



What is an “Intake Protection Zone” (IPZ)?

The “Intake Protection Zone” is the area around a surface water intake that is defined to protect the source water for a municipal residential drinking water system. It is the vulnerable area where potential contaminants could pose a significant risk or threat to the source water. In most cases, the protection zone includes the water and the land that surrounds the intake and takes into account the influence of land use and water activities.

The “Intake Protection Zone” in a lake, such as Lake Superior, ends up in the shape of a circle out in the water around the intake as the primary zone. However, the influence of land use activities and the flow of rivers and streams into the lake are also taken into consideration to determine the secondary zones of protection, usually irregular boundaries.

Time of Travel Zones

Time of travel zones outline how long it could take a contaminant to reach the intake. Zones are established based on the amount of time that it could take any material or contaminant spilled in or near a lake, river or stream to flow downstream and get to the intake.

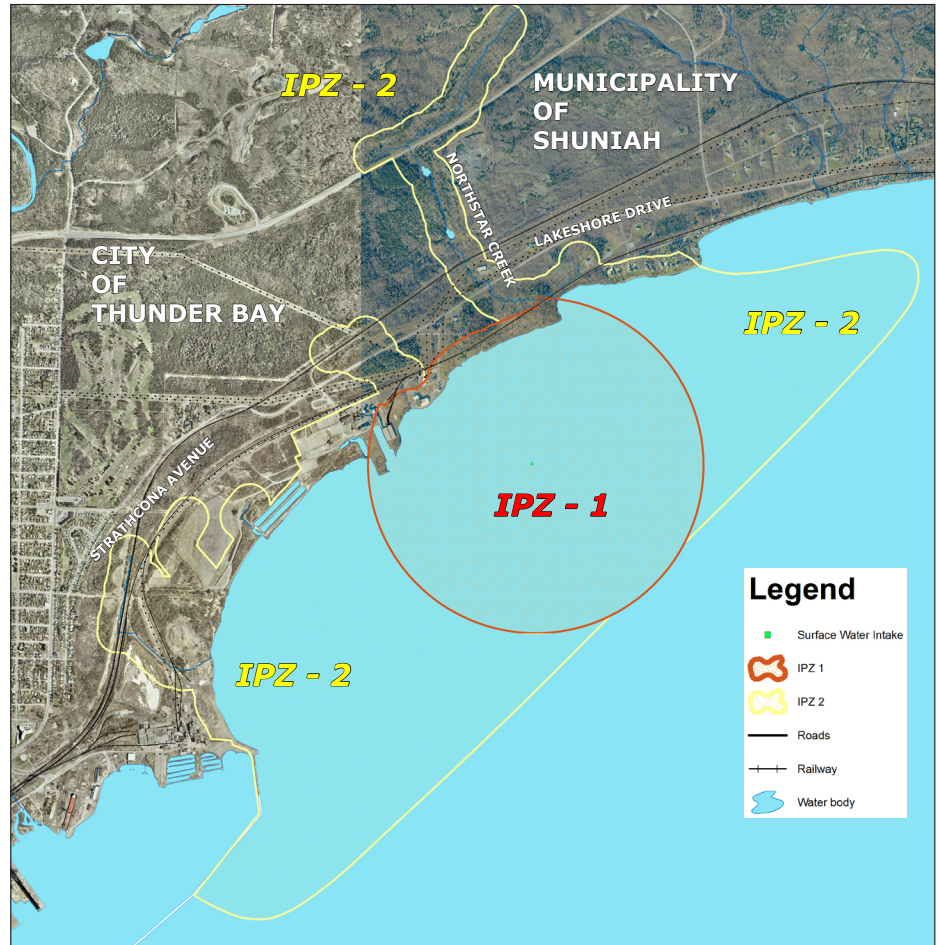
IPZ-1

This is the zone closest to the intake with the highest concern for vulnerability to the source water. In this zone, there would be little or no dilution before the potential contaminant reached the intake.

IPZ-1 is usually a 1-kilometre radius (red circle) around the intake. The influence of land use activities is taken into consideration with setback on land of 120 metres from the shoreline.

IPZ-2

IPZ-2 is the next zone of protection (yellow outline). The zone is determined in three parts: in-water and along shore, upland and up-tributary. In addition, consideration is given to a time of travel calculation to the intake. A two-hour time of travel is considered appropriate to allow a water plant operator time to shut down the intake to deal with a potential spill or threat to the source water supply.



A variety of factors are taken into account to determine time of travel, including lake currents, the flow of rivers and streams feeding into the lake and the location of municipal storm sewers or drains that empty into the lake.

IPZ-3

The IPZ-3 (not shown) covers a part of the watershed that may be impacted by an extreme event such as a storm, strong winds or high waves.



DID YOU KNOW?

Over 70 per cent of Ontario residents get their drinking water from the Great Lakes!



CITY OF THUNDER BAY MUNICIPAL DRINKING WATER SYSTEM

Bare Point Water Treatment Plant

The City of Thunder Bay owns and operates the Bare Point Water Treatment Plant which serves about 102,500 people. There are just over 40,000 residential service connections and close to 2,500 service connections for businesses or institutions in the City of Thunder Bay. The Plant has a capacity to produce 113.5 million litres of water per day with daily use around 50,000 litres.

Raw water is taken from Lake Superior from an intake located 730 metres off shore at a depth of 10.2 metres.

Lake Superior has a history of good raw water quality as it is one of the world's largest fresh water lakes with a surface area of 82,000 square kilometres. It's everyone's responsibility to ensure the lake is maintained as a safe, clean water source for drinking water and other uses.



QUICK FACTS

Owner/Operating Authority

City of Thunder Bay

Location:

City of Thunder Bay near boundary with Municipality of Shuniah
Bare Point Road - (off Lakeshore Drive)

Source of Water:

Lake Superior (3 - surface water intakes)

Main Intake

730 metres off shore, 10.2 metres deep

Population Served by System:

102,500
40,073 residential service connections
2,495 commercial/institutional connections

Operational Capacity:

113.5 million litres per day (ML/d)

Average Daily Use:

310 litres per day per person
48.175 million litres per day

Potential Drinking Water Threats

- * Septic systems of homes and cottages.
- * Improper construction and maintenance of wells.
- * Establishment, operation and maintenance of waste disposal site.
- * Handling and storage of fuel.
- * Application, handling and storage of pesticides and fertilizer.
- * Handling and storage of industrial chemicals, solvents and liquids.
- * Application, handling and storage of agricultural waste material.
- * Application, handling and storage of road salt.
- * Ships and their cargos.
- * Accidental spills along transportation routes.



Technical studies completed on the Intake Protection Zone for the Bare Point Water Treatment Plant will be used in the development of the Assessment Report to identify potential threats and risks to the source water from Lake Superior that supplies municipal residential drinking water to the City of Thunder Bay. The Assessment Report will be used as a tool to assist with the preparation of policies and measures in a local Source Protection Plan.