

EXECUTIVE SUMMARY

Why Should You Read this Document?

This *Draft Proposed Assessment Report: Credit Valley Source Protection Area* (CVSPA) has been prepared for CVSPA (**Figure ES.1**) under the direction of the CTC Source Protection Region Source Protection Committee. It is a requirement of the *Clean Water Act, 2006* (CWA) and Ontario Regulation (O. Reg.) 287/07 as amended by O. Reg. 59/10. The *Draft Proposed Assessment Report: CVSPA* has been developed in accordance with the regulations, the Technical Rules: Assessment Report (MOE, 2009) and the Terms of Reference: CVSPA, as approved by the Minister of the Environment.

This draft of the proposed Assessment Report identifies the location and nature of potential threats to sources of municipal drinking water. These threats include activities that are adversely impacting, or could impact, drinking water quality or quantity from groundwater and/or surface water sources.

Source Protection Committees determine threats to drinking water sources by delineating and applying vulnerability scores to four types of vulnerable areas, where they exist, within each Source Protection Area, as discussed in the legislation. These four areas are:

- intake protection zones (IPZs);
- highly vulnerable aquifers (HVAs);
- significant groundwater recharge areas (SGRAs); and
- wellhead protection areas (WHPAs).

Detailed information about how these vulnerable areas were delineated and scored can be found in **Chapter 4**. This report identifies and describes each of these types of vulnerable areas within the CVSPA, per the Technical Rules. Below are four maps showing the vulnerable areas for CVSPA. Descriptions, scoring, and documentation on the analyses performed to arrive at these delineations are all contained in the body of this report or in the referenced technical appendices.

The IPZ-1 and IPZ-2 map (**Figure ES.2**) indicates areas near a drinking water intake where a contaminant spill could reach the intake before a plant operator is able to respond. In CVSPA, there are two municipal drinking water system intakes that are sourced from Lake Ontario. These intakes supply drinking water to over 1,250,000 people within the CVSPA. The IPZ-1 is based on drawing a 1 km radius around each intake. IPZ-2 is based on estimating the distance a contaminant might move in two hours along the water surface. This IPZ-2 is calculated from the water intake crib outwards under ten-year storm wind conditions. Further work is being completed for an updated Assessment Report that will delineate IPZ-3s based on if, and how far, a major contaminant release could travel from shore to each water intake. More details about this work can be found in **Chapter 4** of this report.

Ten-year storm: The maximum estimated precipitation likely to occur once every ten years (ten-year return frequency).

The SGRA map (**Figure ES.3**) indicates areas where a high percentage of rain or snow seeps down into the ground and flows to an aquifer that is used for drinking water (including both municipal and other users). These areas are delineated in **Chapter 4** using the recharge results from the water budget process described in **Chapter 3** of this report. Under the CWA, the CTC Source Protection Committee may choose to develop policies to protect SGRAs within CVSPA.

The HVA map (**Figure ES.4**) indicates areas where an aquifer has been determined to be highly vulnerable to surface contaminants. Extra caution should be taken when constructing wells in vulnerable aquifers. Water well construction standards are set out in O.Reg. 903 under the *Ontario Water Resource*

Act. Under the CWA, the CTC Source Protection Committee may choose to develop policies to protect HVAs within CVSPA.

The WHPA and Vulnerability Scores map (**Figure ES.5**) ranks the vulnerability of areas around municipal groundwater systems, indicating areas where certain activities are more likely to negatively impact a drinking water source. **Chapter 4** of this report provides detailed maps for each of the municipal groundwater systems within the CVSPA.

Figure 4.7 : Orangeville WHPAs

Figure 4.10: Mono WHPAs

Figure 4.13: Amaranth WHPAs

Figure 4.16: Erin WHPAs

Figure 4.17: Hillsburgh WHPAs

Figure 4.18: Bel-Erin WHPAs

Figure 4.25: Acton WHPAs

Figure 4.26: Georgetown WHPAs

Figure 4.31: Alton and Caledon WHPAs

Figure 4.32: Inglewood WHPAs

Figure 4.33: Cheltenham WHPAs

The Source Protection Plan (SPP) will identify the actions required to reduce, manage, or eliminate current threats to municipal drinking water sources, as well as to prevent future potential threats. The SPP will also set out requirements for the regular monitoring and reporting on the implementation of the SPP. Public consultation will be an important part of developing the SPP. When the SPP is approved, the Minister of the Environment will set the date by which the SPP must be reviewed and updated, as necessary.

What Does All This Mean?

This Assessment Report describes the physical features and water resources within the Credit Valley Source Protection Area (CVSPA) jurisdiction. Using approved provincial methodologies it delineates vulnerable areas and assesses specific activities on the landscape within these vulnerable areas as potential drinking water threats. It should be noted that municipal drinking water supplies for the CVSPA jurisdiction come from both groundwater and surface water sources.

The analyses of the Watershed Characterization component in **Chapter 2** of this Assessment Report reveals Groundwater quality across the CVSPA is generally high, with naturally elevated iron, manganese, and hardness in the deeper groundwater. Surface water quality in the streams discharging into Lake Ontario shows some elevated chlorides and phosphorus levels as compared against ecosystem and aquatic life standards (Canadian Water Quality Guidelines). These contaminants are thought to be associated with the impact of urbanization within the CVSPA. The surface water in these streams is not used as a drinking water supply.

The water budget analysis in **Chapter 3** of this Assessment Report assesses potential water quantity stress in both surface water (not including Lake Ontario) and groundwater. Groundwater sources in CVSPA are used for drinking water supplies for both municipal and private wells, and to support ecosystem functions. The surface water in streams in the study area is important for supporting the ecosystem, and is also used for irrigation and other non-drinking-water purposes.

Fletcher's creek Subwatershed was found to have moderate surface water stress levels, while the Orangeville, Black creek, and Silver Creek Subwatersheds were inferred to have moderate groundwater stress levels. Orangeville, Black Creek, and Silver Creek Subwatersheds are each utilized as municipal groundwater sources. Given this, Tier 3 water budget studies are being undertaken in these areas, and will be included in an updated Assessment Report. Since the *Technical Rules* exclude consideration of Great Lakes in water budget "stress" assessments, Lake Ontario was not included in the water budget studies.

Chapter 4 assesses and scores vulnerability in all vulnerable areas in CVSPA (IPZs, HVAs, SGRAs, and WHPAs). The IPZs for the study area (IPZ-1s and IPZ-2s) were all ranked as having low vulnerability. The results of the CVSPA HVA and SGRA vulnerability analyses reflect the presence of many shallow aquifers that are naturally vulnerable. WHPA delineation and scoring has been completed for every municipal groundwater system within the CVSPA, identifying areas where certain types of activities may pose drinking water threats.

In **Chapter 5**, vulnerability is considered together with provincial hazard scores outlined in the Table of Drinking Water Threats (Technical Rules, MOE, 2009) for the various activities and their associated chemicals and pathogens to determine a risk score. Using both the natural vulnerability and hazard scores, potential drinking water threats are ranked as significant, moderate, or low in each one of the vulnerable areas (IPZs, HVAs, SGRAs, and WHPAs). Significant threats must be identified and located in the assessment report and addressed in the Source Protection Plan. In the absence of field verification, the SPC took a conservative approach in identifying threats. If the activity is categorized as a moderate or low-level threat, the province requires only the identification of all of the circumstances that could pose a threat to drinking water by reference to the Provincial Tables of Circumstances (www.ene.gov.on.ca/en/water/cleanwater/provincialTables.php). It should be noted that these moderate and low threats may not actually exist within the vulnerable areas discussed. Low and moderate threats do not require mandatory action.

There are no significant drinking water quality threats related to surface water intakes, and **1,598 significant drinking water quality threats** related to groundwater systems in this Assessment Report. Additional work underway in the Tier 3 water budget and Lake Ontario IPZ-3 analyses may identify additional significant drinking water threats for the study area.

Drinking water issues relating to sodium (Na) and chloride (Cl) were identified in WHPAs of municipal wells servicing the Towns of Orangeville, Acton and Georgetown; and issues relating to Nitrates (NO₃) were identified in Acton. The majority of the significant drinking water quality threats in the CVSPA are found in the most populated urban centers: Acton, Georgetown and Orangeville. These are areas in the middle and upper zones where sizeable populations receive municipal water supplies sourced from the ground. Moderate drinking water quantity stresses have been identified in the Orangeville, Black Creek and Silver Creek which are undergoing detailed Tier 3 water budget assessment. This Tier 3 assessment may identify some significant drinking water quantity threats within the CVSPA.

How Can People Be Involved?

The release of this *Draft Proposed Assessment Report: CVSPA* begins a 35-day public comment period that ends on November 2, 2010. This is your opportunity to provide advice and comment on the technical work being completed to support source protection planning within TRSPA.

The Source Protection Committee will host 5 public meetings in CVSPA in October 2010 to provide more information, answer questions, and receive comments on this *Draft Proposed Assessment Report: CVSPA*. Details of these meetings can be found at www.ctcswp.ca.

You may make comments in writing until November 2, 2010 to

sourcewater@trca.on.ca,

or by regular mail to

Chair, CTC Source Protection Region
c/o Toronto and Region Conservation Authority
5 Shoreham Road
Downsview, ON M3N 1S4

or by fax to the attention of Chair, CTC Source Protection Region at 416-661-6898

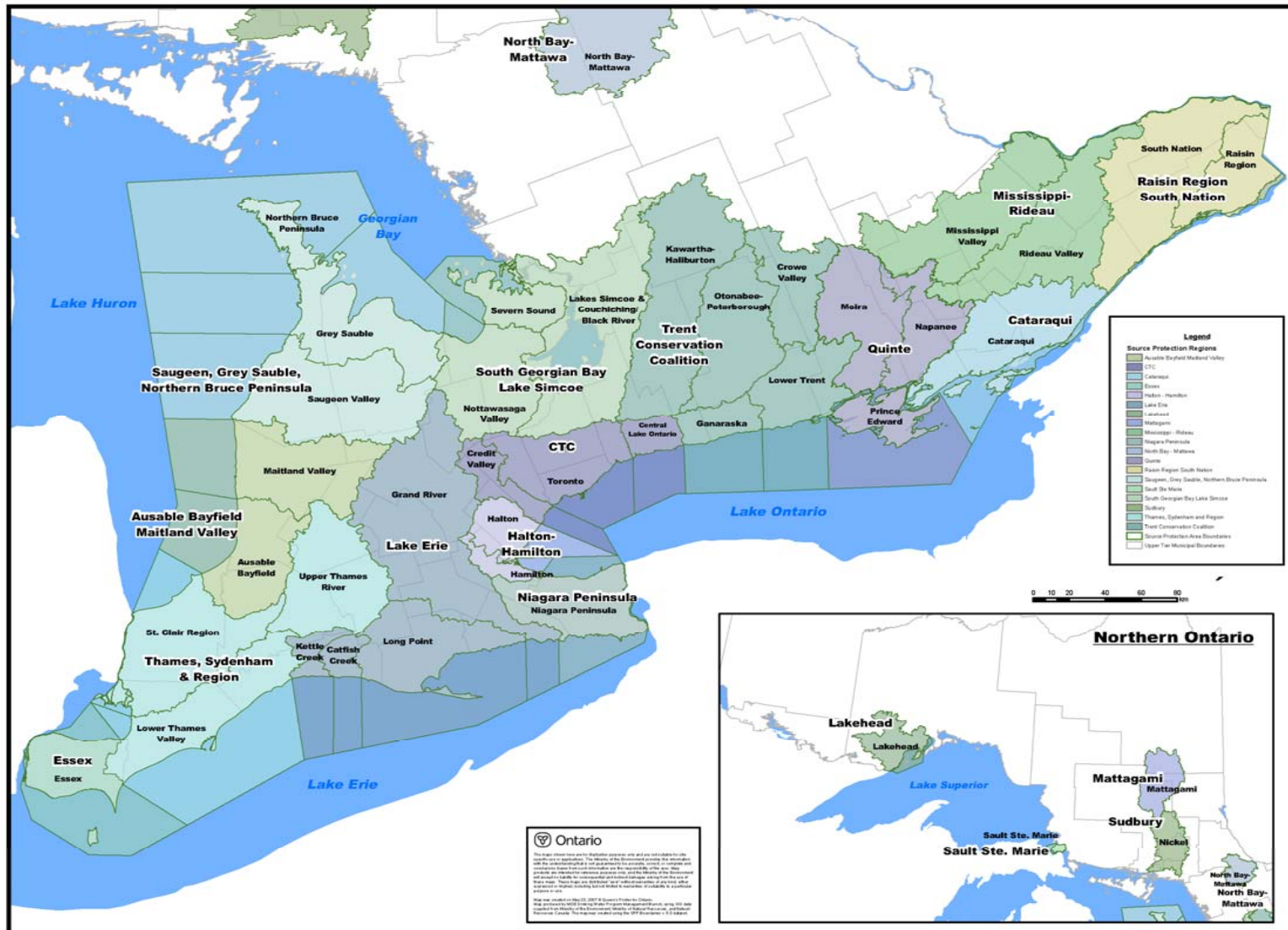


Figure ES.1: Source Protection Regions and Source Protection Areas in Ontario

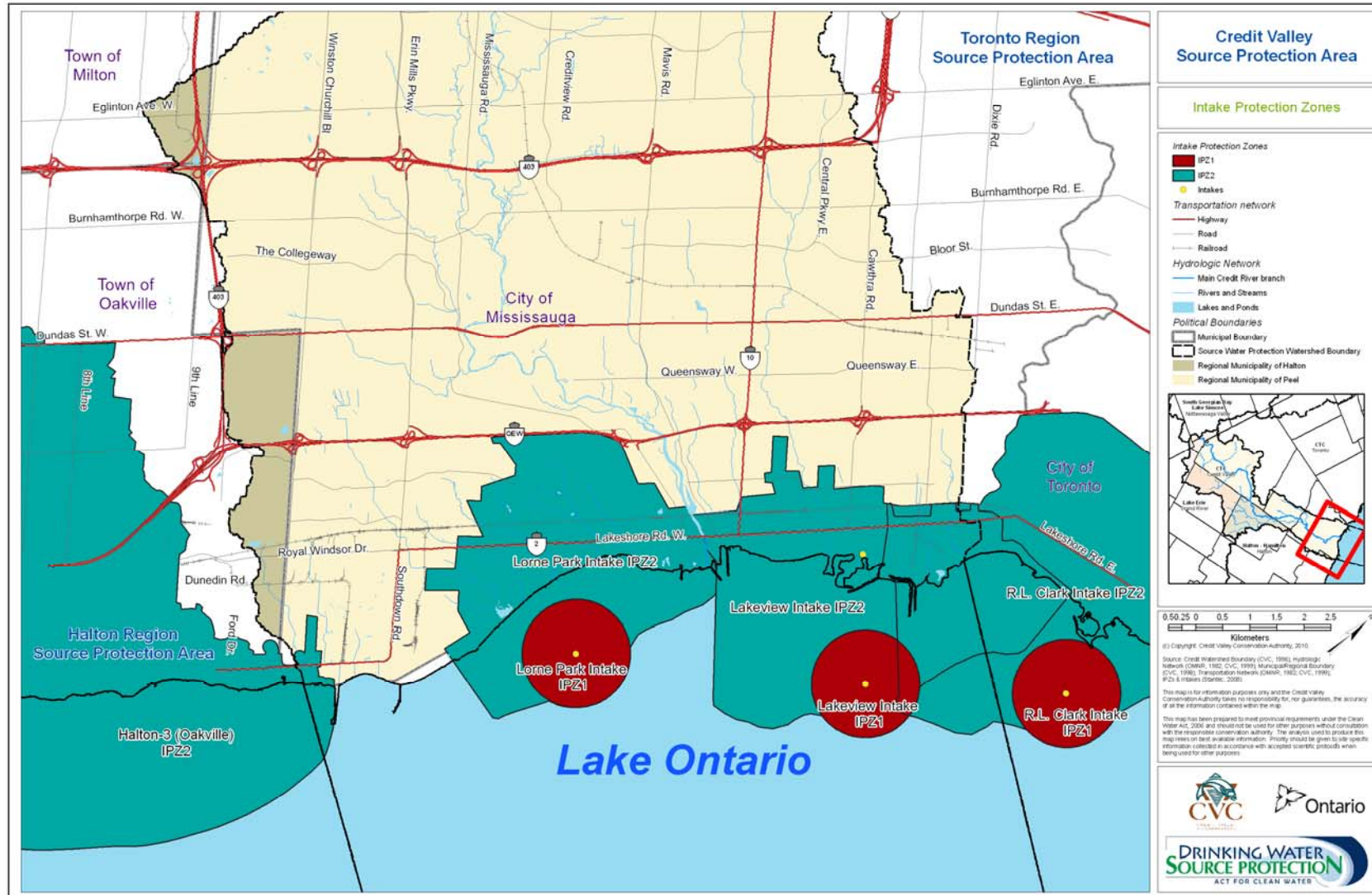


Figure ES.2: Intake Protection Zones

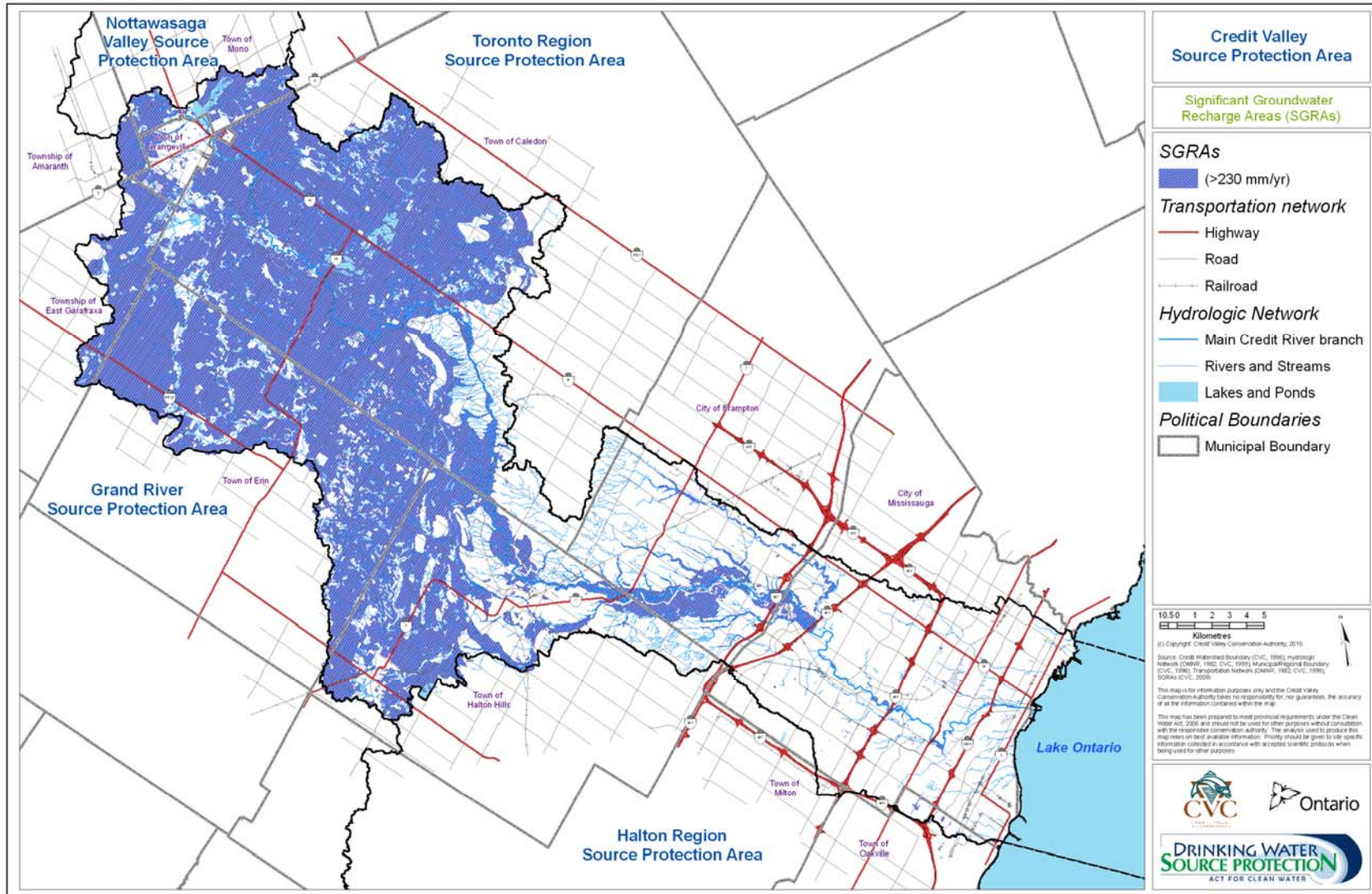


Figure ES.3: Significant Groundwater Recharge Areas (SGRAs)

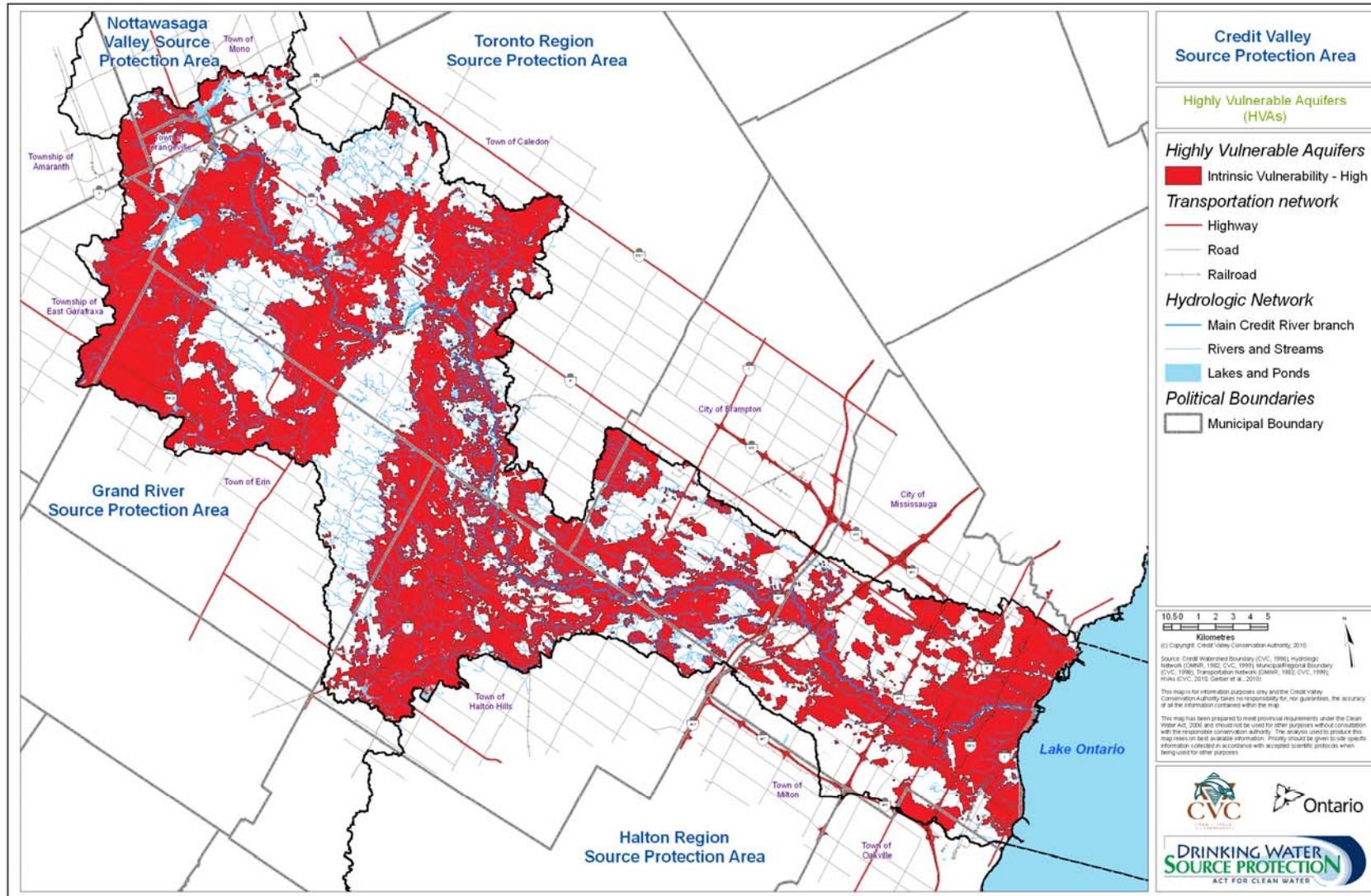


Figure ES.4: Highly Vulnerable Aquifers (HVAs)

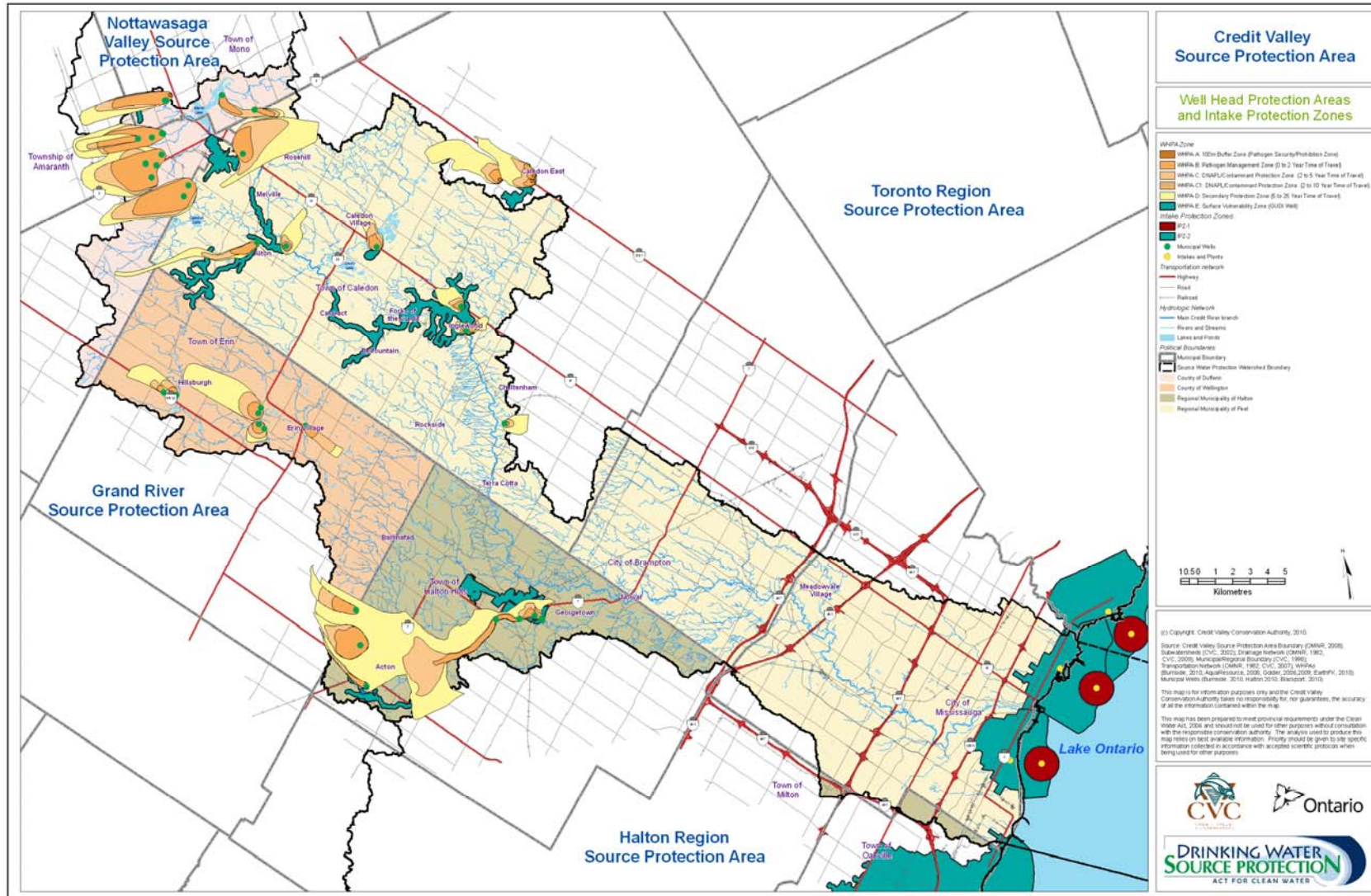


Figure ES.5: Wellhead Protection Areas and Intake Protection Zones