

Kettle Creek Source Protection Area

SOURCE PROTECTION PLAN VOLUME I

**Prepared on behalf of:
Lake Erie Region Source Protection Committee**

**Under the *Clean Water Act, 2006*
(Ontario Regulation 287/07)**

**Version 2.1
August 15, 2024**

This project has received funding from the Government of Ontario.



The following table provides a high-level summary of amendments made to the Kettle Creek Source Protection Plan under the *Clean Water Act, 2006*.

V#	Amendment	Dates	Description
1	Not applicable	Approval: September 8, 2014 Effective: January 1, 2015	Not applicable.
1.1	Editorial s.51	Posted: February 21, 2017	Text updated to reflect implementation of new provincial threats tool.
1.2	Editorial s.51	Posted: January 25, 2022	Updated text, tables, and figures in compliance with the <i>Accessibility for Ontarians with Disabilities Act, 2005</i> .
2	Comprehensive s.36	Approval: July 24, 2024 Effective: August 15, 2024	New and amended mapping, updated groundwater and surface water quality information, additional climate change information, and removal of commercial fertilizer significant threat and associated events-based area IPZ-3 from the Elgin Area Water Supply System. Policies revised to align with the 2021 Technical Rules and new policies added for liquid hydrocarbon pipelines.
2.1	Editorial s.51	Posted: August 15, 2024	General formatting updates to enhance readability and/or AODA compliance. Repeated information removed where it exists in other documents or online.

EXECUTIVE SUMMARY

A Plan to Protect Drinking Water in the Kettle Creek Watershed

The *Clean Water Act, 2006* provides a framework for the development and implementation of local, watershed-based Source Protection Plans, and is intended to implement the drinking water source protection recommendations made by Justice Dennis O'Connor in Part II of the Walkerton Inquiry Report.

The key objectives of the source protection planning process are to complete science-based Assessment Reports that identify the risks to municipal drinking water sources, and to develop local Source Protection Plans that put policies in place to reduce the risks to protect current and future sources of drinking water.

The Kettle Creek Source Protection Plan sets out policies to protect sources of drinking water.

The first volume (Volume I) of the Kettle Creek Source Protection Plan provides the context for the Plan, including a brief history of source protection planning and the *Clean Water Act, 2006*, Source Protection Plan objectives, and a description of the watershed/source protection area. This volume also includes a description of plan components, key steps in the planning process, public consultation, interaction with other Source Protection Regions, source water threats, guidance on how to read the plan, and details on plan implementation and enforcement.

The second volume (Volume II) of the Kettle Creek Source Protection Plan contains the Source Protection Plan policies listed by drinking water system, and a list of watershed wide policies. These policies address existing and future drinking water threats.

How the Source Protection Plan was Developed

The Source Protection Planning process is being led by a multi-stakeholder steering committee called the Lake Erie Region Source Protection Committee. The Committee was formed in November 2007 and is responsible for directing the development of the Assessment Reports and Source Protection Plans for each of the four Source Protection Areas in the Lake Erie Region.

Consultation with the public and stakeholders is key to developing a locally derived Source Protection Plan and is required under the *Clean Water Act, 2006* at each key point in the planning process. Broad public consultation was conducted throughout the development of the Source Protection Plan, involving municipalities, conservation authorities, property owners, farmers, industry, businesses, community groups, and public health officials. Key consultation mechanisms included stakeholder workshops, public meetings and open houses, and opportunities to comment on discussion papers and via the [Lake Erie Source Protection Region website](#).

Public Consultation on the Kettle Creek Source Protection Plan

Updates to the Source Protection Plan require one formal round of consultation with the public and stakeholders.

The Kettle Creek Source Protection Plan was posted for a 35-day public consultation period between April 5 and May 9, 2023. The public was invited to review the Plan on www.sourcewater.ca, at the Central Elgin municipal office, or at the Kettle Creek Conservation Authority, where hard copies were made available.

The public could submit comments on the Assessment Report by email or by regular mail.

All comments received during this comment period were forwarded to the Ontario Ministry of the Environment, Conservation and Parks with the submission of the Kettle Creek Source Protection Plan.

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1.0 INTRODUCTION

1.1 Protecting Our Drinking Water

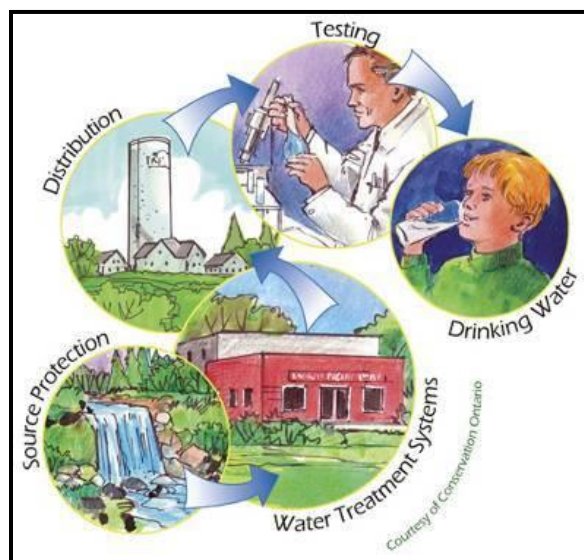
Following the public inquiry into the Walkerton drinking water crisis in May 2000, Justice Dennis O'Connor released a report in 2002 containing 121 recommendations for the protection of drinking water in Ontario. Since the release of the recommendations, the Government of Ontario has introduced legislation to safeguard drinking water from the source to the tap, including the *Clean Water Act in 2006*. The Act provides a framework for the development and implementation of local, watershed-based source protection plans, and is intended to implement the drinking water source protection recommendations made by Justice Dennis O'Connor in Part II of the Walkerton Inquiry Report. The Act came into effect in July 2007, along with the first five associated regulations.

The intent of the *Clean Water Act, 2006* is to ensure that communities are able to protect their municipal drinking water supplies now and in the future from overuse and contamination. It sets out a risk-based process on a watershed basis to identify vulnerable areas and associated drinking water threats and issues. It requires the development of policies and programs to reduce or eliminate the risk posed by significant threats to sources of municipal drinking water through science-based source protection plans.

The *Clean Water Act, 2006* and Drinking Water Source Protection are one component of a multi-barrier approach to protecting drinking water supplies in Ontario.

The five steps in the multi-barrier approach include:

- Source Water Protection
- Adequate treatment
- Secure distribution system
- Monitoring and warning systems
- Well thought-out responses to adverse conditions



After the Walkerton Inquiry, the Government of Ontario enacted the *Safe Drinking Water Act, 2002* which provides new requirements and rules for the treatment, distribution and testing of municipal drinking water supplies. Together, the *Clean Water Act, 2006* and *Safe Drinking Water Act, 2002* along with their associated regulations, provide the legislative and regulatory framework to implement the multi-barrier approach to municipal drinking water protection in Ontario.

The protection of municipal drinking water supplies through the *Clean Water Act, 2006* is one piece of a much broader environmental protection framework in Ontario. Water resources in Ontario are protected directly and indirectly through the federal and provincial governments, municipalities, conservation authorities and public health units.

Source Protection Planning Process

The key objectives of the source protection planning process are to complete science-based Assessment Reports that identify the risks to municipal drinking water sources, and to develop local Source Protection Plans that put policies in place to reduce the risks to current and future sources of drinking water.

Since 2005, municipalities and conservation authorities have been undertaking studies to delineate areas around municipal drinking water sources that are most vulnerable to contamination and overuse. Within these vulnerable areas, technical studies have identified historical, existing, and possible future land use activities that are or could pose a threat to municipal water sources. The Assessment Report for the Kettle Creek Source Protection Area was approved by the Ministry of the Environment on May 15, 2014, and is available on the [Lake Erie Source Protection Region website](#). Further technical studies have been undertaken since and are included in the updated Kettle Creek Assessment Report. These changes are consulted on together with updates to the Kettle Creek Source Protection Plan.

The first Source Protection Plan was submitted to the Minister of the Environment on October 17, 2012 for review and approval. As part of the plan review process, the Ministry of Environment formally provided recommended revisions and comments on December 13, 2013. These comments were addressed and the changes are included in the Source Protection Plan that was posted for public consultation for a 30 day comment period beginning on January 13, 2014.

Any comments and feedback received during the comment period were reviewed by the Source Protection Committee and considered in the finalization of the Source Protection Plan. The Source Protection Plan was submitted to the Minister of the Environment on March 19, 2014. The Minister of the Environment approved the Kettle Creek Source Protection Plan on September 8, 2014.

New information has since been added to the Kettle Creek Assessment Report and Source Protection Plan which was posted for a 35-day public consultation period from April 5 to May 9, 2023.

The Source Protection Plan is a document that sets out policies to protect sources of drinking water against a list of prescribed drinking water threats identified by the Ministry of the Environment, Conservation and Parks.

Public input and consultation has played a significant role throughout the process of developing the Source Protection Plan. The task of plan development involves municipalities, conservation authorities, property and business owners, farmers,

industry, health officials, community groups and others working together to develop a fair, practical, and implementable Source Protection Plan.

After approval of the Source Protection Plan, annual progress reports on implementation are required. Implementation of the Source Protection Plan is led by municipalities in most cases. In some cases, conservation authorities, public health units, the provincial government, or other organizations may be involved in implementing policies in the Source Protection Plans. The agencies identified in the Source Protection Plan use a range of voluntary and regulatory programs and tools, including outreach and education, incentive programs, land use planning (zoning by-laws and Official Plans), new or amended provincial instruments, risk management plans, and prohibition.

Public Consultation on the Kettle Creek Source Protection Plan:

Consultation with the public and stakeholders was key to developing a locally derived Source Protection Plan. Consultation is required under the *Clean Water Act, 2006* at each key point in the source protection planning process.

Public consultation was conducted using the following methods for various versions of the Kettle Creek Source Protection Plan:

- Distribution of factsheets, brochures, and pamphlets: samples available on the [Lake Erie Source Protection Region website](#).
- Property specific mailings to landowners affected by the Source Protection Process.
- Stakeholder workshops on policy options.
- Public open houses on the technical work, policy development and documents under the Source Protection Program: Terms of Reference, Assessment Report and Source Protection Plan.
- Early engagement of the public on draft Assessment Reports technical work and Source Protection Plan policy options.
- Formal public consultation on the Terms of Reference, Assessment Reports and Source Protection Plan.
- Pre-consultation and formal consultation with Municipal Councils and First Nations.
- Availability of hard copies of Source Protection Plan materials and the Assessment Report at Conservation Authority and municipal administrative offices.

In preparing the Kettle Creek Terms of Reference, the Assessment Report and Source Protection Plan, the Source Protection Committee considered all feedback received from the public and stakeholders during consultation.

2.0 SOURCE PROTECTION PLAN OBJECTIVES

The Kettle Creek Source Protection Plan is a document that sets out the policies to protect sources of municipal drinking water against potential existing and future drinking water threats. The objectives of the Source Protection Plan are detailed in the *Clean Water Act, 2006* (O. Reg. 287/07, s.22) and are described below.

22. (1) Every source protection plan shall set out the following as objectives of the plan:

1. To protect existing and future drinking water sources in the source protection area.
2. To ensure that, for every area identified in an assessment report as an area where an activity is or would be a significant drinking water threat,
 - i. the activity never becomes a significant drinking water threat, or
 - ii. if the activity is occurring when the source protection plan takes effect, the activity ceases to be a significant drinking water threat. O. Reg. 246/10, s. 12.

(2) If a source protection plan sets out policies relating to conditions resulting from past activities, the plan shall set out that an objective of the plan is to ensure that for every area identified in the assessment report as an area where a condition that results from a past activity is a significant drinking water threat, the condition ceases to be a significant drinking water threat. O. Reg. 246/10, s. 12.

(3) If, under Subsection 85 (6) of the *Clean Water Act, 2006*, the Minister has directed that a report be prepared and submitted that recommends policies that should be set out in the source protection plan for the source protection area to assist in achieving a Great Lakes target, the plan shall set out that an objective of the plan is to achieve the target for the source protection area. O. Reg. 246/10, s. 12.

(4) No objectives other than the objectives set out in Subsections (1) to (3) shall be contained in a source protection plan. O. Reg. 246/10, s. 12.

3.0 COMPONENTS AND SUPPORTING DOCUMENTS

The Source Protection Plan is divided into two volumes, including appendices and supporting documents.

3.1 Volume I

The first volume of the Kettle Creek Source Protection Plan provides the context for the overall Plan, including a brief history of source protection planning and the *Clean Water Act, 2006*, Source Protection Plan objectives, and a description of the watershed/source protection area. This volume also includes a description of plan components, key steps in the planning process, public consultation, interaction with other Source Protection Regions, source water threats, guidance on how to read the Plan, and details on Plan implementation and enforcement.

The Kettle Creek Source Protection Area Assessment Report is another key component of the Source Protection Plan. Since 2005, numerous technical studies have been completed and are summarized in the Kettle Creek Source Protection Area Assessment Report. This Assessment Report examined and identified:

- The vulnerable areas around municipal-residential drinking water sources;
- Intrinsic susceptibility to contamination;
- Where potential threats to water quality and quantity may exist in each vulnerable area;
- The activities that pose drinking water threats to human health; and
- How significant the risks of these drinking water threats are to contaminating or depleting the water supply.

Based on this analysis, significant drinking water threats were identified. The information contained in the Assessment Report was used to prepare the Source Protection Plan. For this reason, and based on the requirements under Section 22 (2) of the *Clean Water Act, 2006*, the Assessment Report is included as part of the submission of this Source Protection Plan to the Ministry of the Environment, Conservation and Parks. The Assessment Report is available on the [Lake Erie Source Protection Region website](#).

Maps: Volume I of the Source Protection Plan contains 3 maps:

- Map 4-1: Lake Erie Source Protection Region
- Map 4-2: Kettle Creek Source Protection Area
- Map 5-1: Adjacent Source Protection Regions and Municipalities

Appendices: The appendices associated with this volume include:

- **APPENDIX A:** Drinking Water Threats and Optional Content for the Lake Erie Source Protection Region
- **APPENDIX B:** Legal Effect Matrix

Volume II

The second volume of the Kettle Creek Source Protection Plan contains the Source Protection Plan policies. These policies address both existing (where applicable) and future drinking water threats. Volume II includes policies for significant drinking water threats and optional content. Future updates to the Source Protection Plan may include policies for moderate and low threats.

Section 1 and 2 of Volume II contain information about the legal effect of the Source Protection Plan policies as well as guidance on how to read the plan. The source protection policies for the Kettle Creek Source Protection Area are included in Section 3 of Volume II. This section includes the following:

- A description of where the Source Protection Plan policies will apply;
- Definitions specific to the identified municipality (i.e., existing and future);
- Source Protection Plan policies;
- Required Appendices as per Section 34 of O. Reg. 287/07; and
- Maps showing where the Source Protection Plan policies will apply.

Additional information contained in Volume II as required by Section 34 of O. Reg. 287/07 includes:

- A list of policies as per Section 34 of O. Reg. 287/07
- Prescribed Instrument and Policy Summary Tables

3.2 Explanatory Document

Before publishing the Source Protection Plan under Section 41 of O. Reg. 287/07, the Source Protection Committee prepared an Explanatory Document.

This document contains the following, as described in the regulation, to aid in the review of the Source Protection Policies:

1. An explanation of the Source Protection Committee's reasons for each policy set out in the Source Protection Plan.
2. An explanation of the Source Protection Committee's reasons for designating an activity under paragraph 1 of Subsection 22 (3) of the Act, including the reasons relied on by the committee to form the opinion that the activity must be prohibited to ensure that it ceases to be a significant drinking water threat.
3. A summary of the comments received under Sections 35 to 39 and an explanation of how the comments affected the development of the policies set out in the Source Protection Plan.

4. An explanation of how the summary referred to in paragraph 7 of Subsection 13 (1) affected the development of the policies set out in the Source Protection Plan.
5. A summary of how the consideration of the potential financial implications for persons and bodies who would be implementing or affected by the Source Protection Plan influenced the development of the policies set out in the plan.
6. If a policy described in Subsection 22 (7) of the Act or paragraph 1 of Section 26 of this Regulation is the only policy set out in a Source Protection Plan to deal with an activity that has been identified as a significant drinking water threat, a statement that the Source Protection Committee is of the opinion that,
 - i. the policy, if implemented, will promote the achievement of the objectives of the plan in accordance with paragraph 2 of Subsection 22 (2) of the *Clean Water Act, 2006*, and
 - ii. a policy to regulate or prohibit the activity is not necessary to achieve those objectives. O. Reg. 246/10, s. 12.

The Source Protection Committee resolved early in the development of the Source Protection Plan that the first version of the Source Protection Plan would only consider activities identified as significant drinking water threats under the *Clean Water Act, 2006*. However, a number of activities that currently are not considered drinking water threats were discussed. Section 2.2 of the Explanatory Document seeks to provide clarification on issues and concerns raised throughout the Source Protection Plan process by either the Lake Erie Region Source Protection Committee, other interested bodies or the general public.

The Source Protection Committee felt that it was important to provide clarification as to why certain activities that the public or other agencies may expect to be included in the Source Protection Plan have not been included.

4.0 LAKE ERIE SOURCE PROTECTION REGION

In an effort to share knowledge and resources for the purposes of developing source protection plans, a partnership was formed in 2004 between the Grand River, Long Point Region, Catfish Creek and Kettle Creek Conservation Authorities to create the Lake Erie Source Protection Region. The partnership was formalized in 2007 by Ontario Regulation 284/07 (Source Protection Areas and Regions) under the *Clean Water Act, 2006*. The Grand River Conservation Authority, referred to in the regulation as the Grand River Source Protection Authority, acts as the lead source protection authority for the region. **Map 4-1** represents the territory covered by the Lake Erie Source Protection Region, including municipal boundaries and main rivers and tributaries.

The four Source Protection Authorities agreed to jointly undertake research, public education, and watershed planning and management for the advancement of drinking water source protection for the respective watersheds. The watersheds have a long history of partnership and cooperation, and have a natural association by containing the majority of inland rivers and streams flowing from Ontario directly into Lake Erie.

Combined, the Lake Erie Source Protection Region represents a diverse area, ranging from intense agricultural production to large and rapidly expanding urban areas. The region spans an area from the City of St. Thomas in the west, to Halton Hills on the east, and as far north as Dundalk. The area includes 52 upper, lower and single tier municipalities, as well as two First Nations reserves.

The Lake Erie Source Protection Committee

The Source Protection Planning process is being led by a multi-stakeholder steering committee called the Lake Erie Region Source Protection Committee. The Committee was formed in November 2007, and is responsible for directing the development of the Assessment Reports and Source Protection Plans for each of the four Source Protection Areas in the Lake Erie Region. The list of current and past members is published on the [Lake Erie Source Protection Region website](#).

Message from the Committee

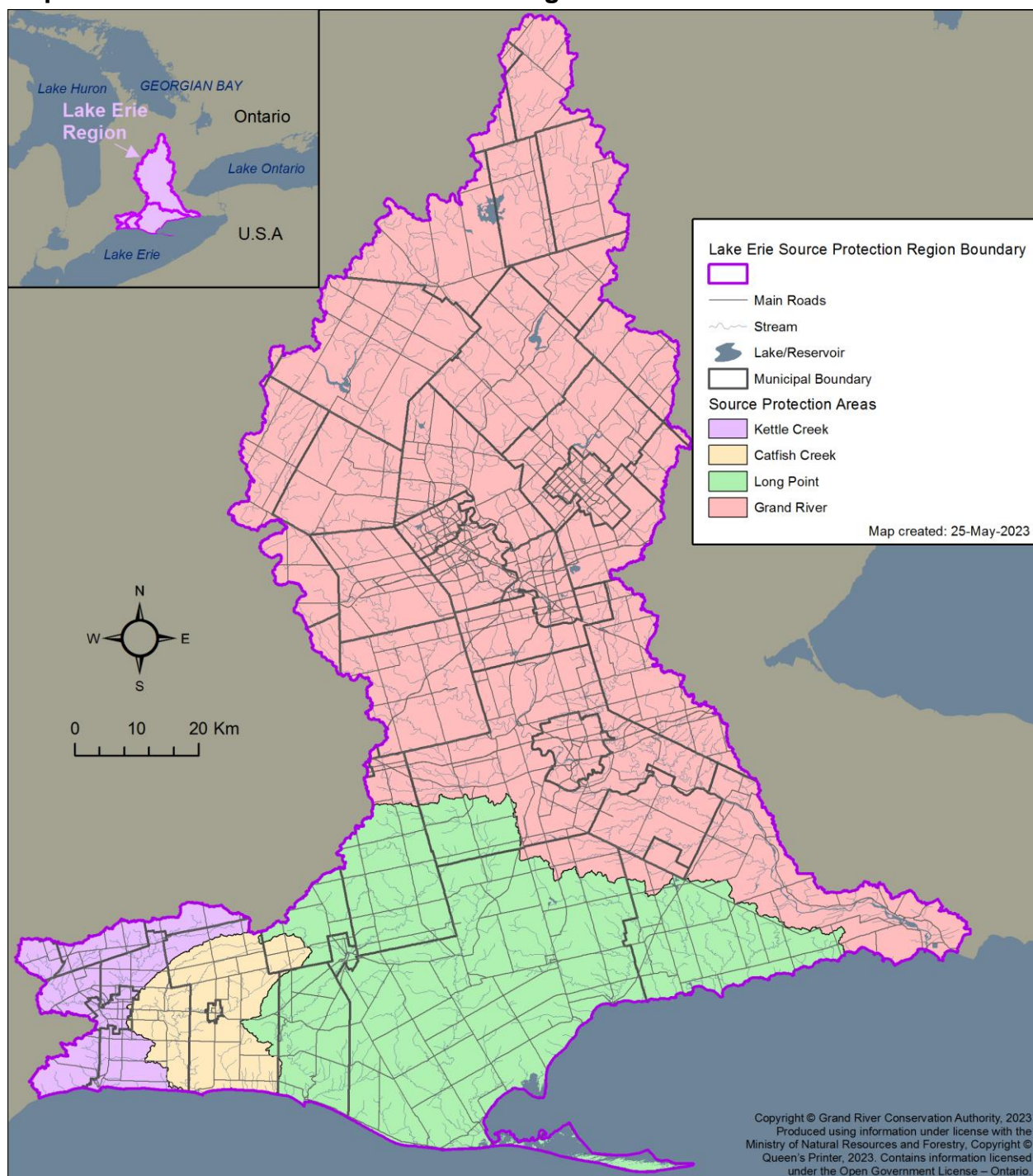
The overall objective of the Lake Erie Region Source Protection Committee, in partnership with local communities and the Ontario government, is to direct the development of source protection plans that protect the quality and quantity of present and future sources of municipal drinking water in the Lake Erie Source Protection Region. We will work with others to gather technical and traditional (local and Indigenous) knowledge on which well-informed, consensus-based decisions can be made in an open and consultative manner. In developing the Source Protection Plan, the Lake Erie Region Source Protection Committee intends to propose policies that are environmentally protective, effective, economical, and fair to local communities.

The Committee will strive to develop policies that are practical and implementable, and that focus limited resources on areas that net the greatest benefit, while recognizing that the plan must address significant threats so that they reduce the risk to drinking water sources. Where possible, the Committee will strive to develop policies and programs

that also provide a benefit to broader protection of water quality and quantity. The process to assess drinking water threats and Issues will be based on the best available science, and where there is uncertainty, we will strive to follow the precautionary approach.

In December 2008, the Source Protection Committee submitted to the Ministry of the Environment their Terms of Reference for the Kettle Creek Source Protection Area Assessment Report and Source Protection Plan. The Terms of Reference that set out the work plan for completing both the Assessment Report and Source Protection Plan received Ministerial approval on May 11, 2009. A copy of the Kettle Creek Source Protection Area Terms of Reference is available on the [Lake Erie Source Protection Region website](#).

Map 4-1: Lake Erie Source Protection Region



4.1 Kettle Creek Source Protection Area

The Kettle Creek watershed is situated in the heart of the Carolinian Life Zone on the north shore of Lake Erie. As shown on **Map 4-2** the watershed area is hourglass in shape and drains 520 square kilometres of land. The Kettle Creek watershed includes the south-central portion of Middlesex County and the City of London, the central portion of Elgin County, and the City of St. Thomas.

According to the Kettle Creek Conservation Authority (2021), the population of the Kettle Creek Source Protection Area is approximately 83,595 people. The most densely populated area in Kettle Creek is the City of St. Thomas with 1,032.6 people per square kilometre. The remaining areas in the Kettle Creek watershed are mainly rural agricultural and, as such, have relatively low population density. Even the portion of the City of London that is located within the watershed is not densely populated.

Land uses in the Kettle Creek watershed are characterized by small urban commercial, industrial and residential centres, surrounded by less-populated rural land used for intensive agricultural production. It has been calculated that 78 percent of the watershed lands are in agricultural use, 14 percent of land is forested or marginal, and 8 percent is designated urban use. The primary agricultural land use is cash crop, with a moderate amount of specialty cropping. Crop rotation and minimum till are commonly practised in the agricultural community, as are a number of other land conservation measures. Livestock operations are increasing in intensity, but the total number of animals is decreasing to below historical levels.

The tributaries to Kettle Creek include Dodd Creek, Upper Kettle Creek and Lower Kettle Creek. Kettle Creek originates at Lake Whittaker, a kettle lake in the northeastern portion of the watershed. The upper portion of Kettle Creek flows in a south westerly direction to the City of St. Thomas where it is joined by Dodd Creek, a major tributary flowing from the northwest part of the watershed. Kettle Creek flows predominately southward towards Lake Erie, and is joined by the tributaries of Beaver and Mill Creeks before emptying into Lake Erie at Port Stanley.

The total drainage area of Kettle Creek at the outlet to Lake Erie is approximately 440 square kilometres. Numerous small watercourses bordering Kettle Creek along the Lake Erie shoreline drain directly into Lake Erie.

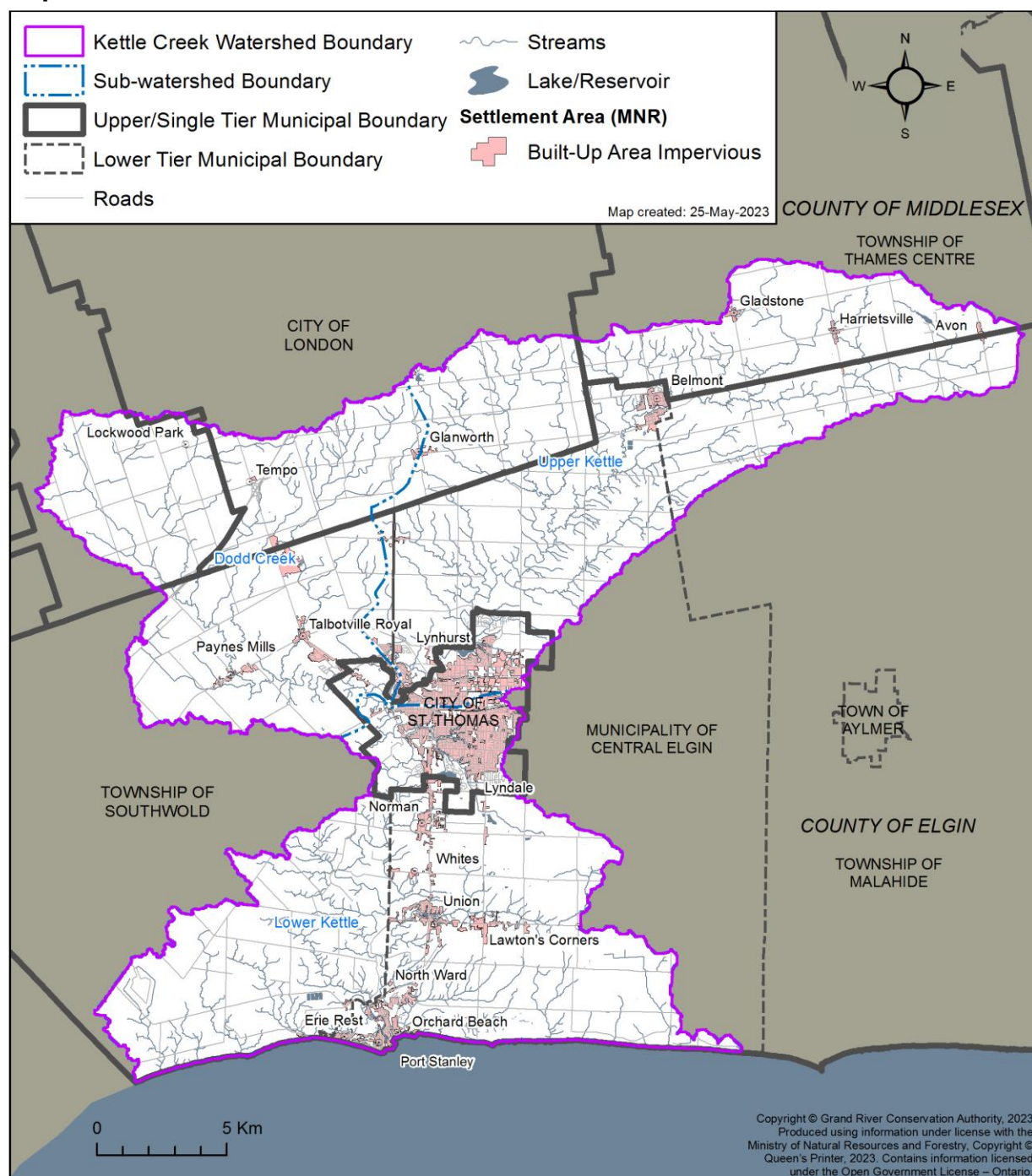
Municipal Systems

Belmont contains the only groundwater source for municipal water supply in the Kettle Creek Watershed. The remaining municipalities receive their water from Lake Erie, from either primary or secondary water systems from the Elgin Area Primary Water Supply System intake in Lake Erie, located near Port Stanley. These communities include St. Thomas and smaller communities in both Central Elgin and Southwold. The water that is distributed via pipelines throughout Elgin County also supplies approximately 15 to 20 percent, by volume, of the City of London's total water consumption.

The drinking water supply system for the Village of Belmont consists of two deep artesian wells, a pumphouse, underground reservoir and distribution system. The system is classified by the Ministry of the Environment, Conservation and Parks as a Large Municipal Residential System. The overburden aquifer is sand and gravel, and is confined by a thick layer of clay.

The Elgin Area Primary Water Supply System is owned by the Elgin Area Primary Water Supply System Joint Board of Management. The intake and treatment plant facility is located in the Municipality of Central Elgin along the north shore of Lake Erie, two kilometres north east of Port Stanley. Treated water from the Elgin Area Primary Water Supply System is distributed to seven municipalities (Aylmer, Bayham, Central Elgin, London, Malahide, Southwold and St. Thomas) through distribution systems owned and operated by the receiving municipality. The Elgin Area Primary Water Supply System supplies drinking water to the majority of serviced communities within the Kettle Creek Source Protection Area, including Southwold, London, St. Thomas and Elgin.

Map 4-2: Kettle Creek Source Protection Area



5.0 DEVELOPMENT OF THE SOURCE PROTECTION PLAN

5.1 Establishing a Framework

The Source Protection Committee established a Terms of Reference prepared in accordance with the *Clean Water Act, 2006*. This Terms of Reference was approved by the Minister of the Environment on May 11, 2009, and included: a description of the source protection planning process; maps of the source protection area and region; a description of the source protection area; a list of members of the Source Protection Committee; a list of municipalities wholly or partially within the Source Protection Area; a list of existing and planned municipal drinking water systems in the Source Protection Area; a list of matters that affect other source protection regions; and high level cost estimates, schedules, and assignment of responsibility for tasks.

The municipal role as defined within the source protection planning process was critical to the success of this program. Each task within the process was given an assigned lead – either municipalities or the Conservation Authority, on behalf of the Source Protection Committee. Regardless of which party takes the lead for undertaking a particular task, the Lake Erie Region Source Protection Committee has the decision-making authority regarding the acceptability of the work or findings to be included in the Assessment Report and Source Protection Plan to be submitted, through the Source Protection Authority, to the Ministry of the Environment, Conservation and Parks for final approval.

Where municipalities intended to take the lead on a task, a municipal council resolution was required to assume the responsibility to undertake the task.

5.2 Preparing and updating the Source Protection Plan

The Source Protection Plan builds on the information contained in the earlier reports. It sets out the actions required to address the drinking water threats identified in the science-based Assessment Report, and to meet the objectives outlined in the *Clean Water Act, 2006*. The Source Protection Plan sets out how drinking water threats will be reduced, eliminated, or monitored, who is responsible for taking action, timelines, and how progress will be measured.

5.2.1 Discussion Papers

As part of the early Source Protection Plan development process, a series of Discussion Papers were developed in 2011 by the Lake Erie Source Protection Committee for the prescribed drinking water quality threats and sub-threats, local threats, and optional content as outlined in **APPENDIX B**. These discussion papers provide background information on the drinking water threats and available policy tools that could be used to address each threat.

Consultation with agency and industry stakeholders was conducted between February and April 2011 through a series of nine workshops. Participants offered input on the potential policy options and policy tools provided by the *Clean Water Act, 2006*. The

results of the workshops were recorded and compiled in threat specific outcome reports. These outcome reports were subsequently reflected in the Discussion Papers, which served to elicit further feedback from stakeholders and the Source Protection Committee on policy options.

After completion of the Discussion Papers, policy choices were selected by the Lake Erie Region Source Protection Committee and municipal councils with input from various stakeholders and policy developers. The policies were then consolidated into the Source Protection Plan.

5.2.2 Pre-consultation with Implementing Bodies

Before this Plan was released to the public for review and comment, the Source Protection Committee pre-consulted on draft policy amendments with individuals and agencies that are responsible for implementing them. Notices of pre-consultation for the Kettle Creek Source Protection Plan were distributed to implementing bodies, and government ministries that have obligations under the *Clean Water Act, 2006*. All comments on draft policies are considered. The following is a summary of what is required during pre-consultation under O. Reg. 287/07:

Section 36: Notice of plan revisions to the implementing person or body responsible for implementing policies, draft policy text (including vulnerable area mapping), summary of rationale for amendments and request for submission of written comments.

Notices have been sent to implementing bodies that have obligations under the *Clean Water Act, 2006*, of the opportunity for pre-consultation on Plan amendments prior to release of this Source Protection for public review and comment. The pre-consultation comment period was set from January 25 to February 28, 2023.

5.2.3 Public Consultation

- Additional work has been completed since the latest approval of the Kettle Creek Assessment Report and the Source Protection Plan in 2014. The public consultation period for the Kettle Creek Assessment Report and Source Protection Plan update was scheduled from April 5 to May 9, 2023. The consultation period provided an opportunity for stakeholders and the public to view and provide comment on the Kettle Creek Assessment Report and Source Protection Plan. The following steps were undertaken to satisfy the requirements of the *Clean Water Act, 2006*: The Assessment Report and Source Protection Plan was posted publicly online on the [Lake Erie Source Protection Region website](#) and in hard copy at the head offices of the Kettle Creek Conservation Authority and Municipality of Central Elgin.
- Notification of public consultation was sent to affected implementing bodies.
- Notification of the opportunity for public consultation was published in local newspapers.

- Property specific mailings to landowners affected by the Source Protection Process.

5.3 First Nations Involvement

The involvement of First Nations was very important to the planning and implementation of Source Protection Plans to achieve source protection both on and off First Nations' land. The *Clean Water Act, 2006* included provisions that allow a First Nation's drinking water system, on a voluntary basis, to be considered as part of the source protection planning process.

There are no First Nations reserves located within the Kettle Creek Watershed.

5.4 Liaison with Other Source Protection Partners

The Kettle Creek Source Protection Area neighbours other Source Protection Areas and conservation authorities (see **Map 5-1**) as follows:

Within the Lake Erie Source Protection Region

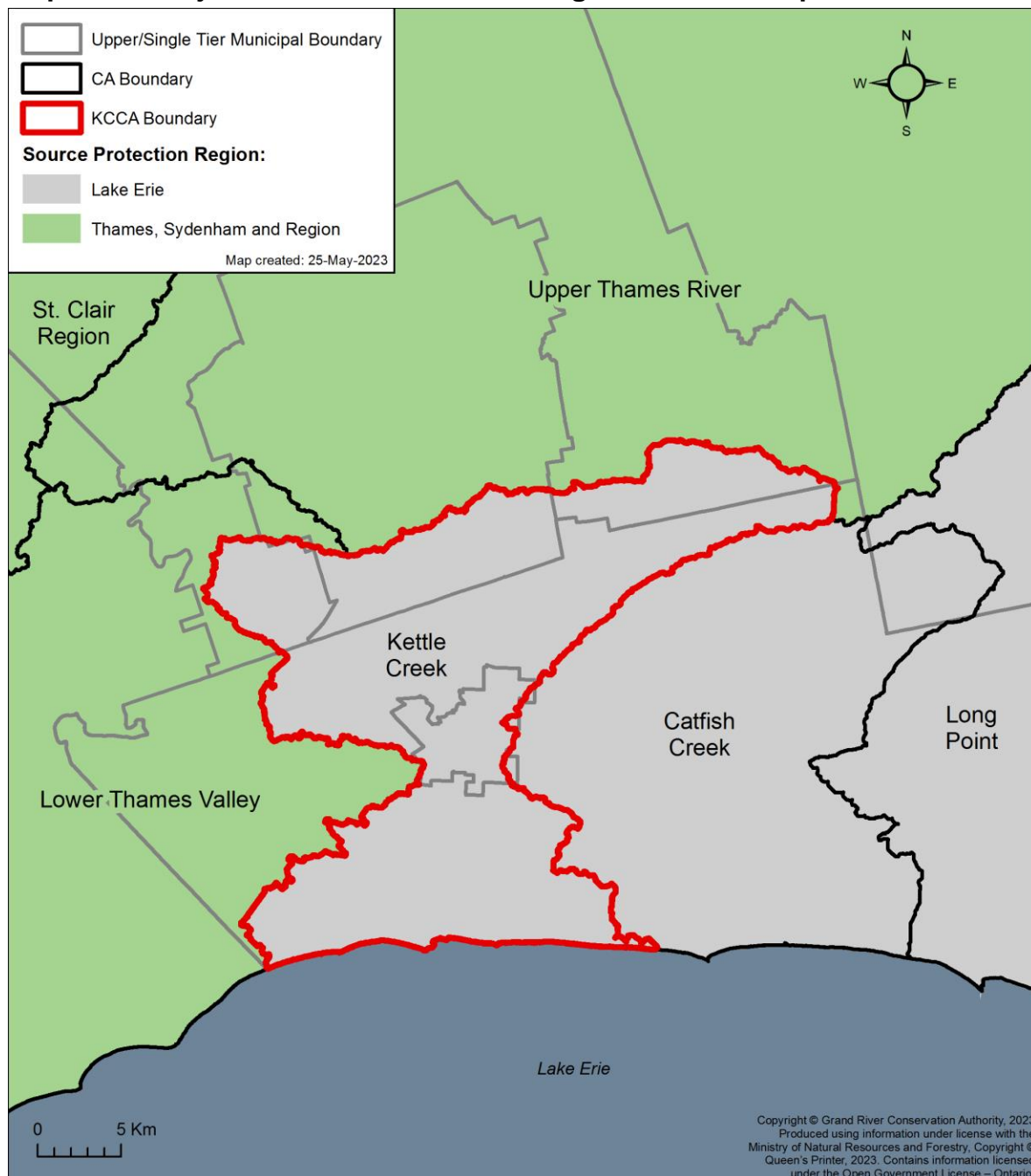
- Catfish Creek Conservation Authority

Outside of the Lake Erie Source Protection Region

- Thames, Sydenham and Region Source Protection Region
 - Upper Thames River Conservation Authority
 - Lower Thames Valley Conservation Authority

In cases where two or more Source Protection Committees have jurisdiction in one municipality, the municipality has been engaged and has provided guidance to ensure consistent policy direction where possible. The same is true for bordering source protection authorities.

Communication with neighbouring regions throughout the source protection planning process has included sharing information through the [Lake Erie Source Protection Region website](#), teleconferences, workshops, and meetings. Although not a requirement, consistency in policy direction was strived for through this sharing of information and early engagement activities.

Map 5-1: Adjacent Source Protection Regions and Municipalities

6.0 DRINKING WATER THREATS

6.1 Identifying Drinking Water Threats

The Ontario *Clean Water Act, 2006* defines a drinking water threat as, “an activity or condition that adversely affects or has the potential to adversely affect the quality or quantity of any water that is or may be used as a source of drinking water, and includes an activity or condition that is prescribed by the regulation as a drinking water threat.”

The Technical Rules (MECP, 2021) list five ways to identify a drinking water threat:

- 1) Through an activity prescribed by the *Clean Water Act, 2006* as a Prescribed Drinking Water Threat;
- 2) Through an activity identified by the Source Water Protection Committee as an activity that may be a threat and (in the opinion of the Director) a hazard assessment confirms that the activity is a local threat;
- 3) Through a condition that has resulted from past activities that could affect the quality of drinking water;
- 4) Through an activity associated with a drinking water issue; and
- 5) Through an activity identified through the events-based approach.

The methods used to identify drinking water threats are described in detail in the Assessment Report found on the [Lake Erie Source Protection Region website](#) and summarized below. To identify drinking water threats, studies were completed in the areas around municipal wells and surface water intakes to identify activities that could threaten municipal water supplies. A summary of the technical studies and enumeration of significant drinking water threats undertaken to characterise the Kettle Creek watershed are found in the Assessment Report. A brief description of the key components of this report are provided below.

Water Quality Risk Assessment

The Water Quality Risk Assessment identified ground and surface water vulnerable areas within the Kettle Creek Source Protection Area, and evaluated the risk of contamination from specific drinking water threats (existing or future activities, or existing conditions that result from a past activity) entering drinking water supplies.

Groundwater Vulnerability

The Groundwater Vulnerability module identified wellhead protection areas (WHPA) around municipal drinking water supply wells, highly vulnerable aquifers (HVA), and significant groundwater recharge areas (SGRA). The relative vulnerability within each of these areas (with the exception of SGRAs) was characterized with a numeric score. The categorization reflected the susceptibility of the aquifer(s) in the vulnerable areas to surface (or near surface) sources of contamination. Vulnerable areas were delineated and assigned vulnerability scores, along with the level of uncertainty associated with each score.

Surface Water Vulnerability

The Surface Water Vulnerability module identified Intake Protection Zones (IPZ) for Lake Erie and riverine water supplies, assigned a vulnerability score for each of the zones referring to the comparative likelihood of a contaminant of concern reaching an intake. Potential human-made pathways that may allow contaminants of concern to enter the water directly, such as storm sewers, sanitary sewers, combined sewers, cooling water discharge sewers, and open drainage ditches were analyzed. Contaminants of concern reaching an intake in significant quantities would likely be associated with storm events, spills or upset conditions such as extended power outages or pipes rupturing where they cross water courses.

The IPZs were delineated and assigned vulnerability scores, obtained by multiplying the source vulnerability factor with the area vulnerability factor. A level of uncertainty was associated with each score. Vulnerability scoring was used to rank threats to drinking water in the surface water quality risk assessment.

6.2 Threats Inventory and Issues Evaluation

The Threats Inventory and Issues Evaluation included the areas around each drinking water intake and wellhead. A hazard rating associated with the inventoried drinking water threats was used to rate the likelihood of chemical or pathogenic contamination of a drinking water source, as well as the potential severity of its impact. An inventory of contaminant pathways was mapped, and each threat was categorized as significant based on the qualitative assessments in the vulnerable areas.

Village of Belmont Threats Assessment

No existing significant threats, significant conditions, or Issues were enumerated within the Belmont Wellhead Protection Areas.

Elgin Area Water Supply Threats Assessment

Under the Technical Rules (MOE, 2009a), an activity can be identified as a significant drinking water threat following the events-based approach, if, within an Intake Protection Zone (IPZ), the activity could result in the release of a chemical parameter or pathogen that would be transported to the intake and result in the deterioration of the water for a drinking water source (Rule 130).

At the time of the investigation (2012), two significant drinking water threat events-based investigations were completed.

- the handling and storage of 5,000 m³ or more of commercial fertilizer and,
- the handling and storage of 6,000 Litres or more of fuel.

In recent years, the bulk storage tanks of fertilizer were removed and the previous industrial lands are being rezoned as part of the Secondary Plan for the Port Stanley Harbour area. The Events Based Area and associated IPZ-3 for the Urea Ammonium

Nitrate (UAN) fertilizer threat have been removed as part of the 2022 assessment report update.

Prescribed Drinking Water Threats

Section 1.1 of Ontario Regulation 287/07, made under the *Clean Water Act, 2006* identifies the following twenty-two (22) activities as 'prescribed drinking water threats'. This includes twenty (20) drinking water quality threats and two (2) drinking water quantity threats:

1. The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the *Environmental Protection Act, 1990*.
2. The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.
3. The application of agricultural source material to land.
4. The storage of agricultural source material.
5. The management of agricultural source material.*
6. The application of non-agricultural source material to land. **
7. The handling and storage of non-agricultural source material.
8. The application of commercial fertilizer to land.***
9. The handling and storage of commercial fertilizer.
10. The application of pesticide to land.
11. The handling and storage of pesticide.
12. The application of road salt. †
13. The handling and storage of road salt.
14. The storage of snow.
15. The handling and storage of fuel.
16. The handling and storage of a dense non-aqueous phase liquid.
17. The handling and storage of an organic solvent.
18. The management of runoff that contains chemicals used in the de-icing of aircraft.
19. An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body. ‡
20. An activity that reduces the recharge of an aquifer. ‡
21. The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard.
22. The establishment and operation of a liquid hydrocarbon pipeline.

* No policies were included for the management of agricultural source material, i.e., aquaculture (prescribed drinking water threat #5) as the circumstances for this threat are such that the vulnerability scoring would never present a significant threat in the vulnerable areas in the Kettle Creek Source Protection Area.

** The application of most types of non-agricultural source material (NASM) can only be a significant drinking water threat if the percent managed land and livestock density meet specific criteria. The policy included in the Kettle Creek Source Protection Plan for the application of NASM (#6) only applies to a subset of category 3 NASM, which includes NASM from a meat plant or sewage works.

*** The application of commercial fertilizer (#8) can only be a significant drinking water threat if the percent managed land and livestock density meet specific criteria. This situation does not currently exist within the WHPA-A of the Belmont well and therefore policies were not included to address this threat.

† The application of road salt (#12) is only a significant drinking water threat if the impervious area is equal to or greater than 80 percent. This situation does not currently exist within the WHPA-A of the Belmont wells and therefore policies were not included to address this threat.

‡ The Kettle Creek Source Protection Plan does not contain policies relating to water quantity (#19 and #20). As the potential for water quantity stress is low in the Kettle Creek Region, and is not expected to increase significantly in the future, these policies were not required.

For a more complete description of the drinking water quality threats, see APPENDIX A.

Drinking Water Threat Tables

The Technical Rules (2021) includes tables of drinking water threats sorted according to the various activities that could constitute a significant, moderate or low threat to municipal drinking water sources.

In the tables, each of the twenty-two (22) prescribed drinking water threats has been broken out into a number of circumstances that are significant, moderate, or low threats depending on the vulnerability score and the vulnerable area. Drinking water threats are also available through the [Source Water Protection Threats Tool](#).

The Kettle Creek Source Protection Plan addresses primarily significant drinking water threats. Additional drinking water threat policies and optional content, as approved by the Source Protection Committee, are also included and described below.

6.3 Optional Content

O. Reg 287/07 provides for optional content to be included in the Source Protection Plan. The Source Protection Committee decided that the first Source Protection Plans should not include policies for moderate and low drinking water threats; incentive programs or education/outreach programs for systems not included in the Terms of Reference; or policies for data collection for climate change. On January 13, 2011, the Source Protection Committee passed a resolution (Res. No. 05-11) that determined the Source Protection Plans should include the policies listed below:

1. Policies on Conditions from past activities that have been identified as significant drinking water threats in the Assessment Reports;
2. Policies to update spill prevention, spill contingency or emergency response plans along highways, railways or shipping lanes in Intake Protection Zones (IPZ) or Wellhead Protection Area (WHPA);
3. Policies that govern transport pathways;
4. Policies for the monitoring of moderate and low threats in specific situations;
5. Anything that will assist in understanding the plan; and
6. Dates for when the policies take effect.

Further detail on the rationale behind what topics were not included in this Source Protection Plan is provided in the Explanatory Document.

A more complete description of each of the optional content sections is presented in **APPENDIX A**.

6.4 Kettle Creek Watershed and Great Lakes Agreements

Under the *Clean Water Act, 2006* the following Great Lakes agreements must be considered in the work undertaken in Assessment Reports:

- Canada – United States Great Lakes Water Quality Agreement (GLWQA)
- Canada – Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA)
- Great Lakes Charter
- Great Lakes – St. Lawrence River Basin Sustainable Water Resources Agreement

The Great Lakes Water Quality Agreement and the Canada – Ontario Agreement generally deal with water quality concerns, while the Great Lakes Charter, the Great Lakes Charter Annex, and the Great Lakes – St. Lawrence River Basin Sustainable Water Resources Agreement provide principles for joint water resources management and water quantity and quality concerns in the Great Lakes Basin.

The Kettle Creek watershed drains directly into Lake Erie. The work described in the approved Assessment Report considered the impact of the Great Lakes Agreements on the Elgin Area Primary Water Supply. Further clarification from the Government of Ontario is required prior to determining whether the water supplies may be impacted in the future. Given the level of uncertainty regarding the impact of the Great Lakes Agreements on the Elgin Area Primary Water Supply, it was not considered as part of the approved Assessment Report; therefore, no Great Lake Policies are included in the Kettle Creek Source Protection Plan at this time.

7.0 HOW TO READ THE SOURCE PROTECTION PLAN

7.1 Legal Effect of the Source Protection Plan

As required by the *Clean Water Act, 2006*, the Source Protection Plan policies must identify who will be responsible for implementation. The legal effect describes whether there is a legal obligation for the responsible party to implement the policy. Three factors determine the legal effect of a policy: 1) the policy tool, 2) the ranking of the threat (significant/moderate/low), and 3) the implementing body. This information is presented in the Legal Effect Matrix, included in **APPENDIX B**. Further information about the legal effects of the Plan is presented in Volume II.

7.2 Source Water Protection Policy Tools

The *Clean Water Act, 2006* (O. Reg. 287/07) enables a range of approaches or “policy tools” to achieve the objectives of the Source Protection Plan.

7.2.1 Part IV Tools

Part IV of the *Clean Water Act, 2006* created additional tools that can be used to implement a significant threat policy to address significant drinking water threat activities. Specifically, Part IV provides Source Protection Committees with the following tools to address significant drinking water activities:

- Prohibiting the activity (Section 57)
- Requiring a risk management plan for the activity (Section 58)
- Restricted Land Use (Section 59)

Section 57: Prohibition

Section 57 Prohibition can be used to prohibit both existing and/or future occurrences of an activity.

Section 58: Risk Management Plans

Section 58 risk management plans are site-specific documents, established after the approval of the Source Protection Plan. A risk management plan outlines the actions required to address identified significant drinking water threat(s), accounting for risk management measures already in place. The risk management plans are negotiated between the risk management official and the person engaging in the activity that is causing a significant drinking water threat. A risk management plan can be thought of as a means of applying regulatory controls to an activity; it is a plan that regulates how a significant drinking water threat activity is undertaken – one which offers the opportunity for practical considerations and local agreement. A risk management plan must be established for the significant drinking water threat activity to be undertaken or continue to be undertaken at a site thus ensuring reasonable mitigative measures are in place to protect the water supply.

While the intent is for risk management plans to be voluntarily negotiated wherever possible, the authority does exist within the *Clean Water Act, 2006* for a risk management plan to be imposed by a risk management official on a person engaged (or proposing to engage) in an activity. Under Section 58 of the *Clean Water Act, 2006* the risk management official can give the property owner a notice establishing a deadline for negotiating the risk management plan. If this deadline is not met, the risk management official may establish a risk management plan by order. It is intended that this authority would be used only as a last resort.

Section 59: Restricted Land-use

Where the Source Protection Plan includes policies using Section 57 prohibition or Section 58 risk management plans, a complementary policy that uses Section 59 may exist. The purpose of Section 59 is to ensure that, if a development that may include a significant drinking water threat activity is proposed in an area that is subject to Section 57 or 58 policy, then approvals for the proposal (i.e. municipal approvals, planning approvals or building permits) cannot be issued until the risk management official has an opportunity to review the proposal and ensure its compliance with those provisions (MOE Administering & Enforcement of Part IV, 2011).

7.2.2 Land-use Planning

The *Clean Water Act, 2006* recognizes the authority of the Planning Act and Condominium Act to regulate land uses and provides for the implementation of certain source protection plan policies through Ontario's existing land use planning framework. The Planning Act and Condominium Act in Ontario provide tools with which municipalities can regulate development as they plan their communities, such as allocating land for agricultural, residential, commercial or mixed uses.

7.2.3 Prescribed Instruments

Under the *Clean Water Act, 2006*, an "instrument" is defined as any document of legal effect, including a permit, licence, approval, authorization, direction or order issued or otherwise created under an Act. These instruments listed in Section 1.0.1(1) of O. Reg. 287/07 are prescribed for the purposes of the *Clean Water Act, 2006* policy development.

Prescribed Instruments listed in Section 1.0.1(1) of O. Reg. 287/07 under the *Clean Water Act, 2006* are as follows:

- Section 39 of the *Environmental Protection Act, 1990* with respect to environmental compliance approvals for the use, operation, establishment, alteration, enlargement or extension of waste disposal sites or waste management systems;
- Sections 7 and 11 of the *Pesticides Act* with respect to permits for land exterminations, structural exterminations and water exterminations;

- Sections 10, 14, 15.2, and 28 of O. Reg. 267/03 made under the Nutrient Management Act with respect to nutrient management plans, nutrient management strategies and non-agricultural source material plans;
- Sections 8, 11, 13, 20, 30, 36, and 37 of the Aggregate Resources Act with respect to licenses, wayside permits, aggregate permits or site plans accompanying applications for wayside permits or aggregate permits;
- Sections 34 and 53 Ontario Water Resources Act with respect to permits to take water and approvals to establish, alter, extend or replace new or existing sewage works; and
- Sections 40 and 44 of the *Safe Drinking Water Act, 2002* with respect to drinking water works permits and municipal drinking water licenses.

7.2.4 Non-Regulatory Tools

In addition to the tools listed above, a Source Protection Plan can use a number of non-regulatory tools to manage existing and future drinking water threats. The legal effect of these policy tools is dependent on the party responsible for implementation and the risk level of the threat being addressed. The following are the non-regulatory tools provided by the *Clean Water Act, 2006*:

- Education and outreach programs;
- Incentive programs;
- Establishment of stewardship programs;
- Specify and promote best management practices;
- Establishment of pilot programs;
- Govern research; or
- Specify actions to be taken to implement the plan or to achieve the plan's objectives.

These policy approaches may be applied alone or in combination with other policy approaches to deal with a particular drinking water threat.

Education and Outreach and Incentive Programs

Education and outreach programs can be used to inform the identified property owners of the drinking water threats associated with their property. Further, these programs can encourage the use of best management practices to manage the drinking water threat. Incentives are used to encourage an action by means of support, usually financial.

Stewardship Programs

In Ontario, stewardship programs are typically collaborative partnerships between organizations (who provide financial or technical assistance, information, or data) and individuals who take action at a local scale. This assistance may be provided for the development of educational materials, incentives for infrastructure upgrades, or to

maintain a monitoring and information network. Local conservation authorities may already administer stewardship programs for drinking water source protection or for environmental conservation that also benefits source protection.

Best Management Practices

Often, with activities like agriculture or construction, there are also sector established best management practices that promote the safest or most efficient way of doing something. Information on typical best management practices may be available from professional organizations and industry associations, as well as from people who operate in that sector. Best management practices can apply to a range of measures from operational procedures to administrative processes. While best management practices are generally voluntary in nature, source protection plan policies can support the continuation of these practices and encourage their use at other sites where similar threat activities occur.

Pilot Programs

Emerging technologies or new methods to address certain threats to drinking water may need to be assessed for their applicability in different situations, or for their suitability to address a wider range of threats. Pilot programs could test these methods or technologies and look at the feasibility of the approach in addressing particular threats or to examine potential improvements to these methods or technologies.

Research

There may be situations where the Source Protection Committee feels that further research is necessary to develop new methods or new technologies for addressing certain threats. This may be in cases where existing methods to address the threat have not been as effective as desired under local conditions and the committee feels that research may find a better solution or modification.

Specify Actions

The Source Protection Plan can include specific actions to achieve the Plan's objectives. Specify Action refers to a set of policy tools described within portions of Section 26 and 27 of O. Reg. 287/07. This type of policy specifies that an implementing body undertake a particular action to address either a specific threat identified in the Assessment Report or a transport pathway. A specify action policy can be a significant threat policy if it addresses an activity that is identified as a significant threat. Some specify action policies can have a 'comply with' (CW) legal effect if they address significant drinking water threats and are directed at a municipality, local board or source protection authority (these appear on List E within the appendices of the Plan found in Volume II). Other specify action policies are 'Non-Legally Binding' (NB), for example, if they rely on specify action tools and are directed at an implementing body other than a municipality, local board or source protection authority, such as a provincial ministry (these appear on List K within the appendices found in Volume II). Specify action policies can also be grouped as strategic action policies (List J of Volume II) if they meet the criteria set out in Section 33 of O. Reg. 287/07.

Specify Action policies are policies identified in the following sections of the O. Reg. 287/07:

- Section 26 – policies that specify the actions to implement the source protection plan or achieve the plans objectives with respect to drinking water threats identified in the Assessment Report;
- Section 26 – policies that specify the actions with regards to climate data gathering;
- Section 26 – policies that specify the actions with regards to updating spill prevention and spill contingency plans or emergency response plans along highways, railway lines, or shipping lanes;
- Section 27 – policies that specify the actions with regard to transport pathways

7.2.5 Strategic Action

Strategic Action refers to a group of policies as per Section 33 of O. Reg. 287/07. These are policies that do not address significant threats, are not Great Lakes policies, are not monitoring policies, and are not “have regard to” policies under the *Planning Act, 1990* or the *Condominium Act, 1998* or “have regard to” policies that affect prescribed instruments. For the most part, these policies address items such as Transport Pathways, Spills Prevention and Response Plans, and moderate or low threat policies that use tools other than Planning Act or prescribed instruments. Strategic Action policies appear on List J within the appendices of Volume II of the Source Protection Plan and are Non-Legally Binding.

7.3 How to Read Volume II of the Source Protection Plan

Sections 1 and 2 of Volume II present information required to understand the policies contained in the Source Protection Plan. Section 3 of Volume II contains the Source Protection Plan policies that have been developed to meet the objectives of the *Clean Water Act, 2006*. The following is a guide to how to read Volume II to determine if a property is or would be subject to the presented Source Protection Plan policies.

Section 3 is divided into four parts: (1) definitions needed to interpret the Source Protection Plan policies, (2) policies applicable in the entire Kettle Creek Source Protection Area, (3) policies applicable for the Village of Belmont Drinking Water Supply System, and (4) policies applicable for the Elgin Area Primary Water Supply System.

For each drinking water system, Policy Applicability Maps are included within the schedules. This mapping has been adapted from the Assessment Report mapping, available on the [Lake Erie Source Protection Region website](#). The Policy Applicability Mapping presents a summary of the prescribed drinking water threats and the location where policies will apply based on the 2021 Technical Rules under the *Clean Water Act, 2006*. As the Policy Applicability Map is a summary, not all of the details about the circumstances under which the policies would apply are captured and the reader should refer to the [Source Water Protection Threats Tool](#).

A summary of which activities are significant drinking water threats and where they exist is also presented in the Assessment Report in a tabular format. The table, given for each of the drinking water systems, is found under the Drinking Water Quality Threats Assessment Section of the Assessment Report. The table, along with the [Source Water Protection Threats Tool](#), will assist the reader in determining which drinking water threats are significant under various circumstances.

The first step to determine if the property is subject to a Source Protection Plan policy is to determine if the property is located within an area where a policy applies as shown on the Policy Applicability Maps in the Schedules. Once located, the user should have the following information:

- The wellhead protection area and/or intake protection zone where the property is located.
- The vulnerability score (how vulnerable the area is to contaminants). As indicated on the Policy Applicability Map, each vulnerability score is associated with a colour. This colour is then reflected in the summary table provided on the map to indicate which potential drinking water threats would apply to a specific location.
- Prescribed Drinking Water Threats that would be significant drinking water threats if present on the property.

The reader should next consult the [Source Water Protection Threats Tool](#) to find the exact detailed information about the circumstances that would make the activity a significant drinking water threat.

With these three pieces of information, the reader should then consult the applicable policies listed under the Prescribed Drinking Water Threats Section of Volume II of the Source Protection Plan. A review of the policies, aided by the sidebar notes, should indicate which policy would apply to that property based on the activities being conducted.

8.0 SOURCE PROTECTION PLAN IMPLEMENTATION

8.1 Status and Effect

Following the Minister of the Environment, Conservation and Parks' approval of the Source Protection Plan, the decision notice will be posted on the Environmental Bill of Rights Registry. The Source Protection Plan takes effect on January 1, 2015.

8.2 Roles and Responsibilities

The implementation of the source protection policies included in Volume II of this Source Protection Plan requires the cooperation of the various source protection partners. The following section outlines the key roles and responsibilities of the players in the implementation of the Source Protection Plan.

Source Protection Committee

The Source Protection Planning process is being led by a multi-stakeholder steering committee called the Lake Erie Region Source Protection Committee. The Committee was formed in November 2007, and is responsible for directing the development and update of the Assessment Reports and Source Protection Plans and annual reporting for each of the four Source Protection Areas in the Lake Erie Region. The committee is comprised of 24 local stakeholders and a Chair as defined in the Regulation.

The Lake Erie Region Source Protection Committee has the decision-making authority regarding the acceptability of the work or findings to be included in the Assessment Report and Source Protection Plans.

Source Protection Authority

The Conservation Authority as the Source Protection Authority is responsible for providing technical and administrative support to the Source Protection Committee. The Source Protection Authority, along with municipalities and other partners, has an important role in monitoring and reporting on the progress of the Source Protection Plan's implementation. They will continue their role as liaison with the Ministry of Environment, Conservation and Parks and local conservation authorities and municipalities. The Source Protection Authority will also submit any Updated Source Protection Plans, Terms of Reference, and Assessment Reports to the Ministry of the Environment, Conservation and Parks for approval.

Province

The Province is required to carry out the significant threat policies associated with provincial instruments as prescribed in O. Reg. 287/07 s. 1.0.1 and implement monitoring policies developed under Section 45 of the *Clean Water Act, 2006*. Also, other Non-Legally Binding policies will request the Province to take specific actions as an implementing body.

Municipalities

Municipalities have a strong role in implementing Source Protection Plans. Currently, municipalities are responsible for the delivery of municipal drinking water and for land use planning. Many of the source protection policies included in this Plan build on these roles, meaning implementation of the Source Protection Plan policies is for the most part incorporated into existing municipal planning processes.

Municipalities are responsible for bringing their Official Plans, by-laws, plans of subdivision and plans of condominium into conformity with the significant threat policies contained in the Plan. They are required to ensure that any future undertaking does not conflict with the Source Protection Plan.

For the implementation of policies that use Part IV Tools, new roles are required of municipalities, as outlined in the *Clean Water Act, 2006* – a risk management official and a risk management inspector (Section 47(6)). The risk management official is responsible for negotiating or establishing risk management plans (Section 58). In addition, the risk management official has the authority to: establish interim risk management plans (Section 56); establish enforcement orders (Section 63) and cause things to be done (Section 64); enter property if appropriately trained (Section 66); issue orders to pay costs (Section 67); and submit annual reports (Section 81). The risk management inspector has authority to conduct inspections (Section 62), issue enforcement orders (Section 63), issue an order causing a thing to be done (Section 65 where person liable is unknown), and enter property (Section 66). The risk management inspector is also responsible for prosecution related to activities stipulated by Section 106 of the *Clean Water Act, 2006*.

The Risk Management Official and Risk Management Inspector are required to meet specific regulatory requirements to manage certain drinking water threat activities, hold specific qualifications, and receive proper training, as outlined in the regulation. It is permitted that risk management officials and risk management inspectors may be cross-appointed i.e. an individual who is appointed as a risk management official can also be appointed as a risk management inspector. The *Clean Water Act, 2006* contains provisions whereby a municipality can enter into an agreement with other entities, including a board of health, planning board, other municipalities or the source protection authority, in which case that entity would be responsible for Part IV enforcement. Two or more municipalities can also share the responsibility for enforcing Part IV.

Landowners and Business Owners

Individual property owners and local businesses may be asked to take action on significant drinking water threats occurring on their properties, where they are located within wellhead and intake protection areas. The action taken will be dependent on the Source Protection policy outlined in Volume II of this Source Protection Plan.

Other Agencies/ Parties

Source Protection Plan policies can also provide direction to other agencies and parties such as the Federal Government and the Technical Safety and Standards Authority

(TSSA). The action taken and legal effect is dependent on the Source Protection Plan policy outlined in Volume II of this Source Protection Plan.

8.3 Annual Review Process

The *Clean Water Act, 2006* requires that the Source Protection Authority prepare and submit an annual progress report and supplemental form describing the measures taken to address existing and future significant drinking water threats, the results of monitoring and the progress that has been achieved in meeting the Source Protection Plan's objectives. The annual reports are submitted to the Director by May 1 in the year following the year to which the reports apply. The annual progress reports and supplemental form rely on several sources for information. Further details on what information must be included in these annual reports can be found in Section 46 of the *Clean Water Act, 2006* and Section 52 of O. Reg. 287/07.

Prior to the submission to the Ministry of the Environment, Conservation and Parks, the annual reports are submitted to the Source Protection Committee with the opportunity to provide comments. The report, along with the comments from the Source Protection Committee, will then be submitted to the Ministry of the Environment, Conservation and Parks allowing them to monitor progress of the Plan against its objectives.

The annual progress reports and supplemental form provide the basis for future Source Protection Plan amendments and will serve as important information in the ongoing assessment of progress towards source water protection.

8.4 Financing and Costs

As of the date of this Source Protection Plan, was completed there has been no long-term financial commitment from the Ministry of the Environment, Conservation and Parks for implementation of Source Protection Plans. Starting in 2013 through to the end of 2017, the Ministry provided funding for small and rural municipalities through the Source Protection Municipal Implementation Fund (SPMIF). The fund was designed to support municipal activities in the early stages of implementation. Moving forward, the Ministry is expecting municipalities to fund implementation efforts without provincial support.

The Province of Ontario continues to support the source protection planning process, including capacity building, at each conservation authority, the writing of various reports and completion of the technical documents and the process to update the Assessment Reports and Source Protection Plans. The Grand River Conservation Authority has the responsibility for fiscal management with parties undertaking tasks in the Lake Erie Source Protection Region. Where a municipality has taken the lead for specific tasks, a Memorandum of Agreement between the Grand River Conservation Authority and the municipality was required, setting out the legal and financial obligations, technical deliverables, and schedules.

Section 97 of the *Clean Water Act, 2006* establishes the Ontario Drinking Water Stewardship Program. The program provided financial assistance to those whose

activities and properties may be affected by the implementation of the Source Protection Plan between 2008 and 2014. The program also provided for outreach and education programs to raise awareness of the importance and opportunities for individuals to take actions to protect sources of drinking water. O. Reg. 287/07 (General) further clarifies the details of the Ontario Drinking Water Stewardship Program.

Under the stewardship program, funding from the Ministry of the Environment provided grants to undertake early actions that protect municipal sources of drinking water. The grants are directed at landowners within close proximity to municipal wells or surface water intakes to undertake projects that reduce or eliminate existing potential contamination sources. In addition, funding has been available for communications and outreach efforts to persons and businesses in these areas.

The program was funded from 2008 until 2014 to provide grants to undertake Early Response Programs to address significant drinking water threats in advance of approved source protection plans.

By way of committee resolutions and letters to the Ministry, the Lake Erie Source Protection Committee has requested that the Province of Ontario continue to support funding of the Ontario Drinking Water Stewardship Program beyond 2014. The Joint Advisory Committee (JAC) continues to encourage the Province to re-establish and rejuvenate the stewardship program to support local source protection plan implementation to bring to the Province for consideration. The committee believe that ongoing funding is needed to provide financial assistance to property owners affected by new policies and risk reduction strategies as a result of approved Source Protection Plans.

Source water protection is a responsibility that crosses watershed and municipal boundaries; therefore, arriving at a fair and equitable manner to share the financial responsibilities of implementation of the Source Protection Plan is complicated. Within the *Clean Water Act, 2006*, some provisions are set out for financing various aspects of source protection including stewardship programs and application of fees for Part IV policies.

As stated in the *Clean Water Act, 2006* fees can be applied for applications received under Section 58, 59 or 60, for agreeing to or establishing a risk management plan under Section 56 or 58, for issuing a notice under Section 59, for accepting a risk assessment under Section 60, or for entering property or exercising any other powers under Section 62.

The Lake Erie Region Source Protection Committee has, from the onset of the planning process, empowered the municipalities to direct the source protection plans to meet their needs. The Lake Erie Region has been unique in this approach in allowing municipalities to take the lead on the technical assessment and policy development. This has resulted in local plans that are financially practical and implementable.

The *Clean Water Act, 2006* and the source protection planning process was a program introduced by the Province in response to a province-wide concern about the safety of municipal drinking water. The Lake Erie Region Source Protection Committee strongly believes that the Province should continue to fund the implementation of the Kettle Creek Source Protection Plan and is committed to requesting that this be done.

9.0 DEFINITIONS

“**Activity**” includes land use as defined in the *Clean Water Act, 2006*. Activities are prescribed in the Table of Drinking Water Threats: *Clean Water Act, 2006* and in the Technical Rules: Assessment Report.

“**Chemical**” means a substance of distinct molecular composition which has been deemed to be of concern to drinking water due to its toxicity, environmental fate, quantity, method of release into the environment and type of vulnerable area into which it might be released.

“**Director**” means the director appointed under the *Clean Water Act, 2006*.

“**Drinking Water**” has the same meaning as in the *Safe Drinking Water Act, 2002*.

“**Drinking Water Threat**” means an activity or condition that adversely affects or has the potential to adversely affect the quality (chemical or pathogen) or quantity of any water that is or may be used as a source of drinking water, and includes an activity or condition that is prescribed by the regulations as a drinking water threat. O. Reg. 287/07 sets out in Section 1.1(1) a prescribed list of drinking water threats.

“**Existing**” see definition stated in Volume II of the Kettle Creek Source Protection Plan.

“**Future or New**” see definition stated in Volume II of the Kettle Creek Source Protection Plan.

“**Groundwater**” is water that has percolated into the ground and occupies spaces between soil particles or cracks and fissures in otherwise solid rock. (Source: Ministry of the Environment. 2004. White Paper on Watershed-based Source Protection Planning.).

“**Implementing Body**” can be a provincial ministry, municipality, local board, source protection authority, or other body.

“**Intake Protection Zone**” (IPZ) means a zone established around a surface water intake of drinking water as prescribed in the Technical Rules: Assessment Report.

“**Legal Effect**” The policies in the Source Protection Plan have one of three types of legal effect – “must conform/comply with” policies, “have regard to” policies, and “non-legally binding” policies (Source: Conservation Ontario. 2011. Legal Effect of Source Protection Policies.).

“**Low Drinking Water Threat**” means a drinking water threat that, according to a risk assessment, poses or has the potential to pose a low risk (Source: *Clean Water Act, 2006*. O. Reg. 287/07.).

“**Moderate Drinking Water Threat**” means a drinking water threat that, according to a risk assessment, poses or has the potential to pose a moderate risk (Source: *Clean Water Act, 2006*. O. Reg. 287/07.).

“Pathogen” means a microscopic organism capable of producing infection or infectious disease in humans (Source: Tables of Drinking Water Threat, *Clean Water Act, 2006*).

“Planned” means, with respect to a drinking water system, a drinking water system that is to be established, or a part of a drinking water system that is to be established, if, (a) approval to proceed with the establishment of the system or part has been given under Part II of the Environmental Assessment Act, (b) the establishment of the system or part has been identified as the preferred solution within a completed planning process conducted in accordance with an approved class environmental assessment under Part II.1 of the Environmental Assessment Act and no order has been issued under Subsection 16 (1) of that Act, or (c) the system or part would serve a reserve as defined in the Indian Act (Canada).

“Policy Lead/ Task Lead/ Developer”: The lead authority as outlined in the appropriate Approved Terms of Reference for the Preparation of the Source Protection Plan.

“Prescribed Instrument” is any document of legal effect, including a permit, licence, approval, authorization, direction, or order, that is issued or otherwise created under an Act and listed in Section 1.0.1 of O. Reg. 287/07.

“Risk Management Inspector” means a risk management inspector appointed under Part IV of the *Clean Water Act, 2006* (Source: *Clean Water Act, 2006*).

“Risk Management Official” means the risk management official appointed under Part IV of the *Clean Water Act, 2006* (Source: *Clean Water Act, 2006*).

“Risk Management Plan” means a plan for reducing a risk prepared in accordance with the regulations and the rules of the *Clean Water Act, 2006* (Source: *Clean Water Act, 2006*).

“Significant Drinking Water Threat” means a drinking water threat that, according to a risk assessment, poses or has the potential to pose a significant risk. The Technical Rules (2021) along with the vulnerability score in the Assessment Report provides the basis for the risk assessment.

“Significant groundwater recharge area” means an area within which it is desirable to regulate or monitor drinking water threats that may affect the recharge of an aquifer. (Source: O. Reg. 287/07.)

“Source Protection Authority” means a conservation authority or other person or body that, under Subsection 4 (2) or Section 5, is required to exercise and perform the powers and duties of a drinking water source protection authority under the *Clean Water Act, 2006*. In this Source Protection Plan, it refers specifically to the Kettle Creek Source Protection Authority.

“Source Protection Committee” means a drinking water source protection committee established under Section 7 of the *Clean Water Act, 2006*. In this Source Protection Plan, it refers specifically to the Lake Erie Region Source Protection Committee.

“Source Protection Plan” means a drinking water source protection plan prepared under the *Clean Water Act; 2006*. In this Source Protection Plan, it refers specifically to the Kettle Creek Source Protection Plan.

“Source Protection Region” means a drinking water source protection region established by the regulations (Source: *Clean Water Act, 2006*). In this Source Protection Plan, it refers specifically to the Lake Erie Source Protection Region.

“Surface Water” means water collecting in a stream, river, lake, and wetland. It is the source for drinking water for the Intakes in the Great lakes (Source: Ministry of the Environment. 2004. White Paper on Watershed-based Source Protection Planning.).

“Surface Water Intake Protection Zone” means an area that is related to a surface water intake and within which it is desirable to regulate or monitor drinking water threats (Source: O. Reg. 287/07.).

“Transport Pathway” means a condition of land resulting from human activity that increases the vulnerability of a raw water supply of a drinking water system set out in clause 15 (2) (e) of the *Clean Water Act, 2006* (Source: *Clean Water Act, 2006*. O. Reg. 246/10.).

“Water Supply System” means one or more surface water intakes and/or groundwater wells that pump water to supply a municipal water distribution system (Source: Tier 3 Water Budget and Local Area Risk Assessment – Glossary).

“Wellhead Protection Area” means an area that is related to a wellhead and within which it is desirable to regulate or monitor drinking water threats (Source: *Clean Water Act, 2006*.).

“Vulnerable Area” means, (a) a significant groundwater recharge area, (b) a highly vulnerable aquifer, (c) a surface water intake protection zone, or (d) a wellhead protection area (Source: *Clean Water Act, 2006*.).

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APPENDIX A: DRINKING WATER THREATS AND OPTIONAL CONTENT FOR THE LAKE ERIE SOURCE PROTECTION REGION

The following is a description of the twenty (20) prescribed drinking water quality threats prescribed by the *Clean Water Act, 2006* and four (4) optional content policies. Threat circumstance details are available on the [Lake Erie Source Protection Region website](#).

Threat 1: The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the *Environmental Protection Act, 1990*

As defined in the *Environmental Protection Act, 1990* a waste disposal site is any land, building, and/or structure in connection with the depositing, disposal, handling, storage, transfer, treatment or processing of waste. Operational activities associated with these sites are also included in the definition.

“Waste” is defined to include: ashes, garbage, refuse, domestic waste, industrial waste, or municipal refuse, and such other materials as are designated in the regulations under the *Environmental Protection Act, 1990*. Waste disposal sites may be active, inactive, or closed. In most circumstances, a waste disposal site (particularly a medium to large operation) has the potential to be identified as a significant or moderate threat.

This drinking water threat contains fourteen (14) sub-threats:

1. Disposal of Hauled Sewage to Land;
2. Application of Processed Organic Waste to Land;
3. Landfarming of Petroleum Refining Waste;
4. Landfilling (Hazardous Waste or Liquid Industrial Waste);
5. Landfilling (Municipal Waste);
6. Liquid Industrial Waste Injection into a Well;
7. PCB Waste Storage;
8. Storage of Hauled Sewage;
9. Storage of Processed Organic Waste or Waste Biomass;
10. Transfer/Processing Sites approved to receive Hazardous Waste or Liquid Industrial Waste;
11. Transfer/Processing Site approved to receive only Municipal Waste under Part V of the *Environmental Protection Act, 1990*;
12. Storage of Subject Waste at a Waste Generation Facility: site requires generator registration under Section 3 of O. Reg. 347;
13. Storage of Waste at a Waste Generation Facility: site that is exempt or excluded from generator registration requirements;
14. Storage, Treatment and Discharge of Tailings from Mines.

Threat 2: The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.

This drinking water quality threat contains eight (8) sub-threats:

1. Onsite Sewage Works;
2. Wastewater Collection Facilities and Associated Parts: Sanitary Sewers;
3. Wastewater Collection Facilities and Associated Parts: Outfall of a Combined Sewer Overflow (CSO), or a Sanitary Sewer Overflow (SSO) from a Manhole or Wet Well;
4. Wastewater Collection Facilities and Associated Parts: Sewage Pumping Station or Lift Station Wet Well, a Holding Tank or a Tunnel;
5. Wastewater Treatment Facilities and Associated Parts;
6. Industrial Effluent Discharges;
7. Storm Water Management Facilities and Drainage Systems: Outfall from a Storm Water Management Facility or Storm Water Drainage System;
8. Storm Water Management Facilities and Drainage Systems: Storm Water Infiltration Facility.

Onsite sewage works means any works for the collection, transmission, treatment and disposal of sewage or any part of such works, but does not include plumbing to which the *Building Code Act, 1992* applies. Leaching bed systems with septic tanks or holding tanks are the systems most commonly used. Onsite sewage works are considered a drinking water threat due to the potential discharge of chemicals and pathogens and their potential impact on the sources of drinking water.

Wastewater treatment facilities and associated parts: means a sewage works that treats or disposes of sewage but does not collect or transmit sewage. Associated parts include a final effluent outfall or a sewage treatment plant outflow outfall, a sewage lagoon, and a sewage treatment plant process tank or holding tank that forms part of a wastewater treatment facility and that may discharge sewage to groundwater.

All sewage treatment plants release treated wastewater that is called effluent. The effluent can be directly released to a watercourse or water body or its release from a lagoon can be scheduled.

Sometimes the capacity at a sewage treatment plant is overwhelmed and partially treated or untreated sanitary waste is released into the receiving water body. This is typically a result of an extreme wet weather event (i.e. significant rainfall or snow melt) where the sanitary sewer network is not completely isolated from stormwater. Combined sewers or sewer networks with inflow/infiltration issues are the root cause of such bypasses.

Many sewage treatment plants have sewage storage tanks as part of the treatment process.

Wastewater collection facilities and associated parts: sanitary sewers means a sewer for the collection and transmission of residential, commercial, institutional or industrial sewage, or any combination thereof. The sanitary sewer system is an underground pipe network that collects and directs the wastewater to a treatment plant where it is treated before being discharged. Leaking underground sewer lines are of concern to groundwater and surface water quality in Ontario. Leaks in sewer lines can happen for numerous reasons, including blockage from tree roots, soil slippage, washout resulting in loss of foundation, sewage backup, faulty materials, improperly constructed pipelines, lack of corrosion protection, age of the system, and ground subsidence.

Industrial effluent discharges refer to a system that discharges to surface water and has as its primary function, the collection, transmission, or treatment of industrial sewage. These systems are collectively referred to as sewage works. Industrial effluent discharges could result in the presence of chemicals in both surface water and groundwater, and the presence of pathogens in surface water.

Combined sewers are those which function simultaneously as a storm sewer and a sanitary sewer and may discharge sanitary sewage containing human waste to surface water other than by way of a designed bypass. Traditional combined sewer discharges are not common practice in the Lake Erie Source Protection Region and they are unlikely to be built in the future. Situations where sanitary sewers and stormwater channels are separated by a dividing wall are more common.

Stormwater means rainwater runoff, water runoff from roofs, snowmelt and surface runoff. Where stormwater is managed, it is often under a stormwater management (SWM) plan which addresses runoff through conveyances and end of pipe collection systems. Stormwater can also be managed at source. A hierarchical approach to managing stormwater is preferred: at-source, then conveyance, and finally end-of-pipe controls. Stormwater management facilities/ ponds are designed to collect runoff from the local storm-sewer system following either a rainfall or snowmelt event, or from activities such as washing cars. They are built to temporarily hold water, provide some treatment to remove some pollutants, and then slowly release it back to natural waterways or allow it to infiltrate into the ground. Not all SWM ponds are designed for quality control; many older ones only provide quantity control. The assessment of a SWM pond as a drinking water threat is dependent on the chemical or pathogen released, the size of the drainage area the facility serves, and the predominant surrounding land uses flowing into the facility.

Threats 3, 4 and 5: The application, storage, and management of agricultural source material (ASM)

Agricultural source material (ASM) is a type of nutrient that can be applied to land for the purpose of improving growth of agricultural crops and for soil conditioning. The Nutrient Management Act defines the materials that are considered to be ASM, to include manure, run-off from farm animal yards, wash water, anaerobic digestion output, organic materials, and regulated compost. ASM is produced on farms with livestock, and can be stored in a permanent nutrient storage facility (usually a steel or concrete

manure storage facility or earthen lagoon), or on a temporary field nutrient storage site (only for solid ASM). The classification of the threat differs depending on whether it is being applied to land or stored. The application of ASM is dependent on the vulnerability score of the specific area and the volume applied, as well as the combination of the managed land percentage and livestock density for the vulnerable area.

The storage of ASM is dependent on the location of the storage facility (storage at, above, or below grade) and the type of storage (permanent or temporary).

Both the application and storage of ASM are considered significant threats in any quantity and regardless of how and where it is stored.

The management of ASM refers to aquaculture facilities. The primary sources of pathogens in ASM from aquaculture are the water in which fish manure and by-products are in suspension or settled, the incoming water to an aquaculture facility contaminated with pathogens from other sources, and dead fish not removed from the water. These sources can negatively impact fish health, cause a food safety issue, and can increase the pathogens in the water.

Threats 6 and 7: The application, handling and storage of non-agricultural source material (NASM)

Non-agricultural source material (NASM) is a type of nutrient that can be applied to land for the purpose of improving growth of agricultural crops and for soil conditioning. The circumstances describe the NASM categories 1 (“non-herbivorous animal”) 2 and 3. Category 1, 2 and 3 means NASMs described in Tables 1, 2 and 3 of Schedule 4, respectively, in O. Reg. 267/03 under the *Nutrient Management Act, 2002*.

Threat 8 and 9: The application, handling and storage of commercial fertilizer

Fertilizer, as defined by the *Fertilizer Act, 1985*, is any substance or mixture of substances, containing nitrogen, phosphorus, potassium or other plant food, manufactured, sold or represented for use as a plant nutrient. Commercial fertilizer is not an agricultural source material (ASM) or non-agricultural source material (NASM) but is considered a nutrient as defined by the Nutrient Management Act and associated regulations. Commercial Fertilizer is used extensively by the agriculture industry, as well as for heavily landscaped commercial, institutional, recreational, industrial and residential areas. Commercial fertilizer products are also known as “chemical fertilizers”. The impacts from commercial fertilizer application generally stem from improper use, such as application without consideration for nutrients available in the soil and plant requirements; or inappropriate timing of application for plant growth cycles and weather conditions causing an excess of nutrients to enter the groundwater and surface water. Potential impacts from storage of commercial fertilizers relate to leaks and spills because of aging infrastructure or improper handling or storage.

Threat 10 and 11: The application, handling and storage of pesticides

In Ontario, the Pesticides Act defines “pesticide” as any organism, substance or thing that is manufactured, represented, sold or used as a means of directly or indirectly

controlling, preventing, destroying, mitigating, attracting or repelling any pest or altering the growth, development or characteristics of any plant life that is not a pest and includes any organism, substance or thing registered under the Federal Pest Control Products Act. Historically, pesticide has been applied as part of many land uses including agricultural, active recreation, institutional, industrial, commercial and residential. Since 2009, there has been a ban on the cosmetic use of pesticide in Ontario that prohibits the application of pesticide on lawns, vegetable and ornamental gardens, patios, driveways, cemeteries, and in parks and school yards. However, the ban does make exceptions for various land uses, such as agricultural, golf courses, and public works operations.

Threat 12 and 13: The application, handling and storage of road salt

Road salt as a drinking water threat refers to any product containing sodium and/or chloride that is used to maintain roads and pedestrian areas. Most road salt is used as a de-icer or an ice prevention agent, but is sometimes also used for dust suppression. The most commonly used products for de-icing roads and preventing ice formation on roads are sodium chloride and calcium chloride because they are effective and inexpensive. The most common technique involves the use of liquid salts, either as an additive to conventional rock salt (pre-wetting) or applied on its own in advance of snow accumulation (direct liquid application). Given the extended winter season in Ontario, there is widespread use and storage of road salt. The majority of the material is handled by road authorities such as municipalities and the Ontario Ministry of Transportation; however, private businesses and residential property managers also store and use salt. At typical concentrations in drinking water, sodium and chloride are not risks to human health; however, at concentrations greater than 20 milligrams per litre (mg/L), sodium intake can present a health issue for some people.

The application of road salt can only be a significant drinking water threat if the impervious area is equal to or greater than 30 percent. This situation does not exist within the wellhead protection areas or intake protection zones of the two municipal drinking water systems in the Kettle Creek Source Protection Area. Therefore, no policies pertaining to the application of road salt were included in this Source Protection Plan.

Threat 14: The storage of snow

For health and safety reasons (i.e., slipping hazard), snow removed from roads and parking lots must be melted on-site or transported to a location where it is either melted or stockpiled and allowed to melt. Since snow can be contaminated with salt, oil, grease and heavy metals from vehicles, litter, and airborne pollutants, it must be handled and stored in ways that protect water sources. The activities related to snow storage that are drinking water threats include:

- Snow that is pushed into large piles on a property (e.g., stored in parking lots);
- Snow that is transported to a central site from other locations (e.g. snow disposal sites); and,

- Large snow banks along roads that are close to municipal wellheads or surface water intakes.

Threat 15: The handling and storage of fuel

This category of drinking water threat includes the handling of liquid fuel as well as its storage. The types of storage facilities to be considered are defined in O. Reg. 213/01 (Fuel Oil) or O. Reg. 217/01 (Liquid Fuels). Both regulations are made under the *Technical Standards and Safety Act, 2000*. Facilities where fuel is manufactured or refined are also to be considered. The types of fuel storage facilities include those outlined in O. Reg. 217/01.

A facility is defined as:

- Permanent or mobile retail outlets;
- Bulk plant;
- Marinas;
- Cardlocks/ keylocks;
- Private outlets; or
- Farms.

Facilities that store greater than 250 L of liquid fuel oil at, above grade, partially below grade (including within a basement), and below grade, are categorized as a significant drinking water threat.

The primary circumstance that determines whether an activity is a significant drinking water threat is related to quantity and type of fuel, and whether or not it is stored above, below or partially below grade.

Threat 16: The handling and storage of Dense Non-Aqueous Phase Liquid (DNAPL)

A Dense Non-Aqueous Phase Liquid (DNAPL) is a liquid chemical that is denser than water and tends to be sparingly soluble in water. The majority of DNAPLs are used in industrial and commercial applications. They can also be found in small quantities in common household products such as paints and adhesives. Historically, these compounds were also found in smaller quantities in personal care products (e.g., shampoo, cosmetics), but in many cases are being phased out of such products. If spilled, DNAPLs tend to sink into the ground and can contaminate even the deepest groundwater resources. The DNAPLs identified in the [Source Water Protection Threats Tool](#) are toxic to humans and/or the environment at even the lowest levels, meaning that even if only a small amount dissolves into the water, it would be harmful to humans. Therefore, these DNAPLs pose a significant threat to drinking water sources.

Threat 17: The handling and storage of organic solvents

Organic solvents are liquid organic compounds with the ability to dissolve solids, gases, or liquids. They have been used in vast quantities for decades in industrial and commercial applications and can also be found in small quantities in common household products such as adhesives and cleaners. Four organic solvents have been identified as potential concerns related to drinking water: carbon tetrachloride, chloroform, dichloromethane, and pentachlorophenol. These substances have various properties, uses and negative environmental effects. The assessment of the risk to drinking water sources from these organic solvents is dependent on whether they are stored underground, at ground surface or above ground and the amount of material stored. Underground storage is of greater concern due to the potential for undetected leaks.

Threat 18: The management of runoff that contains chemicals used in the de-icing of aircraft

Chemicals used in the de-icing of aircraft contain contaminants that could make their way into surface and groundwater as a result of runoff. Ethylene glycol is the active ingredient in de-icing fluids, and dioxane-1, 4 may be used as an additive for its wetting or dispersing properties. These chemicals could threaten the safety of drinking water sources in certain situations. The classification of this activity as a significant, moderate or low drinking water threat is dependent on the classification of the airport as remote, small, regional or national airport. The activity may be classified as a significant threat only for airports that: i) have passenger traffic as part of definition of “regional “or “national “airport and; ii) where the run-off of de-icing substances may result in the release to land or water.

Threat 21: The use of land as livestock grazing or pasturing land, an outdoor confinement area (OCA) or a farm-animal yard

This threat can be divided into two sub-threats: 1) Outdoor Confinement Areas or farm animal yards; and 2) livestock grazing or pasturing. An Outdoor Confinement Area (OCA) is a yard, facility, or enclosure (for livestock, deer, elk or game animals) with a very high animal concentration, typically 15 or more animals per acre, often for extended periods of time. Grazing is crop production where the animals do the harvesting. Ontario grazing systems involve a concentration of up to 2 to 3 animals per acre during the grazing season, often on a rotational basis.

Generally speaking, keeping greater numbers of livestock in an area intensifies the accumulation of nutrients and pathogens, thereby increasing the risk of contamination to drinking water sources and the requirement for more active management.

Threat 22: The establishment and operation of a liquid hydrocarbon pipeline

The establishment and operation of a liquid hydrocarbon pipeline was added as a prescribed threat in July 2018.

Liquid hydrocarbon pipelines consist of the pipeline and associated equipment including compressors and pumps. Pipe diameters can range in size, but typical sizes found within the Lake Erie Region are approximately 12 inches. The main consideration for reducing or eliminating drinking water threats related to this threat is to prevent spills because of pipeline ruptures and to have an appropriate spill response. Significant threats occur in wellhead protection areas with a vulnerability score of 10 and Intake Protection Zones (IPZs) and WHPA-Es with a score of 9 or 10.

There are liquid hydrocarbon pipeline threats identified in the Assessment Report and policies have been included in the Kettle Creek Source Protection Plan to address any future threats.

Optional Content

On January 13, 2011, the Source Protection Committee passed a resolution (Res. No. 05-11) which determined that policies for optional content shall be included within the Source Protection Plans as outlined in O. Reg. 287/07 and the report to the committee (SPC-11-01-03).

Conditions

Significant conditions are contaminated sites for which there is evidence of off-site contamination from a past activity that may have an immediate impact on drinking water quality, as outlined in Part XI.3, Rule 126 of the *Clean Water Act, 2006* Technical Rules. There were no significant conditions identified in the Assessment Report and therefore none are addressed in the Kettle Creek Source Protection Plan.

Spill Prevention, Spill Contingency or Emergency Response Plans

Spill prevention plans outline the appropriate handling and storage (action plan) of potentially harmful substances and may include preventative maintenance standards and reporting. Spill prevention and contingency plans are outlined in the *Environmental Protection Act, 1990* O. Reg. 224/07 and are developed by industries as described in O. Reg. 222/07, Environmental Penalties.

This includes, but is not limited to, industrial facilities (Table 1 of O. Reg. 222/07 and those that discharge sewage other than storm water to a watercourse. These plans must include the following: a written description of the facility; plans required by the Act to prevent or reduce the risk of spills of pollutants and prevent, eliminate, or ameliorate any adverse effects that may result in a spill; and the date the plan must be developed and implemented.

Policies included for spill prevention, spill contingency or emergency response plans can only be included in the Source Protection Plan if they relate to a highway (as defined by the *Highway Traffic Act, 1990*), railway line or a shipping lane (i.e., along a transportation corridor). This does not include properties that are along highways and also within the vulnerable area (O. Reg. 287/07 Section 26(6)).

Every municipality is responsible for creating an emergency plan governing the provision of necessary services during an emergency, and the procedures under and the manner in which employees of the municipality and other persons will respond to the emergency. The council of the municipality shall by by-law adopt the emergency plan.

An emergency plan authorizes employees of the municipalities and public servants to take action prior to the declaration of the emergency; specifies the procedures to be taken for the safety and evacuation of persons in the emergency area; designates one or more members of the council who may perform the duties of the head of council, if the head of council is unable to act; provide for obtaining and distributing materials, equipment and supplies during an emergency; and provide for such other matters as are considered necessary or advisable for the implementation of the emergency plan during an emergency. Outdated plans may pose a risk to drinking water sources as they may not contain the most recent data and most appropriate response (e.g., personnel) to an emergency or spill.

Spill requirements found in Part X of the *Environmental Protection Act, 1990* (Spills) and applicable regulations (e.g. O. Reg. 675/98) set out obligations for various parties to take action (including, but not limited to, duty to report spills, duty to mitigate and restore the environment etc.) in the event of a spill. Among others, various duties apply to the owner of spilled material, controller of spilled material, person who spills or causes or permits a spill, and the municipality where a spill occurs.

Transport Pathways

Transport pathways are defined in the *Clean Water Act, 2006* O. Reg. 287/07. Transport pathways are a land condition, resulting from human activity, which increases the vulnerability of a municipal drinking water system's raw water supply. This can include constructed pathways such as subsurface utility corridors, abandoned boreholes, deteriorating water wells, which do not meet applicable legal requirements, pits and quarries, geothermal systems, underground parking lots and excavations. They are a concern to drinking water supplies because they may facilitate the movement of contaminants vertically or laterally below grade, and result in a more widespread distribution of contaminants.

In the Assessment Report, transport pathways are considered as part of the vulnerability assessment for the wellhead protection areas and intake protection zones. If a transport pathway(s) was identified, the vulnerability scoring may have been increased, therefore potentially causing activities (i.e., one of the prescribed drinking water threats) to become significant threats due to the vulnerability scoring change.

For example, in the case of groundwater wells which do not meet applicable legal requirements, transport pathways provide a conduit to an aquifer that bypasses the natural protection of the overburden layer resulting in a greater potential risk for contamination. In the case of surface water intakes, transport pathways include anthropogenic (storm sewersheds) conduits which can extend the delineation of intake protection zones two and three.

Under the *Clean Water Act, 2006* transport pathways, albeit in many cases human-made pathways that increase the vulnerability, are not considered activities; therefore, they cannot be addressed the same way as the 21 Prescribed Drinking Water Threats. Inclusion of policies to address these transport pathways, as allowed under Section 27 of O. Reg. 287/07, facilitates the need to ensure protection of drinking water sources.

Monitoring of Moderate and Low Threats

Listed under mandatory content, the monitoring of moderate and low threats must be included in the Source Protection Plans where the Source Protection Committee thinks this is advisable to prevent them from becoming significant drinking water threats. However, moderate and low threats need to be inventoried before they can be monitored and policies can be developed and applied.

Dates for When Policies Take Effect

Implementation dates must be included in the Source Protection Plan to help identify to municipalities and other bodies when the policies take effect and when compliance must be met.

Section 29: Additional Source Protection Plan Information

Under the *Clean Water Act, 2006* O. Reg. 287/07 Section 29, the Source Protection Committee has the ability to include content in the Source Protection Plan that allows for the inclusion, in their opinion, of anything that will assist in understanding the plan. The information is included to provide clarification on issues and concerns raised throughout the source protection planning process by either the Lake Erie Source Protection Committee, other interested bodies or the general public. Further information is presented in the Explanatory Document.

Sources:

- Discussion Papers prepared by the Grand River Source Protection Area, Region of Waterloo, County of Oxford, City of Guelph, and Lura Consulting
- Kettle Creek Source Protection Area – Approved Assessment Report (February 2011)
- *Clean Water Act, 2006*

APPENDIX B: LEGAL EFFECT MATRIX

Implementing Body:	Provincial	Municipality, Local Board or Source Protection Authority	Other Bodies⁽¹⁾
SIGNIFICANT THREAT POLICIES- ACTIVITIES	-	-	-
Part IV Tools ⁽¹⁾	Comply	Comply	Comply
Prescribed Instruments	Must Conform	N/A	N/A
Land Use Planning Approaches	Must Conform	Must Conform	Must Conform
Education and Outreach/ Incentive Programs	Non-Legally Binding	Comply	Non-Legally Binding
Other ⁽²⁾	Non-Legally Binding	Comply	Non-Binding
SIGNIFICANT THREAT POLICIES-CONDITIONS	-	-	-
Part IV Tools ⁽¹⁾	N/A	N/A	N/A
Prescribed Instruments	Must Conform	N/A	N/A
Land Use Planning Approaches	Must Conform	Must Conform	Must Conform
Education and Outreach/ Incentive Programs	Non-Legally Binding	Comply	Non-Legally Binding
Other ⁽²⁾	Non-Legally Binding	Comply	Non-Legally Binding
MONITORING POLICIES ⁽³⁾	-	-	-
All Policy Tools	Comply	Comply	Comply
MODERATE AND LOW THREAT POLICIES- ACTIVITIES AND CONDITIONS	-	-	-
Part IV Tools ⁽¹⁾	N/A	N/A	N/A
Prescribed Instruments	Have Regard	N/A	N/A
Land Use Planning Approaches	Have Regard	Have Regard	Have Regard
Education and Outreach/ Incentive Programs	Non-Legally Binding	Non-Binding	Non-Legally Binding

Implementing Body:	Provincial	Municipality, Local Board or Source Protection Authority	Other Bodies ⁽¹⁾
Other ⁽²⁾	Non-Legally Binding	Non-Legally Binding	Non-Legally Binding
OTHER – STRATEGIC ACTIONS	-	-	-
Transport Pathways	Non-Legally Binding	Non-Legally Binding	Non-Legally Binding
Climate change data collection	Non-Legally Binding	Non-Legally Binding	Non-Legally Binding
Spill prevention, contingency or response plans along highways, railways or shipping lanes	Non-Legally Binding	Non-Legally Binding	Non-Legally Binding

Notes:

1. Other Bodies would include any body which is not a provincial body, municipality, local board and/or Source Protection Authority (e.g., the TSSA)
2. Part IV Tools include Section 57 Prohibition, Risk Management Plans and Restricted Land Uses
3. Other approaches authorized by the regulation include: specify the action to be taken to implement the source protection plan or to achieve the plan's objectives; establish stewardship programs; specify and promote best management practices; establish pilot programs; and govern research.
4. The "comply with" legal effect only applies to policies where Section 45 of the *Clean Water Act, 2006* applies. Monitoring policies written for Strategic Action policies have a Non-Legally Binding legal effect.

N/A not applicable

Source: Adapted from: Conservation Ontario, 2011. Legal Effect of Source Protection Plan Policies.