

# FREQUENTLY ASKED QUESTIONS

## What is a Source Protection Plan?

The Clean Water Act (2006) requires the development of Source Protection Plans designed to protect existing and future sources of municipal drinking water. The Thames-Sydenham and Region Source Protection Plan contains the policies that will protect our drinking water from significant threats.

The Source Protection Plan for the Thames-Sydenham and Region contains policies that manage existing significant threats to municipal drinking water sources and prevent new significant threats from occurring. Landowners with "significant threat" activities on their property will be required to follow Source Protection Plan policies. Examples of things that could be a "significant threat" in a vulnerable area include septic systems, fuel storage, or application of pesticides.

## Who created the Source Protection Plan?

The Plan is guided by a Committee made up of members of the general public and representatives of municipalities, aggregate/ oil and gas, industry, agriculture, and First Nations from across the region. The Conservation Authorities provide the administrative and technical support to the Committee.

## What types of policies are in the Source Protection Plan?

The policies use tools to reduce threats to drinking water that range from voluntary action to prohibition of an activity. Some threats can be reduced through an education to encourage different ways of doing things. Some threats are addressed through existing regulatory processes, such as permits and land use planning, such as zoning bylaws. For most existing significant threats, the Committee chose to use a new tool, the Risk Management Plan, which allows the municipality's risk management official and the landowner to negotiate a risk reduction strategy that satisfies the Source Protection Plan.

## What is an Assessment Report?

Assessment Reports provide the science behind the plan. It identifies vulnerable areas where sources of municipal drinking water might be at risk. The report looks at an entire watershed and the factors influencing the quality and quantity of the water in that area. It includes information such as:

- the physical characteristics of the land
- land uses
- where municipal drinking water sources are located
- how much water is being used and how much is available for future uses
- where vulnerable water source areas are located
- what issues already compromise municipal drinking water sources
- what activities or conditions threaten drinking water sources with overuse or contamination

There were three assessment reports for the Thames-Sydenham and Region, one for each of the Source Protection Areas (Lower Thames Valley SPA, Upper Thames River SPA, and the St. Clair Region SPA.

## What is a Vulnerable Area?

Vulnerability is a measure of how easily contaminants may reach a surface water intake, or penetrate the ground to reach the aquifer supplying a well. How it is assessed depends on the type of vulnerable area. Four types of vulnerable areas must be identified:

- Wellhead protection areas
- Intake protection zones
- Highly vulnerable aquifers
- Significant groundwater recharge areas

Each vulnerable area is assigned a vulnerability score from 1 - 10, with a higher score indicating a higher vulnerability. Activities in the most vulnerable areas will be reviewed to determine the risks that they pose to the drinking water sources.

## What is a Well Head Protection Area?

A wellhead protection area (WHPA) is the area surrounding a well, through which contaminants are reasonably likely to move toward or reach the well. Computer models and other tools are used to build a picture of the groundwater conditions around a well. These models calculate the time it takes for water to travel through the aquifer to the well. To determine a well's vulnerability score, two questions must be answered:

1) How quickly does water move horizontally through the aquifer to the well? This information was used to draw WHPA zones around each well. The innermost WHPA (WHPA-A) is a 100 metre circle around the well. Other zones (WHPA-B, C and D) are set at times of travel of 2 years, 5 years and 25 years. In the Upper Thames River SPA, there are five groundwater well systems under the direct influence of surface water (GUDI). An additional zone (WHPA-E) was delineated for these wells.

2) How quickly does water move vertically from the ground's surface down to the aquifer?

The answers to the two questions are combined to create vulnerability scores for all the land within the WHPA for each municipal well. The scores are on a 10 point scale, with 10 being the highest level of vulnerability. This score tells us where increased protection from threats is needed.

## What is an Intake Protection Zone?

Surface water intakes on rivers and lakes can be contaminated when pollutants are spilled into the water or on nearby land and make their way to the intake. Intake protection zones (IPZs) map areas where pollutants may get into an intake too quickly for operators of the municipal water treatment plant to shut down the intake before the pollutant reaches it.

IPZs were drawn around each intake. IPZ-1 is a 1 km circle or semi-circle around the intake. This zone is considered to be most vulnerable since it is very close to the intake. Outside of this area is IPZ-2. The limits of this zone are determined by the amount of time it would take for a contaminant to reach the intake. A third zone (IPZ-3) was also developed for some intakes. This zone includes areas that can contribute contaminants under an extreme event (e.g., high winds or heavy rain), at a concentration that would result in a deterioration of the raw (untreated) source water. These are called Event Based Areas. Vulnerability scores for the IPZs in our Region ranged from 4 to 9 out of 10.

## What is a Highly Vulnerable Aquifer?

A highly vulnerable aquifer (HVA) has a relatively fast path for water to travel from the ground's surface down to the aquifer. Generally, the faster the water is able to flow through the ground to an aquifer, the more vulnerable the area is to contamination. These aquifers typically occur in areas of coarse or sandy soils with a high groundwater table. All HVAs have a vulnerability score of 6 out of 10.

## What is a Significant Groundwater Recharge Area?

In a significant groundwater recharge area (SGRA), a relatively large volume of water makes its way from the ground's surface down to the aquifer. It is important to protect this recharge capacity because it has an effect on both the quality and the quantity of water.

SGRAs are often areas of coarse or sandy soils. SGRAs of high vulnerability are assessed a vulnerability score of 6 out of 10, while moderate areas are scored 4 and low areas are scored 2.

## What Activities May Threaten Our Drinking Water Sources?

Our activities on the land and in the water near municipal wells and surface water intakes may adversely affect our drinking water sources. The Source Protection Plans must manage or eliminate significant threats to municipal drinking water sources.

There are a number of different types of threat activities that can affect drinking water quality under the Clean Water Act (2006):

- Waste disposal sites
- Systems that collect, store, transmit, treat or dispose of sewage
- Application, handling and storage of agricultural source material (manure) or non-agricultural source material (bio-solids)
- Application, handling and storage of commercial fertilizer, pesticide or road salt
- Snow storage
- Handling and storage of fuel, dense non-aqueous phase liquids or organic solvents
- Management of runoff that contains aircraft de-icing chemicals
- Livestock grazing or pasturing land, outdoor confinement areas or farm animal yards

## What Activities May Threaten Our Drinking Water Sources? Cont...

These threats focus on three types of materials:

- **Pathogens:** Dangerous bacteria or viruses found in human waste (e.g., in a septic tank or bio-solids) or animal waste (e.g., in manure).
- **Chemicals:** Include fuels, solvents, fertilizer, pesticides and similar products. Can be found in factories, gas stations, storage depots, farms and other places.
- **Dense non-aqueous phase liquids (DNAPLs):** Chemicals that are heavier than water (e.g., petroleum products, chlorinated solvents) and cause severe adverse effects in groundwater when released into the ground.

## When is an activity a threat?

Not all threats are equal. An activity is only identified as a threat if it occurs in a vulnerable area that received a vulnerability score of greater than 4. A threat may be low, medium or significant, depending on where the activity occurs, the vulnerability score and the circumstances associated with the activity.

The circumstances to be considered include the type, toxicity, environmental fate and quantity of material (pathogen, chemical or DNAPL) and whether the material might be released to surface water or groundwater.

## How are potential threats identified?

Documents such as publicly available databases from industries, information from property owners, windshield surveys and assumptions such as that a rural home would have a septic system, all help to identify potential threats.

## What if I have a significant threat on my property?

Individual properties are not identified in the Assessment Reports. Property owners who were believed to be engaging in an activity that could be a significant drinking water threat received individual notification and were invited to provide written comments and to participate in the process.

## Who paid the costs of developing the Source Protection Plan?

The Ontario Ministry of the Environment and Climate Change provided the funding to develop and produce the Source Protection Plan.

## Who is responsible for implementing the Source Protection Plan?

Municipalities carry the most significant responsibility for implementing the Source Protection Plan but others have a role to play as well including Conservation Authorities and various provincial ministries (such as OMAFRA, MNRF, MTO, and MOECC).

## For More Information

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