

DRINKING WATER SOURCE PROTECTION

ACT FOR CLEAN WATER

Thames-Sydenham and Region Source Protection Committee
Upper Thames River Source Protection Area

Amended Proposed
Assessment Report

Revised - August 12, 2011

APPROVED

8.0 Great Lakes



Ontario

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Thames - Sydenham and Region
Upper Thames River Conservation Authority
1424 Clarke Road, London, ON, N5V 5B9

July 4, 2011

Dear reader

Re: **Upper Thames River Amended Proposed Assessment Report posted for comments**

The Thames-Sydenham and Region Source Protection Committee has posted the enclosed report for review and comment by stakeholders. This report includes updates and amendments to the Proposed Assessment Report for the Upper Thames River Source Protection Authority. Comments received through the first posting (draft proposed report) were considered by the Source Protection Committee and the report has been revised. Comments received in response to the second posting were submitted with the Proposed Assessment Report to the Ministry of the Environment (MOE).

Based on directions from the Director of Source Protection Programs Branch, MOE, updates and amendments were made to the Proposed Assessment Report to include further technical work conducted. These include the Tier 2 water budget drought scenario analysis, the delineation, vulnerability assessment and threats assessment of WHPA-E, and threats assessment of sewer line threats. The updates and amendments made are summarized in Appendix 4. This version of the Assessment Report once approved will be used by the Source Protection Committee for the development of the Source Protection Plan which is to be submitted to the MOE in August 2012.

The Amended Proposed Assessment Report for the Upper Thames River Source Protection Area represents a significant milestone in the Source Protection Committee's progress in the completion of the first Source Protection Plans for the Thames-Sydenham and Region. The Source Protection Committee realizes that this report is a "living document" which may be updated as more information becomes available in the future.

We hope that you have had an opportunity to attend previous open houses that were held throughout the region, and plan to attend the open houses to be held in July 2011. More information on this assessment report and the past and current consultation is available on the web site given at the bottom of this letter.

Yours truly,
THAMES-SYDENHAM and REGION

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8.0 Great Lakes

The Clean Water Act (2006) requires that the Great Lakes Agreements be considered in an Assessment Report and *Source Protection Plans*, if a Source Protection Area (*SPA*) contains water that flows into a Great Lake (Section 14). The *Technical Rules: Assessment Report* also requires that a description be provided on how the Great Lakes Agreements were considered in work undertaken (Rule 9) towards the Assessment Report.

The Upper Thames River Source Protection Area (*UTRSPA*) is one of the three *SPAs* that the Thames-Sydenham and Region Source Protection Region (*SPR*) is comprised of, the other two being the Lower Thames Valley Source Protection Area (*LTVSPA*), and the St. Clair Region Source Protection Area (*SCRSPA*).

The *UTRSPA* is based on the Upper Thames River Conservation Authority (CA) jurisdiction. Conservation Authorities are established on a watershed basis. The *UTRSPA* is landlocked and has no Great Lakes shoreline. It is surrounded by the Ausable Bayfield Maitland Valley *SPR* and Lake Erie *SPR*, as well as the *LTVSPA*. The Thames River originates in the *UTRSPA* and continues to flow through the *LTVSPA* where it outlets into Lake St. Clair, which in turn outlets into Lake Erie through the Detroit River.

Lake St. Clair is not a Great Lake but it is included while considering Great Lakes in the source protection planning process. For source water protection purposes, the Lake Erie basin is considered to be comprised of Lake St. Clair, the Detroit River and Lake Erie.

In the *UTRSPA*, most communities receive their drinking water from groundwater sources. However the City of London and a few neighbouring communities receive water from Lake Huron and Lake Erie, through municipal water treatment plants located outside of this *SPA*. Map

1-3 shows the watershed boundary of the *UTRSPA*, and the location of the groundwater systems and surface water intakes that serve communities in the watershed.

8.1 Impact of Considering Great Lakes

The Clean Water Act requires *Source Protection Plans* to consider policies that relate to the Great Lakes. The Ministry of Environment (*MOE*) document 'A Discussion Paper on Requirements for the Content and Preparation of Source Protection Plans' (June 2009) provides some details on how Great Lakes policies may be included in the Source Protection Plan. Those details are reproduced below.

The Clean Water Act gives the Minister of the Environment the authority to set targets for the Great Lakes or any part thereof, to address any water quality or quantity issue related to the use of the Great Lakes as a source of drinking water (Section 85). Targets are anticipated to direct and coordinate action on a drinking water source protection issue or an emerging Great Lakes problem. The Minister also has the option of establishing a Great Lakes target for a group of source protection areas. If a target applies to multiple source protection areas, the Minister may direct the source protection authorities to decide jointly on what the relative target should be for each individual source protection area, to contribute to the overall target.

The Clean Water Act also provides that the source protection plan may identify one or more Great Lakes target policies as a “designated Great Lakes policy” (Section 22). Where a *source protection plan* does not designate any of the Great Lakes policies, the Minister may direct a source protection authority to do so during the process of reviewing and approving the *source protection plan*.

Also, policies that govern monitoring to assist in implementing and in determining the effectiveness of a Great Lakes target policy may be established. It may be possible that Great Lakes targets are set up through other *SPR source protection plans* but include the *UTRSPA*, in which case the *SPA* will be involved in discussions with other *SPAs* on achieving those targets.

8.2 Great Lakes Agreements

Under the Clean Water Act, the Great Lakes Agreements to be considered (Section 14) are listed below:

1. The Great Lakes Water Quality Agreement of 1978 between Canada and the United States of America, signed at Ottawa on November 22, 1978, including any amendments made before or after this section comes into force.
2. The Great Lakes Charter signed by the premiers of Ontario and Quebec and the governors of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania and Wisconsin on February 11, 1985, including any amendments made before or after this section comes into force.
3. The Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem 2002 entered into between Her Majesty the Queen in Right of Canada and Her Majesty the Queen in Right of Ontario, effective March 22, 2002, including any amendments made before or after this section comes into force.
4. The Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement.
5. Any other agreement to which the Government of Ontario or the Government of Canada is a party that relates to the Great Lakes Basin and that is prescribed by the regulations.

The first four Agreements are discussed below. At the time of drafting of this report, the Source Protection Committee is not aware of any other Agreement, signed by the Government of Ontario or the Government of Canada, related to the Great Lakes and prescribed by the regulations.

8.2.1 Great Lakes Water Quality Agreement

The Great Lakes Water Quality Agreement (*GLWQA*), first signed in 1972 and renewed in 1978, expresses the commitment of Canada and the United States to restore and maintain the chemical, physical and biological integrity of the Great Lakes Basin Ecosystem and includes a number of objectives and guidelines to achieve these goals. In 1987, a Protocol was signed to help develop and implement Remedial Action Plans (*RAPs*) and Lakewide Management Plans (*LaMPs*). *RAPs* focus on the geographic Areas of Concern (*AOCs*), which are identified under the Canada-Ontario Agreement Respecting Great Lakes Water Quality described in Section 8.2.2.

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LaMPs are designed to improve the environmental quality of the open waters of each of the Great Lakes. In accordance with the GLWQA, the goal of the Lake Erie LaMP is to restore and protect the beneficial uses of Lake Erie, with a focus on the beneficial-use impairments listed in the Agreement. Ecosystem objectives specific to Lake Erie are established to guide LaMP efforts toward defined endpoints. In 1994, nine conservation authorities created a co-operative agreement to combine the strengths of their individual, long-term community partnerships across the Lake Erie Basin, and improve the ability to work with provincial and federal governments. The group established is called the Federation of Conservation Authorities of Lake Erie, or *FOCALErie*, and is comprised of the Essex Region, Lower Thames Valley, Upper Thames River, St. Clair Region, Catfish Creek, Kettle Creek, Long Point Region, Grand River and Niagara Peninsula Conservation Authorities. *FOCALErie* supports the Lake Erie *LaMP* through projects such as public involvement and Lake Erie basin geographic information system compilation and updates. The City of London and neighbouring communities in the *UTRSPA* receive water from Lake Huron and Lake Erie intakes located outside the SPA. It is important to note that *FOCALErie* provides a mechanism for Conservation Authorities including the Upper Thames River CA to deal with other, broader Great Lakes concerns and to coordinate watershed planning and implementation activities at a scale beyond their individual watershed boundaries.

As mentioned before, the Thames River originates in the *UTRSPA* and continues to flow through the *LTVSPA* where it outlets into Lake St. Clair, which in turn outlets into Lake Erie. The Great Lakes Water Quality Agreement (*GLWQA*) has been considered in the Lower Thames Valley Source Protection Area Assessment Report. Under the Great Lakes Water Quality Agreement, the Four Agency Management Committee established a framework for binational coordination of environmental issues on Lake St. Clair (U.S. Environmental Protection Agency, Environment Canada, Ontario Ministry of Environment, Michigan Department of Environmental Quality, 2004). It is called the Lake St. Clair Management Plan. Lake St. Clair intakes in the Essex Region SPA supply some communities in the Lower Thames Valley Source Protection Area.

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A Lakewide Management Plan is yet to be established for Lake Huron. In 2004, a report was prepared entitled Lake Huron Bi-national Partnership Action Plan and is described based on information from <http://www.epa.gov/glnpo/lakehuron/LH%202004.pdf>. This plan does provide an overview of issues and recommends actions to address these issues. The approach to Lake Huron differs from the Lake-wide Management Plans (*LaMPs*) of Lakes Superior, Michigan, Erie and Ontario in that there has been no systematic assessment of beneficial use impairments, identification of causes, definition of critical pollutants, determination of chemical sources and loadings, and release of a report for comment. The alternative approach focuses on areas of obvious importance, such as identified Areas of Concern, tackles these as priorities in the first action plans, and will expand over time to include other activities that investigate the less severe or obvious issues in the lake. Through the *GLWQA*, three Areas of Concern in the Lake Huron basin are identified none of which are in the *UTRSPA*. Under the Action Plan, three priority issues - contaminants in fish and wildlife; biodiversity and ecosystem change; fish and wildlife habitat - were given priority for immediate action while other issues will be tracked and added as the Partnership pursues this process of updating and expanding activities over time. Other Lake Huron concerns include: low water levels, botulism, cormorant populations, blue-green algae blooms, aquaculture, the spread of exotic non-native species such as the Common Reed Grass (*Australius phragmites*), emerging contaminants and global climate change. The 2008-2010 Action Plan tracks progress on issues identified in the previous cycle, including contaminants in fish, changes in food web structure and protection of critical habitat, and has been expanded to address emerging issues, such as observed increases in nearshore algae and diseases such as botulism (<http://www.epa.gov/glnpo/huron.html>). At the time of writing of this report, it is understood that the Lake Huron Bi-national Partnership Action Plan is not prescribed by the Regulations.

8.2.2 The Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem

Information on this Agreement is reproduced from the Ministry of Environment website (<http://www.ene.gov.on.ca/en/news/2007/081602mb.php>). The governments of Canada and Ontario have signed an agreement to protect the Great Lakes that includes cleaning up 15 Areas of Concern on the Great Lakes or its connecting channels where the natural environment has been severely degraded, reducing harmful pollutants, and improving water quality. The Agreement also aims to conserve fish and wildlife species and habitats, lessen the threat of

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aquatic invasive species and improve land management practices within the Great Lakes Basin. The Agreement, which is valid until 2011, contains new areas of cooperation such as protecting sources of drinking water, understanding the impacts of climate change and encouraging sustainable use of land, water and other natural resources. The implementation of this Agreement helps fulfill the obligations of the Great Lakes Water Quality Agreement.

This Agreement is not considered to be relevant to the current Assessment Report, as there are no Areas of Concern in the *UTRSPA*. However as mentioned earlier, the Assessment Report notes the participation of the Upper Thames River CA in organizations that promote watershed based programs that aim at improving Great Lakes water quality.

8.2.3 The Great Lakes Charter and the Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement

The Great Lakes Charter contains agreements between the eight Great Lakes states in the United States and the Provinces of Ontario and Quebec. The purposes of the Charter are “to conserve the levels and flows of the Great Lakes and their tributary and connecting waters; to protect and conserve the environmental balance of the Great Lakes Basin ecosystem; to provide for cooperative programs and management of the water resources of the Great Lakes Basin by the signatory States and Provinces; to make secure and protect present developments within the region; and to provide a secure foundation for future investment and development within the region” (<http://www.cglg.org/pub/charter/index.html>).

The Great Lakes Charter was supplemented in 2001 by the Great Lakes Charter Annex, and its implementing agreements, including the Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement, pertaining to the watershed of the Great Lakes and the St. Lawrence River upstream from Trois-Rivières, Québec within the jurisdiction of eight states in the United States and the Provinces of Ontario and Quebec (http://www.mnr.gov.on.ca/en/Business/Water/2ColumnSubPage/STEL02_164560.html).

The Upper Thames River *SPA* is supplied with groundwater from wells within the *SPA*, as well as Lake Huron and Lake Erie water from intakes located in other *SPRs*. The Water Budget and Water Quantity Stress Assessment included in this Assessment Report consider supply and *demand* within the watersheds of the Thames-Sydenham and Region. Great Lakes water

budgeting must be undertaken on a much larger scale. The information developed through the Water Budget work in the Thames-Sydenham and Region, along with those developed in the other Source Protection Regions, can be used by others when considering the larger scale Great Lakes basin water budgets. This work is beyond the scope of the Assessment Report and *Source Protection Plan* in the Thames-Sydenham and Region.

8.3 Proposed Working Groups

The formation of a Lake Erie Basin working group was discussed in October 2009. This group could bring together interested parties within the Source Protection Regions (*SPRs*) that have intakes which rely on water from the Lake Erie basin as their source of drinking water. This working group would provide a forum to discuss drinking water specific matters relevant to the Clean Water Act. The Lake Erie Basin is comprised of Lake Erie, Lake St. Clair and the Detroit River. The proposed working group members would include system operator, Conservation Authority and Source Protection Committee representation from the Niagara Peninsula *SPR*, Lake Erie *SPR*, Thames-Sydenham and Region *SPR* and the Essex Region Source Protection Area. In the *UTRSPA*, the City of London and a few other communities receive water from municipal intakes located outside the source protection region, on Lake Erie and Lake Huron. At the preliminary meeting held in October 2009 at Woodstock, discussions took place on lake-wide and local water quality issues identified through draft Assessment Report work. General source water quality concerns were also discussed. From preliminary information being compiled through the Assessment Reports, turbidity, aluminium, algal growth and nutrients appear to be common to many of the intakes in the southwestern part of Lake Erie. At the time the meeting was held, the drinking water quality issue identification (as per the Clean Water Act and *technical rules*) was not complete. Once the *issues* identification process has been completed and *issues* contributing areas and activities have been identified it will be possible to consider whether issues are lake-wide or due to local activities at a subwatershed scale. In the Thames-Sydenham and Region the *issues* contributing areas and activities would be determined as part of an amended Assessment Report. The relevance of existing Great Lakes groups and agreements to the requirements of the Clean Water Act was also discussed. The formation of a more formal working group was considered. At this time, however, it was decided to correspond with neighbouring Source Protection Regions as needed and to hold another meeting in 2010, after the submission of Assessment Reports. This plan would help bring

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forward for discussion the findings of each Source Protection Authority's Assessment Report, especially as they pertain to *issues*.

A similar working group for Lake Huron has been discussed by the SPC Chairs and Project Managers. At the time of discussion, there were very few *issues* which might warrant such a working group for Lake Huron. While the Upper Thames River SPA does not contain surface water intakes, a large portion of the population of this SPA is supplied Lake Huron and Lake Erie water, as mentioned earlier. Further, a part of the St. Clair Region SPA is supplied with Lake Huron water. Since the time of the discussion on the formation of a working group for Lake Huron, the St. Clair Region SPA Proposed Assessment Report has been submitted to the province, and there are no *issues* identified for the Lake Huron intake in that SPA. If however, other regions feel there are lake-wide issues that should be discussed, a working group could be considered for Lake Huron.

The Thames-Sydenham and Region (TSR) Source Protection Committee has expressed interest in participation in the Lake Huron and Lake Erie working groups if they are formed. There was some concern as to whether Lake St. Clair *issues* could be adequately considered in the Lake Erie working group. It is however important to realize that Lake St. Clair is bounded by Essex Region SPA and the Thames-Sydenham and Region. As such it is expected that *issues* identified with the Essex Region intakes in Lake St. Clair could be dealt with through collaboration between the two SPCs. The SPAs within the TSR will continue to work with the Essex Region SPA on projects and *issues* related to Lake St. Clair.

8.4 Next Steps for Great Lakes

The Thames-Sydenham and Region will continue to be involved in the Lake Erie Basin working group if formed. Dealing with lake-wide issues, investigating local activities, and formation of Great Lakes related policies will be discussed with other members of the working group. If the *MOE* identifies Great Lakes targets, policies specific to those targets will need to be developed under the Source Protection Plan. Further, if the *MOE* identifies targets that apply across several Source Protection Regions and Source Protection Areas, working groups such as the Lake Erie working group may provide an opportunity to work together to satisfy shared regulatory requirements.