemical contaminants from urban runoff; and biological contamination from agricultural and sewage effluent.

# USING POLLUTION DATA FOR SOURCE WATER PROTECTION IN ONTARIO

PollutionWatch ([www.PollutionWatch.org](http://www.PollutionWatch.org)) is a collaborative project of Environmental Defence and the Canadian Environmental Law Association. The website tracks releases and transfers of pollutants across Canada based on data collected by Environment Canada through the National Pollutant Release Inventory (NPRI) and emissions of greenhouse gases based on the federal government's mandatory Greenhouse Gas Emissions Reporting Program. NPRI and the Greenhouse Gas Emissions Reporting Program do not include data from all pollutants or sources. Visitors to the PollutionWatch website can identify facilities in their home towns by searching by postal code or by a specific street address; access "quick lists" of the facilities reporting the largest releases and transfers of pollutants and greenhouse gases in the country; and create their own ranked lists of

facilities by province, industrial sector, or corporation.

Since 2006, the PollutionWatch project has produced several reports focused on pollution levels in the Great Lakes and St. Lawrence River Basin where eighteen of Ontario's nineteen Source Protection Areas and Regions are located.

NPRI data are useful to Ontario's source protection planning process in identifying intra-basin sources of toxics found in the Great Lakes and other surface water bodies from which Ontarians obtain drinking water. Toxics, such as arsenic, lead and benzene, can enter Great Lakes Basin surface waters through air deposition and releases to water. Although many air depositions in the Great Lakes may be the result of transboundary sources, local emissions are significant contributors to the levels detected in surface waters.

However, Ontario's source protection

planning process does not at present include provisions for identifying and addressing toxic substances from Ontario facilities entering surface water through air deposition. This is despite the fact that these toxics are found consistently throughout the Great Lakes and other Ontario surface waters and may be potential sources of concern to human health and the environment. Moreover, as most existing water treatment methods are unable to completely remove all toxics, such substances may be present in treated drinking water.

In order to better protect human health and the environment against toxic substances, the Canadian Environmental Law Association and Environmental Defence advocate that air emissions of toxics from Ontario facilities should be identified, addressed and mitigated under the source protection planning process.

## ONTARIO SOURCE PROTECTION AREAS & REGIONS



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