



## CTC Source Protection Region

Credit Valley Source  
Protection Area

Toronto and Region  
Source Protection Area

Central Lake Ontario  
Source Protection Area

# *Amended Proposed Source Protection Plan: CTC Source Protection Region*

Prepared by:  
CTC Source Protection Region



July-August 2014

Made possible through funding support from the Government of Ontario

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## ***Amended Proposed Source Protection Plan:***

**July-August 2014**

**Property of  
CTC Source Protection Committee**

**Prepared by  
CTC Source Protection Region**

# AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region

## PREFACE

This document ~~was prepared~~ **has been updated** by staff at the CTC (Credit Valley-Toronto and Region-Central Lake Ontario) Source Protection Region **for consultation July 18 to August 22, 2014**. The **amended** proposed policies have been developed by the Source Protection Committee (SPC) **to address comments from provincial staff received in late 2013 through June 2014 on the** Proposed Source Protection Plan. ~~is being~~ **The Plan was** submitted jointly by the respective Source Protection Authorities (SPAs) to the Minister of Environment for approval **on October 22, 2012**. **The document also contains new or changed water quantity policies developed to address threats in additional vulnerable areas delineated since October 2012; and revised maps where technical work has resulted in revisions.**

The objective of this document is to ~~provide the~~ **show how the proposed policies have been amended to aid consultation**. Changes from the original are shown in red text and ~~strike through~~. Following consideration of any comments received, the CTC SPC will request that the respective Source Protection Authorities **re-submit the amended proposed plan for approval**. **The** proposed policies that the CTC SPC has developed, which when implemented, are to protect existing and future municipal drinking water sources.

If you have any questions about this document or the CTC Source Protection Region, please contact the source protection staff at (416) 661.6600 ext. 5752, [sourcewater@trca.on.ca](mailto:sourcewater@trca.on.ca), or go to [www.ctcswp.ca](http://www.ctcswp.ca) for more information.

Completed: ~~October 22, 2012~~ **July 15, 2014**

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## 1 WHAT IS SOURCE WATER PROTECTION?

In order to understand what a Source (water) Protection Plan is, one must first understand the basic term upon which it is derived. Source water is any untreated water found in rivers, lakes and underground aquifers which is used for the supply of raw water for municipal drinking water systems. Source water protection is the action taken to protect that raw source of municipal drinking water from overuse and contamination.

### 1.1 WHAT IS A SOURCE PROTECTION PLAN?

A Source Protection Plan (SPP) is a strategy and suite of policies developed by residents, businesses and the municipalities within a watershed or series of watersheds, which outlines how water quality and quantity for municipal drinking water systems will be protected.

A Source Protection Plan sets out policies to:

- safeguard human health;
- ensure adequate safe, clean water is available; and
- protect current and future sources of municipal drinking water from significant threats.

A watershed is the area of land where all of the water that drains off of it goes into the same body of water (i.e., lake, ocean). Its boundaries are defined by ridges of high land.

The SPP is based on a foundation of scientific knowledge.

But there is more than science to the SPP. It is, in large part, about land use and the impact of that land use on drinking water quality and quantity.

The chapters that follow provide a more detailed history around source protection planning in Ontario, information about the Credit Valley-Toronto and Region-Central Lake Ontario (CTC) Source Protection Region, and the policy development process. Chapter 10 of this document outlines the proposed policies developed to protect municipal drinking water supplies.

### 1.2 WALKERTON, THE CATALYST FOR SOURCE WATER PROTECTION IN ONTARIO

In May 2000, heavy rains washed *Escherichia coli* (*E. coli*) bacteria into a well that provided water to the municipal water system in the small town of Walkerton, Ontario. A series of human and mechanical failures allowed the bacteria to get through the treatment system and into the municipal water supply. As a result, seven people died and more than 2,300 became ill. The tragedy received international attention and instigated a public enquiry, led by Justice Dennis O'Connor of the Supreme Court of

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Ontario. Justice O'Connor's investigation resulted in two reports, with 121 total recommendations, released in early 2002.

*"The best way to achieve a healthy public water supply is to put in place multiple barriers that keep water contaminants from reaching people," Justice Dennis O'Connor.*

He identified five parts to the multi-barrier system:

- 1 source water protection
- 2 adequate treatment
- 3 a secure distribution system
- 4 proper monitoring and warning systems
- 5 strategic responses to adverse conditions

With the exception of source water protection, four of the five barriers relate directly to "end of pipe" municipal water treatment systems. The government's response to put in place these four barriers was by implementing new legislation: the *Safe Drinking Water Act, 2002* and the *Sustainable Water and Sewage Systems Act, 2002*.

Justice O'Connor felt that the first barrier in the multi-barrier system, source protection, had to be addressed differently. He saw it as a local planning process to be done "as much as possible at a local (watershed) level by those who will be most directly affected (municipalities and other affected local groups)."

Justice O'Connor felt that the first barrier in the multi-barrier system, source water protection, had to be addressed differently. He saw it as a local planning process to be done, "as much as possible at a local (watershed) level by those who will be most directly affected (municipalities and other affected local groups)." He outlined a broad framework for a Source Protection Plan. Justice O'Connor recommended protecting municipal water supplies on a watershed basis, an area of land where all surface water drains into the same lake or river. Groundwater and surface water systems are linked and activities upstream can affect water downstream, regardless of political boundaries. Thus, developing a SPP on a watershed basis made economic and scientific sense. This recommendation led the Province of Ontario to embark on the development of the *Clean Water Act, 2006*.

### 1.3 THE CLEAN WATER ACT

The *Clean Water Act, 2006 (CWA)* introduces a new level of protection for Ontario's drinking water resources that focuses on protecting water before it enters the municipal drinking water treatment system. The *CWA* establishes a locally driven, science-based, multi-stakeholder process to protect municipal residential drinking water sources and designated private drinking water sources. This process is meant to promote the shared responsibility of all stakeholders to protect local sources of drinking water from threats to both water quantity and water quality.

The *Clean Water Act, 2006* is not designed to protect all of the province's water resources. The *CWA* has a more narrow focus – sources of water that have been designated by a municipality as being a current or future source of residential municipal drinking water for the community. The *Ontario*

The *Clean Water Act, 2006* has a more narrow focus than other rules governing water resources. This legislation is dedicated to sources of water that have been designated by a municipality as being a current or future source of residential municipal drinking water.

*Water Resources Act, 1990* and the *Environmental Protection Act, 1990* and other provincial and federal laws remain the chief vehicles for protecting the quality and quantity of Ontario's water resources; the *CWA* and the source protection planning process it establishes, provides additional protection to select sources of water.

Prior to the Walkerton tragedy, the Province focused on protecting water resources on the basis of the resources' ecological and recreational values, not on the basis of the critical public health goal of maintaining secure water supplies for public consumption. The *CWA* puts the goal of public health protection and preserving present and future sources of drinking water front and centre.

### 1.4 PRIVATE DRINKING WATER SYSTEMS

Maintaining safe and secure private drinking water systems is the responsibility of homeowners, institutions and businesses that own their water systems and are regulated separately under the *Safe Drinking Water Act, 2002* and the *Health Protection and Promotion Act, 1990*. Private drinking water systems can be included in a SPP if a municipality expressly designates a private system, for example, if there is a known concern with a private drinking water source. The Minister of the Environment also

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has the authority to designate a private drinking water system for inclusion into a SPP. During this round of source protection planning, the only designated system added in the CTC Source Protection Region is owned and operated by the Region of Durham serving an industrial park in the Town of Uxbridge.

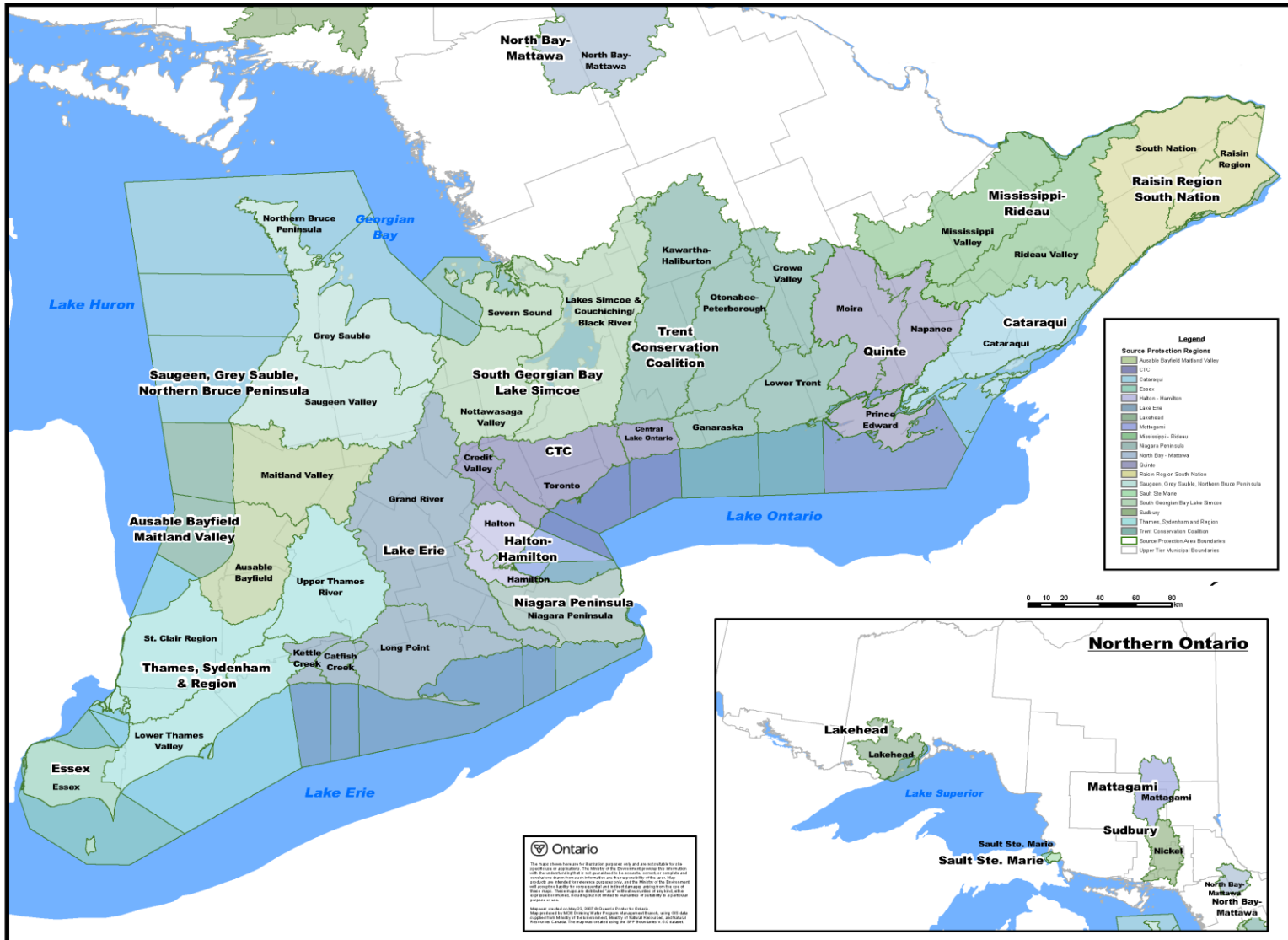
## 2 SOURCE PROTECTION REGIONS IN ONTARIO

With the *Clean Water Act, 2006* and its first regulations coming into force in 2006, Source Protection Areas (SPA), Source Protection Regions (SPR) and the 19 corresponding Source Protection Committees (SPC) were established. Source Protection Regions were initially established using the existing Conservation Authority boundaries as outlined under the *Conservation Authorities Act, 1990*. Ontario Regulation 284/07 made under the *Clean Water Act, 2006*, alters the boundaries of each of these SPAs so that they better encompass watersheds. The *Clean Water Act, 2006* allows for one SPC for each SPR. It is the members of the SPCs who are ultimately responsible for preparing local SPPs – plans which establish local policies on how significant drinking water threats will be prevented, reduced or eliminated, who is responsible for taking action, when action must be taken and how progress will be measured. **Figure 2-1** shows the 19 SPRs in Ontario.

It is the source protection committees who are ultimately responsible for preparing local source protection plans.

# AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region

Figure 2-1: Source Protection Areas and Regions in Ontario

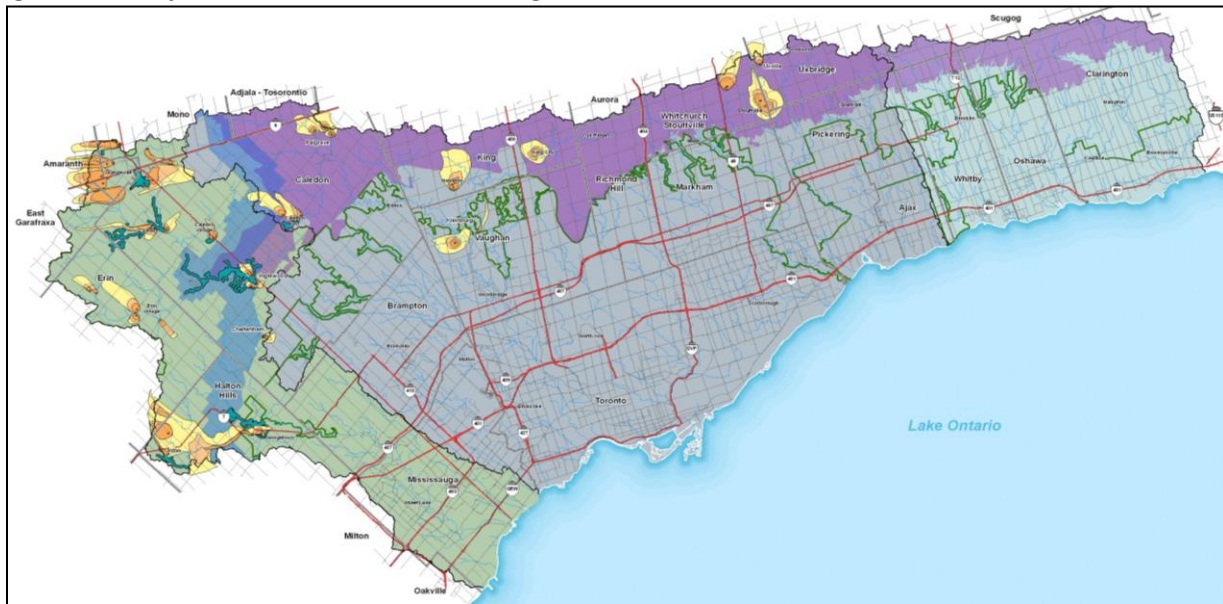


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## 2.1 CTC SOURCE PROTECTION REGION

The CTC Source Protection Region (**Figure 2-2**) contains 25 large and small watersheds and spans over 10,000 km<sup>2</sup>, from the Oak Ridges Moraine in the north to Lake Ontario in the south. The region contains portions of the Niagara Escarpment, Oak Ridges Moraine, Greenbelt, Lake Ontario and the most densely populated region of Canada.

**Figure 2-2: Map of CTC Source Protection Region**



The CTC Source Protection Region includes:

- 27 local municipalities and seven regional or county municipalities;
- 67 municipal supply wells; and
- 16 municipal surface water intakes on Lake Ontario.

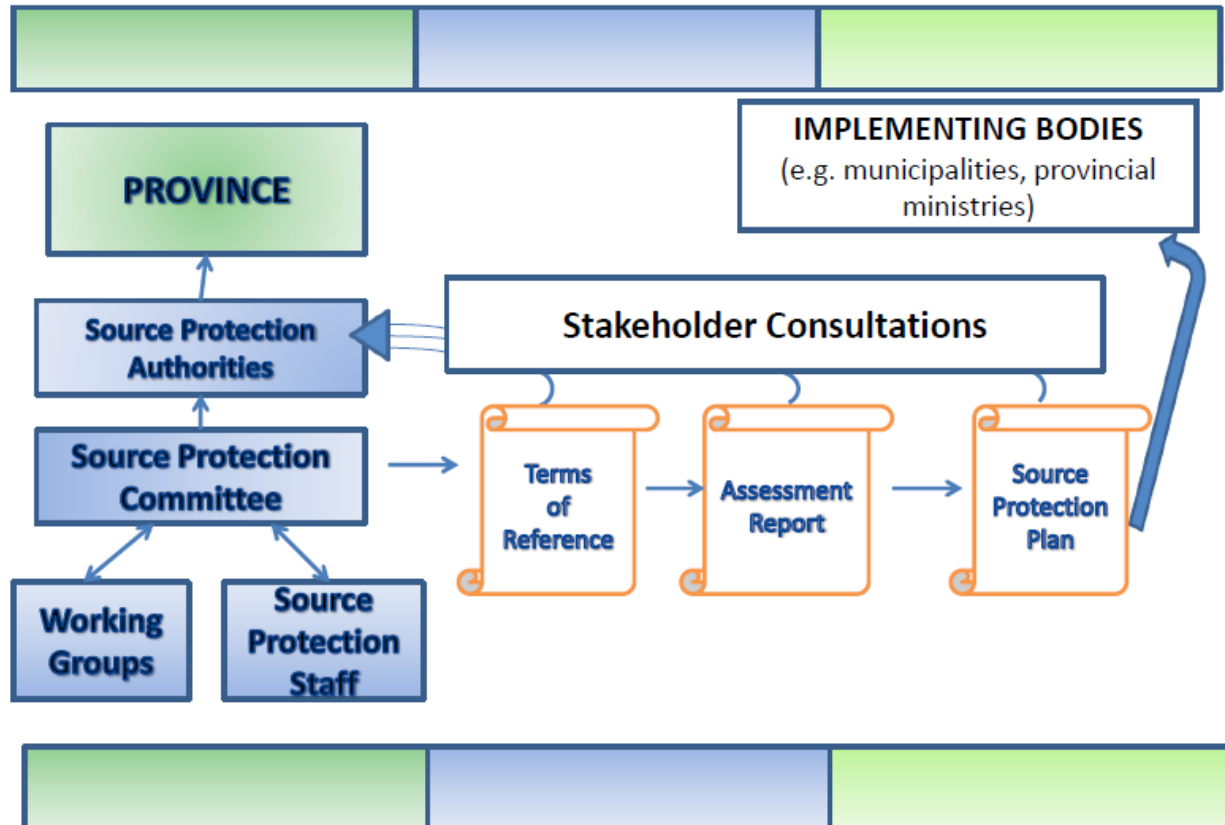
The region is complex and diverse in terms of geology, physiology, population, and development pressures, with many, often conflicting, water uses including drinking water supply, recreation, irrigation, agriculture, commercial and industrial uses, as well as ecosystem needs. This diverse setting represents a significant challenge for the development of the SPP because of the variability of available information upon which to base the technical work, the differing stresses on water resources related to development pressure and population growth, and the differences in the nature, density and locations of threats to the quality and quantity of water resources.



### 3 ROLES AND RESPONSIBILITIES

Figure 3-1 provides an illustration of the relationship between the various groups in the source protection planning process. Each groups' role and support was critical to developing the SPP.

Figure 3-1: Roles and Responsibilities



#### 3.1 PROVINCE: MINISTRY OF THE ENVIRONMENT (MOE)

The Province sets the rules (largely through the *Clean Water Act, 2006*), provides ongoing guidance, approves the documents produced by the SPC (Terms of Reference, Assessment Reports and Source Protection Plans) and is responsible for implementation of significant threat policies associated with prescribed provincial approvals or permits of provincially regulated facilities and activities.

#### 3.2 SOURCE PROTECTION AUTHORITY

The Source Protection Authority is a new body created under the *Clean Water Act, 2006*. The SPAs are made-up of the members of the boards of directors of existing conservation authorities. Initially, it has the important role of laying the groundwork for the new source protection process in each watershed. This includes creating the SPCs and engaging municipalities in that process.

## AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region

In the CTC SPR, there are three Source Protection Authorities:

- Credit Valley
- Toronto and Region (lead SPA)
- Central Lake Ontario

The SPAs role has changed over time. Once the SPC was created, the SPAs role focused on supporting the SPC in its duties. Once the SPP is approved, the SPA will continue to have a role in monitoring and reporting on progress in implementing the SPP.

### 3.3 SOURCE PROTECTION COMMITTEE

In addition to the SPA, the *Clean Water Act, 2006* created a second watershed-level body, the Source Protection Committee. The SPC is the primary driver of the process at the watershed level. The *Clean Water Act, 2006* allows one SPC for each SPR. The lead SPA establishes the SPC. The chair of the SPC, however, is appointed by the Minister of Environment. The SPC is made up of a mix of local citizens, who live or work in the watershed, and who applied for that role and were selected by the SPA based on a competitive process. The number of committee members varies by region. In the CTC SPR, there are 21 committee members, plus the chair (**Table 3-1**). Of the 21 members, one third represent the economic sector, one third represent the municipal sector, and one third represent the general public (includes environmental group representation). The SPC is responsible for preparing the Terms of Reference, the Assessment Reports and the Source Protection Plan. The SPC is also responsible for ensuring that stakeholders and the public are consulted throughout the process.

## AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region

**Table 3-1: SPC Membership**

Chair: Susan Self		
Economic	Municipal	Public
Andrea Bourrie, Aggregate	Bob Burnside, Dufferin County	Juli Abouchar, Public at large
Doug Brown, Energy	Michael D’Andrea, City of Toronto	Michael Garrett, Public at large
Wendy Burgess, Golf Course	David Kentner, Region of Halton and County of Wellington	Jessica Ginsburg, Environmental
Louise Foster, Development	Laura McDowell/Don Goodyear, Region of York	Bob Goodings, Public at large
Heather Laidlaw, Agriculture	John Presta, Region of Durham	Irv Harrell, Public at large
Peter Miasek, Petroleum Products	Mark Schiller, Region of Peel	Peter Orphanos, Environmental
Lynne Moore, Agriculture	Howard Shapiro, City of Toronto	Fred Ruf, Public at large

### 3.4 CONSERVATION AUTHORITY

Through agreement with the SPA, the Conservation Authority provides staff and other expertise. With their experience in watershed-based work and an understanding of local stakeholders, they are able to facilitate cooperation among communities and stakeholders and help prepare the Terms of Reference, Assessment Reports and Source Protection Plan, under the guidance of the SPC.

In the CTC SPR, the Conservation Authority partners are:

- Credit Valley Conservation Authority
- Toronto and Region Conservation Authority (lead)
- Central Lake Ontario Conservation Authority

### 3.5 MUNICIPALITY

Municipalities are a key partner in the source protection process and work closely with the SPC and SPAs. Municipalities have a primary role of implementing the SPP once it’s in place. The municipalities in the CTC Source Protection Region are outlined in **Table 3-2**.

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**Table 3-2: Municipalities in the CTC Source Protection Region**

Durham Region	York Region	Dufferin County	Simcoe County
Municipality of Clarington	Town of Whitchurch-Stouffville	<b>Town of Mono</b>	<b>Township of Adjala-Tosorontio</b>
City of Oshawa	Town of Markham	<b>Township of Amaranth</b>	Wellington County
Town of Whitby	Town of Richmond Hill	<b>Township of East Garafraxa</b>	<b>Town of Erin</b>
Township of Scugog	City of Vaughan	<b>Town of Orangeville</b>	<b>Peel Region</b>
City of Pickering	Town of Aurora	<b>Halton Region</b>	City of Brampton
Town of Ajax	Township of King	Town of Halton Hills	Town of Caledon
Township of Uxbridge	<b>City of Toronto</b>	Town of Oakville	City of Mississauga

\*municipalities in **bold** are responsible for providing water services

## 4 PURPOSE AND OBJECTIVES OF THE SOURCE PROTECTION PLAN

The policies in this SPP have been written to achieve the objectives identified in the *General Regulation* under the CWA. These objectives are as follows:

1. To protect existing and future drinking water sources in the SPA.
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:
  - the activity never becomes a significant drinking water threat,
  - if the activity is occurring when the SPP takes effect, the activity ceases to be a significant drinking water threat.

### 4.1 RELATIONSHIP TO OTHER SOURCE PROTECTION PLANNING DOCUMENTS

While the SPP is a stand-alone document, there are supplementary documents that have been developed for those who may wish to obtain more information about source water protection. These documents are:

- Terms of Reference
- Assessment Reports
- Explanatory Document

#### 4.1.1 Terms of Reference

There are three Terms of Reference documents; one for each watershed area within the CTC SPR:

- Credit Valley Source Protection Area (CVSPA)
- Toronto and Region Source Protection Area (TRSPA)
- Central Lake Ontario Source Protection Area (CLOSPA)

The Terms of Reference documents were the first documents to be completed. They are the work plans that describe the responsibilities of involved groups and stakeholders, timelines and projected costs. The Terms of Reference were submitted to the Ministry of Environment in December 2008 and approved in August 2009.

#### 4.1.2 The Assessment Reports

There are three Assessment Reports (see **Appendix A**) – one for each SPA within the CTC SPR:

- Credit Valley Source Protection Area
- Toronto and Region Source Protection Area

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- Central Lake Ontario Source Protection Area

The Assessment Reports are technical documents that provide the scientific understanding that is the basis of the SPP. The Assessment Reports describe:

- the local watershed and assess available water supply;
- the vulnerable areas and risks to drinking water;
- the maps of the vulnerable areas;
- the vulnerability of those areas;
- the water quality and quantity issues related to water sources; and
- an assessment of the risk to water systems.

The Assessment Reports are ‘living documents’ that will be continually updated and amended as new information becomes available. The Assessment Reports also identify the work that must be undertaken before the SPP is completed. The Assessment Reports are based on the completion of detailed technical studies. These reports underwent a peer review process that enabled scientists and other experts to evaluate the technical work for technical completeness and whether it met the provincial rules and guidelines.

The CTC proposed Assessment Reports were submitted to the Ministry of Environment for approval in December 2010 and were approved in June 2011. At that time, additional research was being carried out, which was then used to update the reports. Updated Assessment Reports for all three areas were submitted to the Ministry of the Environment in July 2011 and were approved in January 2012 (**Appendix A**). A further update to the Assessment Report for the Credit Valley Source Protection Area is underway which delineates new Wellhead Protection Areas (WHPAs) and updates the threats assessment and identification around wells owned and operated by the Region of Halton near Georgetown and Acton (Town of Halton Hills). New technical information collected through ongoing water budget assessment in this area has provided the foundation for changing the WHPA mapping. The revised WHPAs still extend into the Town of Erin in the County of Wellington including into the Grand River Source Protection Area in the Lake Erie Source Protection Region. The updates will be submitted to the Ministry for approval in late October 2012. The maps for these wells contained in this Proposed Source Protection Plan showing where policies apply (**Appendix F**) are based on the new delineations.

**4.1.3 The Explanatory Document**

The Explanatory Document explains how the policies in the Source Protection Plan were developed. The Explanatory Document is not an approved document, but is required by legislation to support the SPP. It includes a record of the rationale that was used to develop the policies in the SPP. In short, it documents the ‘thinking’ behind the SPP. The Explanatory Document will be of interest to the Source Protection Authority, stakeholders, the Minister and members of the general public who may wish to understand the intent that the SPC used to prepare the SPP. By disclosing the underlying rationale that was used to develop specific policy approaches, the Explanatory Document supports a transparent decision making process.

## **5 CONSULTATION PROCESS: OVERVIEW**

Public involvement and consultation has been a strong priority in this program with many legislated requirements. A variety of approaches and different media were used to engage the public, including:

- media releases;
- newspaper advertisements;
- letters to landowners;
- public open houses;
- the publication and distribution of newsletters and other informational brochures;
- hosting and maintaining a website;
- presentations to municipal councils, community and business groups; and
- attendance at trade shows, environmental fairs and festivals.

Public consultation on the Terms of Reference was held in the summer of 2008 and included seven public meetings. The public consultation on the three Assessment Reports was held in the spring of 2010 (CLOSPA) and the fall of 2010 (TRSPA and CVSPA). The three reports were posted on the CTC website and paper copies were made available at Conservation Authority offices. Letters were sent to approximately 15,000 residents identified as owning property in vulnerable areas. All local and regional/county municipalities were also notified. Ten public open houses were held throughout the CTC to consult on the draft Assessment Reports. These open houses were advertised in local newspapers and electronic newsletters were emailed to subscribers. When all three Assessment Reports were updated or amended in the spring of 2011, municipalities and potentially affected landowners were notified and provided an opportunity to comment.

### **5.1 SOURCE PROTECTION PLAN CONSULTATION**

#### **5.1.1 Notice of Commencement of Source Protection Planning**

In April 2011, letters advising of the commencement of source protection planning were distributed to municipal Clerks and 15,000 persons who were identified as potentially engaging in significant threat activities. The letters advised of the commencement of source protection planning, that the plans have the potential to impact them and that there was funding available through the Ontario Drinking Water Stewardship Program (ODWSP), a funding program designed to assist property owners address significant threats.



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### 5.1.2 Pre-Consultation

After draft Source Protection Plan policies were developed, municipalities and provincial ministries that were identified to implement policies were provided the opportunity to comment on the policies in a “pre-consultation” process. A letter was sent in August 2011 to all municipal contacts to provide them with advance notice of the impending pre-consultation that was set to begin in October 2011. The contents of this letter were coordinated with staff at neighbouring Source Protection Regions so that municipalities straddling more than one SPR received coordinated messaging. Official notice of pre-consultation was distributed to all municipal Clerks in mid-October and was followed by a series of municipal workshops that took place as follows:

- November 15, 2011: Durham Region (with Trent Conservation Coalition (TCC) and South Georgian Bay Lake Simcoe (SGBLS))
- November 23, 2011: York Region (with SGBLS)
- November 30, 2011: Peel Region (with SGBLS)
- December 6, 2011: Dufferin County (with Lake Erie and SGBLS)
- December 9, 2011: Lake Ontario policies (with TCC and Halton-Hamilton)
- December 13, 2011: Halton Region (with Halton-Hamilton)
- December 13, 2011: Wellington County (with Lake Erie)

The purpose of these workshops was to provide municipal staff and councillors the opportunity to meet with source protection staff and SPC members from all the Source Protection Areas within their municipality in an informal workshop to review the draft policies and Explanatory Document. The workshops also provided an opportunity for municipal staff/councillors to ask questions to ensure their formal comments on the policies were as well informed as possible. The joint workshops also helped source protection staff and SPC members to hear feedback on both the CTC policies and those being proposed by adjacent SPCs in an effort to harmonize the policies to the greatest extent possible. A summary of the comments received during pre-consultation and how they were considered in preparing the Draft Proposed Source Protection Plan is found in the Explanatory Document and Summary of Consultation Comments.

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### 5.1.3 Formal Consultation

The first formal consultation on the Draft Proposed Source Protection Plan and Explanatory Document began on March 19, 2012 and ended May 1, 2012. The legislation required a consultation period of a minimum of 35 days, however the SPC provided a 43 day consultation period.

The first formal consultation involved sending notices to all municipal Clerks, implementing bodies and adjacent Source Protection Regions advising of the start of formal consultation. In addition to sending notice to municipalities and other implementing bodies and industries identified as significant threats to municipal drinking water systems in Lake Ontario, approximately 22,000 direct mailings were sent to residents and landowners potentially affected by significant threat policies. These mailings contained:

- notification of Draft Proposed Source Protection Plan public consultation;
- map of nearby vulnerable areas;
- magazine describing the Assessment Report process and findings;
- brochure about the Source Protection Plan process; and
- a comment form and a postage paid envelope to submit comments.

These materials and a copy of the Draft Proposed Source Protection Plan were also posted online. Subscribers to the CTC electronic mailing lists were notified. Advertisements were placed in 17 local and regional newspapers covering the CTC Source Protection Region with information on open houses and where to view copies of the SPP. Printed copies of the Draft Proposed Source Protection Plan were available at four Conservation Authority offices, and at 24 local libraries. A series of seven evening open houses took place as follows (a minimum of three meetings was required, one in each SPA):

- April 3, 2012: Town of Halton Hills
- April 5, 2012: Nobleton
- April 10, 2012: Durham Region
- April 11, 2012: Town of Whitchurch-Stouffville
- April 17, 2012: Town of Mono
- April 19, 2012: City of Brampton
- April 26, 2012: Town of Erin

At the May 1, 2012, CTC SPC meeting, members received six invited deputations from representatives of industry and agriculture, and the municipalities impacted by water quantity policies in Dufferin County.

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Comments submitted during the first formal consultation period were considered by the SPC in revising policies to prepare the Proposed Source Protection Plan. A summary of the comments received during this first consultation and how they were considered in preparing the Proposed Source Protection Plan can be found in the Explanatory Document. The Proposed Source Protection Plan was then subject to a second 30 day formal consultation as required by legislation.

This second formal consultation ran between September 7, 2012 to October 8, 2012 under the direction of the respective Source Protection Authorities who were required to send notice to all municipal Clerks, other implementing bodies, adjacent Source Protection Regions, and anyone who submitted written comments during the first formal consultation period. The Proposed Source Protection Plan and Explanatory Document were posted online and written comments were due by the deadline of October 8, 2012.

The Proposed Source Protection Plan was not further revised to address comments submitted during the second formal consultation. However, the comments were submitted to the Minister of Environment for his approval decision along with the Proposed Source Protection Plan and Explanatory Document on October 22, 2012.

## 6 DRINKING WATER VULNERABILITY ANALYSIS AND THREATS EVALUATION

### 6.1 TYPES OF VULNERABLE AREAS

This chapter provides an overview of the methodology and definitions developed by the Ministry of the Environment to identify drinking water threats. The ministry developed mandatory *Technical Rules* that must be followed by all Source Protection Committees, as well as extensive guidance and full funding to carry out this technical assessment. These processes are important components in the multi-barrier approach to protecting drinking water sources from contamination and overuse. Source protection technical work is focused on the identification and assessment of drinking water quality and quantity threats and issues affecting four different types of vulnerable areas.

#### 6.1.1 Wellhead Protection Areas (WHPA)

Wellhead Protection Areas are areas on the land around a municipal well, the size of which is determined by how quickly water travels underground to the well, measured in years. For source protection planning, the *Clean Water Act, 2006* required that a standard 100-metre radius circle be provided around each municipal well; this is called WHPA-A. WHPA-B represents the 2-year time of travel; WHPA-C represents the 5-year time of travel; and WHPA-D represents the 25-year time of travel. WHPA-E represents municipal wells that are under the direct influence of surface water. The size and shape of each WHPA (B, C, D or E) is a function of how water travels underground. Time of travel is important because it is an indication of how quickly a contaminant can move from a WHPA into a municipal well. Time of travel can be influenced by a number of factors such as the slope of land, and the type of soil (for example, water travels faster through sand than it does through clay). Wellhead Protection Areas are drawn based on scientific research that took all these factors into consideration. **Table 6-1** provides a list of the number of WHPAs throughout the CTC Source Protection Region. This research was undertaken in the development of the Assessment Reports and details about each specific well can be found in those documents. The maps in **Appendix F** of this document show where significant drinking water threat polices will apply in the specific WHPAs in the CTC Source Protection Region.

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**Table 6-1: Well Count by Municipality**

Source Protection Area	Upper Tier Municipality	Lower Tier Municipality (Water System)	Well Count
Credit Valley	Dufferin County	Mono (Island Lake)	2
		Mono (Coles)	2
		Mono (Cardinal Wood)	3
		Amaranth (Amaranth-Pullen)	1
		Orangeville (Orangeville)	12
	Wellington County	Erin (Bel-Erin)	2
		Erin (Erin)	2
		Erin (Hillsburgh)	2
	Halton Region	Halton Hills (Acton)	5
		Halton Hills (Georgetown)	7
	Peel Region	Caledon (Alton, Caledon Village)	4
		Caledon (Cheltenham)	2
		Caledon (Inglewood)	2
Toronto and Region	Peel Region	Caledon (Caledon East)	3
		Caledon (Palgrave)	3
	York Region	Whitchurch-Stouffville	5
		King (King City)	2
		King (Nobleton)	3
		Vaughan (Kleinburg)	3
	Durham Region	Uxbridge (Uxville Well)	2
	Central Lake Ontario	No municipal wells	
<b>TOTAL</b>			<b>67</b>

### 6.1.2 Intake Protection Zones (IPZ)

Intake Protection Zones are the area on the water and land surrounding a municipal surface water intake. The size of each zone is determined by how quickly water flows to the intake, in hours. Because surface water travels much faster than groundwater, the IPZ is drawn primarily for emergency response purposes. There are three categories of IPZs; the IPZ-1 is a one-kilometre circle around the intake if it is

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located in one of the Great Lakes; the IPZ-2 is the area where water can reach the intake in a specified time, two hours was used in the CTC. According to the MOE *Technical Rules*, there can be no significant threats in an IPZ-1 or IPZ-2 if it is located in one of the Great Lakes, e.g. Lake Ontario. An IPZ-3 is delineated if modelling demonstrates that contaminants may be transported to an intake and result in a deterioration of the water quality at an intake. These modelled threats are deemed to be significant drinking water threats under the provincial rules. **Table 6-2** provides a list of the surface water intakes (all are located in Lake Ontario) in the CTC Source Protection Region.

**Table 6-2: Intake Protection Zones-3 by Municipality**

Source Protection Area	Upper Tier Municipality	Water System	Number of Intakes
CVSPA	Peel Region	Lorne Park	1
		Lakeview	1
TRSPA	City of Toronto	R.C Harris	2
		R.L. Clark	1
		F.J. Horgan	1
		Island	5
	Durham Region	Ajax	1
CLOSPA	Durham Region	Oshawa	2
		Whitby	1
		Bowmanville	1
<b>TOTAL</b>			<b>16</b>

### 6.1.3 Highly Vulnerable Aquifers (HVA)

An aquifer is an area underground that is highly saturated with water – enough water that it can be withdrawn for human use. A Highly Vulnerable Aquifer is one that is particularly susceptible to contamination because of its location near the ground’s surface or where the types of materials in the ground around it are highly permeable. For example, clay is more impermeable and typically acts to protect the aquifer below it, compared to sand and fractured bedrock which are both highly permeable and do not have these protective characteristics.

**6.1.4 Significant Groundwater Recharge Areas (SGRA)**

Significant Groundwater Recharge Areas are areas on the landscape that are characterized by porous soils, such as sand or gravel, which allows water to seep easily into the ground and flow to an aquifer. A recharge area is considered significant when it helps maintain the water level in an aquifer that supplies a community or private residence with drinking water. Numerical thresholds are used to calculate where these significant recharge areas are located.

**6.1.5 Local Area (Water Quantity)**

Water quantity vulnerable areas are determined differently than other vulnerable areas. Through a tiered process of water budget analyses as set out in the *Technical Rules* under O. Reg. 287/07, SPCs are required to identify any areas with water quantity stress, determine the stress level in the Local Area, and where the level is deemed significant, also identify the type and location of the activities that pose a drinking water quantity threat. At the final stage (Tier 3 Water Budget analysis), any Local Areas where significant drinking water stress has been identified, is an area where significant drinking water quantity threat activities can occur. Within these areas, activities which take water without returning it to the same source or which reduce recharge to the aquifer are significant drinking water threats. At this point, only one Local Area (Local Area A) in Dufferin County (Orangeville, Mono, and Amaranth) has been identified as having significant water quantity stress. Two on-going Tier 3 Water Budget studies may identify additional Local Areas with significant water quantity stress in Halton Hills and Whitchurch-Stouffville. These two studies should be complete in late 2012 or early 2013. Source Protection Plan policies must be developed to address significant drinking water quantity threats.

## 7 PRESCRIBED THREATS

A drinking water threat is defined in the *Clean Water Act, 2006* 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”  
(Section 2(1)).

O. Reg. 287/07 under the *Clean Water Act, 2006* has prescribed 21 threats for which the Source Protection Committee must write policies in areas where these threats could be significant.

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

Just because an activity is a significant threat does not mean that it is currently harming water sources. It has the potential to cause harm if something should go wrong, such as an accidental spill or leak.



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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.

In addition to the prescribed threats listed above, a SPC may determine that there are other activities in their area that they think pose a risk to drinking water. Where this is the case, the SPC may ask the Director at the Ministry of Environment if the activity can be considered as a local threat to drinking water. In 2009, the Lake Ontario Collaborative (LOC) project initiated event based modelling for the purpose of identifying if certain prescribed or local activities posed a significant risk to the LOC municipal partners' Lake Ontario intakes. A list of proposed spill scenario simulations for existing facilities was developed in consultation with municipal partners, SPC Chairs and Project Managers, and MOE. The selected LOC spill scenarios are based on 'real' events that have occurred in the past and are therefore not representative of extreme events. The following spills scenarios resulted in the identification of five different significant drinking water threat activities to Lake Ontario water treatments plants (WTP). Three of these activities fall under the MOE prescribed drinking water quality threats (*Tables of Drinking Water Threats, Clean Water Act, 2006*):

Threat # 2. The establishment, operation, or maintenance of a system that collects, stores, transmits, treats, or disposes of sewage (relates to two activities).

Threat # 15. The handling and storage of fuel.

Two of the activities required MOE approval of additional "Local" drinking water threats:

- Pipeline transporting petroleum products (containing benzene) crossing tributaries of Lake Ontario; and
- Spill of tritium from nuclear generating station.

Both of these 'local threats' only apply to specific Lake Ontario intakes (**Table 6-2**) identified in the respective Assessment Reports.

## 7.1 IDENTIFYING AND ENUMERATING POTENTIAL SIGNIFICANT THREATS

Land use activities have been inventoried in vulnerable areas and potential significant threats have been identified using desktop information but have not been confirmed through site visits. All of this information can be found in the Assessment Reports. Just because one of the 21 activities is identified as a significant threat does not mean that it is currently harming the water or that it will in the future. Determining whether or not a threat actually exists is a complex process. The MOE has ranked drinking water threats as being significant, moderate or low. The SPP must, at a minimum, include policies for all areas where significant threats could occur. There are three possible approaches to identifying drinking water threats.

### 7.1.1 Vulnerability Scoring/Threats-Based Approach

The vulnerability scoring approach relies upon the *Tables of Drinking Water Threats* created by MOE to identify and rank drinking water threats. A variety of specific circumstances are outlined in the *Tables of Drinking Water Threats* for each of the 21 prescribed drinking water threats. These tables were created to provide a consistent approach across all Source Protection Regions in Ontario. The *Tables of Drinking Water Threats* provide the list of circumstances where provincially prescribed activities are low, moderate or significant threats to drinking water. The tables can be accessed through the Ministry of the Environment's website.

To understand how each circumstance applies within the vulnerable areas, it is necessary to understand how the *Tables of Drinking Water Threats* were set up. The tables link the hazard rating of an activity under a specific circumstance and for a specific source of water, with the vulnerability scores needed to make the activity/circumstance a significant, moderate or low drinking water threat. The risk score is determined through the use of the following equation:

$$R = V \times HR$$

Where:

**R** is Risk Score

**V** is Vulnerability of the source water area (scale of 1 – 10)

**HR** is the Hazard Rating of the threat (scale of 1 – 10)

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Risk Score Range	Drinking Water Threat Classification
80 – 100	Significant
60 - < 80	Moderate
> 40 - < 60	Low

The hazard ratings are not provided in the *Tables of Drinking Water Threats*, but the threat level is identified based on the vulnerable area and vulnerability score where the activity is or would be located. The chemical hazard ratings were determined by considering factors such as toxicity, environmental fate, quantity and method of release. The vulnerability scores for different parts of the vulnerable areas described in Chapter 6 are calculated based on provincially mandated factors applied to site specific information about the area, for example how permeable the soil is above the aquifer. The Assessment Reports describe the information and approach used to calculate the vulnerability scores for around each well or intake. The maps (**Appendix F**) included in this SPP show the vulnerability scores for areas around wells or intakes where significant drinking water threats may occur.

The *Tables of Drinking Water Threats* separate circumstances into chemical and pathogen based contaminants. It should be noted that the presence of a DNAPL (dense non-aqueous phase liquid) is considered a significant threat if it occurs anywhere within the five year time of travel (WHPA-A to WHPA-C), regardless of the vulnerability score.

### 7.1.2 Issues Approach

A drinking water Issue is a documented, existing problem with the quality of the source water. An Issue exists if a contaminant is present at a concentration that may result in the deterioration of the quality of water used as a source of drinking water, or if there is a trend of increasing concentrations of the contaminant. Every elevated contaminant in the raw water is not necessarily considered an Issue.

A “condition” is defined as a past land use activity which may pose a problem to water quality.  
An “issue” is defined as a documented water quality problem.

Elevated parameters are not considered an Issue when they are known to be naturally occurring and do not present a problem for the water treatment plant operator. For Issues caused by human activities, the Assessment Report must delineate the area contributing to an Issue or include a plan to delineate the Issue Contributing Area. Once a drinking water Issue is identified, then any activities or conditions

that may be causing that Issue need to be identified. This is called the Issue approach to identifying drinking water threats.

The first step is to identify an Issue Contributing Area (ICA) in the vicinity of the location at which the Issue has been observed. The ICA may be different than the vulnerable area (WHPA or IPZ). In the second step, specific drinking water threats that could reasonably be expected to contribute to the Issue are identified. All such threats are automatically classified as significant.

### **7.1.3 Event-Based Approach**

The event-based approach was included in the *Technical Rules* to identify threats to drinking water in systems drawing water from larger surface water bodies where the vulnerability scores are generally low. In the CTC Source Protection Region, this approach was only used for modeling IPZ-3s for drinking water systems in Lake Ontario.

### **7.1.4 Enumerating Drinking Water Threats**

The minimum requirement for the preparation of the Assessment Reports involved counting the potential significant drinking water threats within WHPAs or IPZs where the risk could be “significant” based on the vulnerability score of the area. Policies must be developed to mitigate existing significant drinking water threats and ensure activities do not become a significant drinking water threat. In the Assessment Reports approved by the MOE in January 2012, seven significant drinking water threats were identified in the CLOSPA, 493 in the TRSPA, and 10604 in the CVSPA. The high number of threats in the CVSPA is due to large ICAs around wells in Orangeville, Acton and Georgetown. The identification and enumeration of threats was a desktop exercise based on air photo interpretation, municipal tax codes, etc. There were no visits to individual properties. The threats identified in the Assessment Reports are *potential* threats only. If an identified property does not have a specific threat activity being carried out on it then the ‘existing’ threat policies in the SPP for that threat would not apply. Conversely, even though a threat activity is not identified on a property, the relevant SPP policies apply if the threat activity is being carried out now or in the future.

## **7.2 TRANSPORT PATHWAYS**

The vulnerability of an aquifer may be increased by any land use activity or feature that disturbs the surface above the aquifer, or which artificially enhances flow to that aquifer. Man-made transport pathways include pits, quarries, mines, road cuts, ditches, storm water, pipelines, sewers, and poorly

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constructed wells. These pathways can bypass the natural system, resulting in faster pathways for contamination to reach the well or intake. If any of these constructed pathways exist in a water source, the vulnerability score increases by one or two steps (i.e., from low to medium, from medium to high, or from low to high). The decision by the SPC to increase the vulnerability score for an area should be supported by data, and use professional judgment. When determining whether the vulnerability of an area has increased, the following factors shall be considered, as per *Technical Rule 41*.

Hydrogeological conditions:

- The type and design of any transport pathways;
- The cumulative impact of any transport pathways; and
- The extent of any assumptions used in the assessment of the vulnerability of the groundwater.

Examples of features that may provide a transport pathway that could result in an increase in vulnerability of a water supply source include:

- Existing wells or boreholes
- Unused or abandoned wells
- Pits and quarries
- Mines

The *Technical Rules* indicate that a Source Protection Committee may conclude that the data available may be insufficient or of too poor quality to justify an increase in vulnerability.

Several datasets for pathway features were reviewed in an attempt to assess transport pathways within the CTC Source Protection Region. Only the data for pits and quarries were deemed sufficient to adjust the vulnerability score within WHPAs and HVAs.

## 8 POLICY DEVELOPMENT

Before the Source Protection Committee could begin the task of researching and creating policies to protect water, a full understanding of the vulnerable areas within the CTC Source Protection Region and what threats existed in those vulnerable areas needed to take place. All the research was compiled into the Assessment Reports which were completed and submitted to the Province in 2010, with updated versions submitted in July 2011 and approval by the Province in January 2012. A further update to the Assessment Report for the Credit Valley Source Protection Area is underway which delineates new WHPAs and updates the threats assessment and identification around wells owned and operated by the Region of Halton serving Georgetown and Acton (Town of Halton Hills). The updates will be submitted to the Ministry for approval in late October 2012. The maps for these wells contained in this Proposed Source Protection Plan showing where policies apply (**Appendix F**) are based on the new delineations.

With the vulnerable areas identified and the threats enumerated, the next step for the SPC was to develop policies. In order to do this, a Source Protection Planning Working Group (comprised of SPC members) and a Source Protection Planning Steering Committee (comprised of municipal staff) were established to begin the detailed research and consultation needed to inform the work on policy development. The Working Group and Steering Committee worked with planning consultants to develop a series of background reports which summarized each of the threats, where they are significant and what tools were available to address them. These reports were presented and discussed at six workshops held between January and April 2011. These workshops were attended by SPC members, municipal staff and subject-area experts (i.e., Ontario Farm Environment Coalition, TSSA) where small groups discussed appropriate policies to address the threats to drinking water sources, and to determine how these policies would be implemented. Under the SPC's authority, there are a number of different pieces of legislation, and planning tools available that were selected, as the most suitable approach to achieving its objectives. These workshops resulted in a set of draft policy options that were presented to the SPC at a two-day workshop in June 2011. The SPC members reviewed each threat and selected (by consensus or vote if consensus not achieved) what they believed was the most appropriate policy option to stop an activity from being a significant threat and to prevent an activity from becoming a significant threat in the future. Additional workshops for groundwater quantity threats and Lake Ontario threats were held in August and September, 2011, respectively and followed a similar process.

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The CTC Source Protection Committee approved the draft policies for pre-consultation with implementing bodies in September 2011.

Chapter 5.1 of this document describes the process followed by the SPC to assess and revise the policies during the pre-consultation and first public consultation stages taking into account the comments made and reviewing what other SPCs were proposing for similar threats.

## 9 RANGE OF POLICY TOOLS AVAILABLE

The Source Protection Committee had a variety of policy tools available to use to develop Source Protection Plan policies, including specific prescribed instruments and land use planning powers under specific provincial legislation (described below). The *Clean Water Act, 2006* also introduces new powers that can be used in a SPP which would be implemented by the municipalities responsible for supplying drinking water. These are known as “Part IV Powers” and these authorities allow specific activities to be regulated (prohibited or managed) in areas where these activities are, or could be, a significant drinking water threat. The SPC can also choose “softer” tools such as Education and Outreach programs alone or in combination with other tools. Where existing legislation is available to address a threat, the SPC chose to use tools based on the existing legislation to avoid duplication or conflict. The SPC also chose in many cases to develop new policies/programs to complement the existing controls.

### 9.1 PRESCRIBED INSTRUMENTS

Prescribed instruments are existing, regulatory tools under specific pieces of provincial legislation. These prescribed instruments allow the regulatory authority to impose conditions on existing and/or future activities that can be used to protect drinking water. Using existing regulatory tools such as Environmental Compliance Approvals under the *Environmental Protection Act, 1990*, avoids regulatory duplication. This means that, rather than creating a new tool, a policy in a SPP would point to an already-existing tool that fulfills the objective of the policy. The *Clean Water Act, 2006* recognizes certain existing instruments that can be used to meet SPP objectives. The instruments that have been prescribed are:

#### ***The Aggregate Resources Act, 1990***

- Section 8 with respect to site plans included in applications for licenses
- Section 11 and 13 with respect to licenses to remove aggregate from pits or quarries
- Section 25 with respect to site plans accompanying applications for wayside permits
- Section 30 with respect to wayside permits to operate pits or quarries
- Section 36 with respect to site plans included in applications for aggregate permits
- Section 37 with respect to aggregate permits to excavate aggregate or topsoil



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### ***The Environmental Protection Act, 1990***

- Section 29 with respect to certificate of approval or provisional certificates of approval issued by the Director for the use, operation, establishment, alteration, enlargement or extension of waste disposal sites or waste management systems
- Section 47.5 with respect to renewable energy approvals issued or renewed by the Director

### ***The Nutrient Management Act, 2002***

- Section 10 with respect to nutrient management strategies
- Section 14 with respect to nutrient management plans
- Section 28 with respect to approvals of nutrient management strategies or nutrient management plans
- Section 15.2 with respect to NASM plans

### ***The Ontario Water Resources Act, 1990***

- Section 34 with respect to permits to take water
- Section 53 with respect to approvals to establish, alter, extend or replace new or existing sewage works

### ***The Pesticides Act, 1990***

- Sections 7 and 11 with respect to permits for land exterminations, structural exterminations and water exterminations issued by the Director

### ***The Safe Drinking Water Act, 2002***

- Section 40 with respect to drinking water works permits issued by the Director
- Section 44 with respect to municipal drinking water licenses issued by the Director

## **9.2 RISK MANAGEMENT PLANS (PART IV TOOL, SECTION 58)**

A Risk Management Plan (RMP) is a new tool introduced in the *Clean Water Act, 2006* which sets out a plan to manage a threat activity in an area where it is, or could be, a significant drinking water threat, which may include responsibilities and protocols of the person engaged in the threat activity. Risk Management Plans are intended to be negotiated between a Risk Management Official (RMO) and a person engaging in the threat activity. If agreement cannot be achieved, a RMP may be ordered, so that the user complies. The Risk Management Official must be satisfied that a RMP will reduce the potential

for adverse effects to a drinking water source, so that the activity ceases to be, or does not become, a significant threat.

### **9.3 PROHIBITION (PART IV TOOL, SECTION 57)**

The Source Protection Committee may choose to prohibit certain activities, including existing activities which pose a particularly significant threat to drinking water sources, using another new tool introduced in the *Clean Water Act, 2006*. Prohibition of existing activities is meant to be a ‘tool of last resort’, meaning that the SPC may only do so if they are convinced no other method will reduce the risk, or the degree/level of risk that the activity poses is unacceptably high or severe that it may not be permitted to continue. The companion Explanatory Document to this Proposed Source Protection Plan provides the rationale for the SPC’s decisions to use these tools to address some existing significant drinking water threats.

### **9.4 RESTRICTED LAND USES (PART IV TOOL, SECTION 59)**

Restricted Land Uses policies are complementary tools under the *Clean Water Act, 2006* which are used with either s.58 Risk Management Plans or s.57 Prohibition of activities. They do not eliminate a land use (and do not have the same meaning as in the *Planning Act, 1990*), but ensure that activities in the designated area are assessed by the RMO to ensure compliance with s.58 Risk Management Plan or s.57 Prohibition policies before the municipality issues a building permit or planning approvals. This tool acts as a screening tool for municipalities when reviewing applications, to prevent the unintentional approval of activities that are a significant threat to municipal drinking water.

### **9.5 LAND USE PLANNING**

These are policies that affect land use planning decisions. Land use planning policies could fall under the *Planning Act, 1990* or the *Condominium Act, 1998*. These policies may manage or eliminate (through prohibiting it from being established) a future threat activity through a land use policy that is implemented through land use planning decisions (such as Official Plans, Zoning By-laws and Site Plan Controls).

### **9.6 EDUCATION AND OUTREACH**

Considered a non-regulatory or ‘soft’ tool, the SPC may use education and outreach policies in conjunction with other types of policies. If the SPC decides to use only a soft tool to address a significant drinking water threat as a stand-alone tool, it must be explained why the policy is sufficient to ensure

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that the threat does not become, or ceases to be significant. The companion Explanatory Document to this SPP provides the rationale for the SPCs decisions to use these tools as the only tool to address some significant drinking water threats.

### 9.7 SPECIFY ACTION

These policies specify an action to be taken to achieve the SPP objectives. These policies may be mandatory depending on the body responsible for implementation. 'Other' approaches include policies that:

- specify certain actions be taken by a particular person or body to implement the Source Protection Plan or achieve the SPP's objectives;
- establish stewardship programs;
- specify and promote best management practices;
- establish pilot programs; and/or
- govern research.

Additional research may be required to determine new, innovative methods or technologies for addressing certain threats, or to better understand where targeted actions to address threats would have the most benefit to source water (e.g., Issues Contributing Area).

### 9.8 STRATEGIC ACTIONS

Strategic Action policies are a non-legally binding commitment. They assign a discretionary obligation on the implementing body to achieve the objectives of the SPP. Any policy set out in the SPP that is NOT one of the following policies is a Strategic Action policy:

- a significant threat policy;
- a designated Great Lakes policy;
- a policy to which section 45 of the Act applies (Monitoring);
- a policy to which clause 39 (1) (b) of the Act applies (Land Use Planning – Have Regard For); and/or
- a policy to which clause 39 (7) (b) of the Act applies (Prescribed Instruments – Have Regard For).

Strategic Action policies can apply to moderate and low threats ONLY, not significant threats.

## 9.9 MONITORING POLICIES

Generally speaking, monitoring policies (**Chapter 10.14**) are provided to track the implementation of a threat policy to determine, over time, the effectiveness of the policy. These policies generally require annual reporting to the Source Protection Authority on the actions taken to implement the policy. Every significant threat policy must have an associated monitoring policy.

## 9.10 LEGAL EFFECT

The Source Protection Plan policies, once approved by the Minister of the Environment, will have a variety of legal effect in the Province. The requirements of the implementing bodies named in each policy vary according to the degree of threat the policy is addressing. It should be noted that the decisions of the Ontario Municipal Board (OMB) and the Environmental Review Tribunal are also required to conform to relevant significant threat policies and have regard for moderate and low threat policies. There are 11 lists that organize all proposed policies according to the legal effect for implementing bodies (**Table 9-1** and **Appendix B**). Implementing bodies include municipalities, planning authorities, provincial ministries, Conservation Authorities, and the Source Protection Authority. The policies are located in tables in **Chapter 10** of this document and include a column that corresponds to the legal effect table below.

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**Table 9-1: Legal Effect of Source Protection Plan Policies**

List	Legal Effect
<b>List A:</b> Significant threat policies that affect decisions under the <i>Planning Act</i> and <i>Condominium Act, 1998</i>	Legally binding - must conform with
<b>List B:</b> Moderate and low threat policies that affect decisions under the <i>Planning Act</i> and <i>Condominium Act, 1998</i>	Legally binding - have regard to
<b>List C:</b> Significant threat policies that affect prescribed instrument decisions	Legally binding - must conform with
<b>List D:</b> Moderate and low threat policies that affect prescribed instrument decisions	Legally binding - have regard to
<b>List E:</b> Significant threat policies that impose obligations on municipalities, source protection authorities and local boards	Legally binding - must comply with
<b>List F:</b> Monitoring policies referred to in subsection 22(2) of the <i>Clean Water Act, 2006</i> .	Legally binding - must comply with
<b>List G:</b> Policies related to section 57 of the <i>Clean Water Act, 2006</i> (Prohibition)	Legally binding - must comply with
<b>List H:</b> Policies related to section 58 of the <i>Clean Water Act, 2006</i> (Risk Management Plans)	Legally binding - must comply with
<b>List I:</b> Policies related to section 59 of the <i>Clean Water Act, 2006</i> (Restricted Land Use)	Legally binding - must comply with
<b>List J:</b> Strategic Action policies	Non legally binding
<b>List K:</b> Significant threat policies that identify a body other than a municipality, source protection authority or local board as responsible for implementing the policy	Non legally binding

## 10 THE POLICIES

### 10.1 ORGANIZATION OF POLICIES

The policies are organized by threat activity. Each threat activity begins with a brief description of the threat, and a summary of where the threat is significant based on the vulnerable area and vulnerability score. Included in the description of the threat are specific circumstance numbers which will help when determining the threat classification of a specific threat activity. In order to determine whether a specific threat activity is subject to a policy, you must refer to the Ministry of Environment's *Tables of Drinking Water Threats* available on the CTC website at [www.ctcswp.ca](http://www.ctcswp.ca) to determine if the activity meets the specific circumstances to be a significant drinking water threat. If the activity is taking place in an Issue Contributing Area, and is releasing one of the chemicals identified as an issue in the *Tables of Drinking Water Threats*, the activity is a significant drinking water threat, regardless of vulnerability score. Following the description is a table listing the threat policies applicable to the threat. All policies are for significant threats, unless noted directly in the policy.

#### 10.1.1 How to Read the Policies

Each threat activity is organized into a table (see **Figure 10-1** for example). Policies that have multiple parts must be read in their entirety. For questions on how to read the policies, contact CTC SPR staff for information ([www.ctcswp.ca](http://www.ctcswp.ca)).

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**Figure 10-1: How to Read the Plan**

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
FER-1	Application of Commercial Fertilizer to Land	OMAFRA	C	<p><b>Prescribed Instrument</b></p> <p>1) The application of commercial fertilizer to land shall be prohibited where the activity is, or would be, a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-E (VS≥4.5) in an Issue Contributing Area for Nitrates (future).</li> </ul> <p>2) Where the application of commercial fertilizer to land is in an area where the activity is, or would be, a significant drinking water threat, the Nutrient Management Plan or Strategy that governs the activity shall be reviewed to ensure appropriate terms and conditions are included so that the activity ceases to be, or does not become, a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-B (VS=10) (existing, future); or</li> <li>• WHPA-E (VS ≥ 9) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</li> <li>• WHPA-E (VS≥4.5) in an Issue Contributing Area for Nitrates (existing); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates (existing, future).</li> </ul>	See maps 1.1- 1.21	Future: Immediate (T-3) Existing: Upon expiry or within 5 years (T-2)	N/A	MON-4
						Future: Immediate (T-3) Existing: 3 years (T-1)	GEN-5 FER-4	MON-4

Full Policy text  
Read entire policy – parts 1) and 2)

These Policies also apply to this same threat and work together to protect source

To which threat activity does the policy apply?

Who is responsible to implement policy

Unique reference id "FER" = commercial fertilizer policy

Table 9-1 of the plan provides key, for example "C" = must comply

Policies apply only in specific areas

Table 10-1 of the plan has full text of timeline policies

S. 10.14 of the plan lists monitoring requirements for implementing body to report on progress

### 10.1.2 Definitions

#### Existing Threat Activity

An existing threat activity shall mean the following, unless expressly stated in a policy:

- a) an existing use, activity, building or structure at a location in a vulnerable area that is in compliance with all applicable requirements, and that was being used or had been established for the purposes of undertaking the threat activity, at any time within ten years prior to the date of approval of the Source Protection Plan, or
- b) an expansion of an existing use or activity that reduces the risk of contaminating drinking water, or
- c) an expansion, alteration or replacement of an existing building or structure that does not increase the risk of contaminating drinking water.

For clarity, **the definition of** an existing threat activity includes a change in land ownership, the rotation of agricultural lands among crops or fallow conditions, **and allows for alternating between sources of nitrates (agricultural source material, commercial fertilizer, and Category 1 non-agricultural source material).**

Future threat activities are anything not covered under existing.

#### Transition

“Existing Threat” policies apply to prescribed drinking water threat activities under the following circumstances:

- 1) A drinking water threat activity that is part of a development proposal where a Complete Application (as determined by the municipality) was made under the *Planning Act* or *Condominium Act* prior to the day the Source Protection Plan comes into effect. The policy for "existing" drinking water threats also applies to any further applications required under the *Planning Act*, *Condominium Act*, or Prescribed Instruments, **or a development permit under the *Niagara Escarpment Planning and Development Act (NEPDA)***, to implement the development proposal.
- 2) A drinking water threat activity that is part of an application accepted for a Building Permit, which has been submitted in compliance with Division C 1.3.1.3 (5) of the *Ontario Building Code* prior to the day the Source Protection Plan comes into effect.
- 3) A drinking water threat activity that is part of an application accepted for the issuance or amendment of a prescribed instrument prior to the day the source protection plan comes into effect.



### 10.1.3 Timelines for Implementation

The following table (**Table 10-1**) outlines the implementation timelines for the policies in the Source Protection Plan. In the policy tables organized by threat, the third column from the right called “When Policy Applies” contains a brief description of the timeline associated with the existing or future policy and the timeline code (i.e., T-1, T-2), that corresponds to the timelines outlined in the following table. These timeline policies (**Table 10-1**) provide greater detail on when the policy applies than the short reference contained within the threat specific policy.

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**Table 10-1: Timelines for Policy Implementation**

Policy ID	Timelines for Policy Implementation
<b>Prescribed Instruments</b>	
T-1	Prescribed Instruments (existing) shall be reviewed (and amended, as necessary) within 3 years of the date the Source Protection Plan takes effect, or such other date as the Director determines.
T-2	Prescribed Instruments (existing), where prohibited, shall not be renewed when the current Prescribed Instrument expires, and the significant threat activity to which the Prescribed Instrument pertains, shall cease no later than 5 years from the date the Source Protection Plan takes effect.
T-3	The relevant Ministry shall comply with the Prescribed Instrument policy (future) immediately upon the date the Source Protection Plan takes effect.
<b>Part IV Tools</b>	
T-4	Activities (existing) designated for the purpose of s.57 under the Clean Water Act as prohibited, shall be prohibited by the Risk Management Official within 180 days from the date the Source Protection Plan takes effect as per s. 57(2) under the Clean Water Act, unless otherwise specified within the policy.
T-5	Activities (future) designated for the purpose of s.57 under the Clean Water Act are prohibited immediately upon the date the Source Protection Plan takes effect.
T-6	Activities (existing) designated for the purpose of s.58 under the Clean Water Act, requiring risk management plans, shall be identified and confirmed within 1 year by the Risk Management Official. Risk management plans shall be established within 5 years from the date the Source Protection Plan takes effect.
T-7	Activities (future) designated for the purpose of s.58 under the Clean Water Act, requiring risk management plans, are prohibited until such time as a risk management plan is approved by the Risk Management Official, immediately upon the date the Source Protection Plan takes effect.
<b>Land Use Planning</b>	
T-8	Official plans <del>and zoning by-laws</del> shall be amended for conformity with the Source Protection Plan within 5 years from the date the Source Protection Plan takes effect, or at the time of the next review in accordance with s.26 of the Planning Act, whichever occurs first. <b>Zoning by-laws shall be amended within 3 years after the approval of the official plan.</b>
T-9	Planning approval authorities shall <del>comply</del> <b>conform</b> with the policy immediately upon on the date the Source Protection Plan takes effect.
<b>Education and Outreach, Incentives, Research</b>	
T-10	Education and outreach (materials, programs, etc.) shall be developed and implemented within 2 years from the date the Source Protection Plan takes effect.
T-11	Incentives shall be considered within 2 years from the date the Source Protection Plan takes effect.
T-12	Research shall be initiated within 2 years from the date the Source Protection Plan takes effect, contingent on funding.
<b>Specify Action</b>	
T-13	A prioritized maintenance inspection program shall be in effect no later than January 2017.
T-14	The policy shall be complied with within 180 days from the date the Source Protection Plan takes effect.
T-15	The policy shall be considered within 2 years from the date the Source Protection Plan takes effect.
T-16	The policy shall be initiated within 2 years from the date the Source Protection Plan takes effect.
<del>T-17</del> T-17	<b>The policy shall be implemented within 2 years from the date the Source Protection Plan takes effect.</b>
<del>T-18</del> T-18	The policy shall be implemented immediately upon the date the Source Protection Plan takes effect.

**10.1.4 General and Other Policies**

General policies apply to more than one group of threat activities, while Other policies only apply to specific threats or locations. Policies are shown below.

**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

Policy ID	Implementing Body	Legal Effect	Policy	When Policy Applies	Related Policies	Monitoring Policy
GEN-1	Municipality	A I	<p><b>s.59 Restricted Land Uses</b></p> <p>All land uses except solely residential uses, are designated for the purpose of Section 59 Restricted Land Uses under the <i>Clean Water Act, 2006</i> in all areas where the following activities are, or would be, a significant drinking water threat:</p> <ul style="list-style-type: none"> <li>• The establishment, operation or maintenance of a waste disposal site (within the meaning of Part V of the <i>Environmental Protection Act</i>) that does not require approval under the <i>Environmental Protection Act</i> or the <i>Ontario Water Resources Act</i></li> <li>• The application or storage of agricultural source material</li> <li>• <b>The application or storage of non-agricultural source material (Category 1)</b></li> <li>• The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard</li> <li>• The application, handling or storage of commercial fertilizer</li> <li>• The handling and storage of pesticide at a manufacturing, processing or wholesaling facility, retail outlet or custom applicator’s storage yard</li> <li>• The application, handling and storage of road salt</li> <li>• The storage of snow (snow dumps)</li> <li>• The handling and storage of fuel that requires s.57 Prohibition or s.58 Risk Management Plan</li> <li>• The handling and storage of DNAPLs and organic solvents</li> <li>• The management of runoff that contains chemicals used in the de-icing of aircraft</li> <li>• <b>An activity that reduces recharge of an aquifer</b></li> </ul>	Immediately (T-9)	<p>WST-2 PES-2 WST-6 SAL-1 ASM-2 SAL-2 ASM-4 SAL-7 NASM-1 SNO-1 NASM-2 FUEL-3 LIV-1 DNAP-1 LIV-3 OS-1 FER-2 DI-1 FER-3 REC-2 PES-1</p> <p align="center">See Explanatory Notes</p>	MON-1
GEN-2	MOE	K	<p><b>Incentive</b></p> <p>The Ministry of Environment should maintain and expand the Ontario Drinking Water Stewardship Program and/or fund other relevant programs to enable local delivery to implement risk management measures for the following activities where they are a significant drinking water threats:</p> <p>a) Septic systems governed under the <i>Building Code Act</i>;  b) Application and storage of ASM;  c) Application, handling and storage of NASM;  d) Use of land as livestock grazing or pasturing land, an outdoor confinement area or farm-animal yard. O. Reg. 385/08, s. 3;  e) Application, handling and storage of fertilizer; and  f) Application, handling and storage of pesticide.</p>	Existing: Consider within  2 years (T-15)	<p>SWG ASM NASM LIV FER PES</p> <p align="center">See Explanatory Notes</p>	MON-4

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Policy ID	Implementing Body	Legal Effect	Policy	When Policy Applies	Related Policies	Monitoring Policy
GEN-3	MOE	K	<p><b>Specify Action</b></p> <p>The Ministry of Environment is requested to continue its funding to municipalities and Source Protection Authorities under source protection programs to continue local research into issues (nitrogen, pathogen, sodium, chloride) to determine where the following activities are a contributing source of the contaminant in Issue Contributing Areas:</p> <p>a) Septic systems governed under the <i>Building Code Act</i> and the <i>Ontario Water Resources Act</i>;                      b) Discharge of untreated stormwater from a stormwater retention pond;                      c) Application and storage of ASM;                      d) Application, handling and storage of NASM;                      e) Use of land as livestock grazing or pasturing land, an outdoor confinement area or farm-animal yard. O. Reg. 385/08, s. 3;                      f) Application, handling and storage of fertilizer; and                      g) Application, handling and storage of road salt.</p>	Existing: Consider within 2 years (T-15)	SWG ASM NASM LIV FER SAL  See Explanatory Notes	MON-4
GEN-4	Municipality	E	<p><b>Specify Action</b></p> <p>Where municipal groundwater monitoring shows increasing or decreasing trends and/or exceeds Ontario Drinking Water Standards, the municipality shall investigate and share the information with the RMO, MOE, OMAFRA (for nitrates or pathogens) and the Source Protection Authority.</p>	Existing & Future: 2 years (T-12)	All Nitrate and Pathogen ICA Threats  See Explanatory Notes	MON-1
GEN-5	Provincial Ministry	K	<p><b>Specify Action</b></p> <p>Where an activity that is, or would be, a significant drinking water threat requires approval using a Prescribed Instrument, the regulatory authority shall undertake compliance/verification inspection to confirm that any new or amended conditions of approval are, or have been, implemented by the facility owner within 3 years of the date of the new or amended approval <b>to ensure that the activity ceases to be, or does not become, a significant drinking water threat.</b> Ongoing inspections should be conducted at no less than 5 year intervals.</p>	See Policy	WST-1 <del>NASM-2</del> WST-4    LIV-2 SWG-8    LIV-4 SWG-11    FER-1 SWG-13    FER-4 SWG-15    FUEL-1 SWG-17    FUEL-2 ASM-1    LO-SEW-1 ASM-3    LO-SEW-2 ASM-5    DEM-1 <del>NASM-1</del>  See Explanatory Notes	MON-4

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Policy ID	Implementing Body	Legal Effect	Policy	When Policy Applies	Related Policies	Monitoring Policy
<b>GEN-6</b>	Municipality	J	<p><b>Specify Action</b></p> <p>Where education and outreach materials are prepared and delivered to significant drinking water threats areas, the municipality is encouraged to deliver those materials to affected properties and businesses in moderate and low threat areas.</p>	Existing & Future: Consider within 2 years (T-15)	SWG-2 FUEL-4 SWG-7 DNAP-2 NASM-5 OS-2 FER-6 DEM-5 PES-3 REC-3 SAL-8  See Explanatory Notes	MON-1
<b>OTHER-1</b>	Niagara Escarpment Commission	K	<p><b>Specify Action</b></p> <p>The Niagara Escarpment Commission is requested to initiate amendments to the Niagara Escarpment Plan, no later than in their next scheduled plan review cycle, to incorporate from the Source Protection Plans the relevant policies, restrictions and conditions into appropriate sections of the NEP, in order to protect existing and future drinking water sources in Source Protection Areas by ensuring activities cease to be or do not become significant drinking water threats.</p>	Existing & Future: Initiate within 2 years (T-16)	WST-5 SWG-18 SWG-4 SAL-3 SWG-9 SAL-10 SWG-12 DEM-2 SWG-14 REC-1 SWG-16	MON-4 <del>MON-1</del>

## 10.2 WASTE

### Definition

Waste means the establishment or operation of a waste disposal site. Waste includes domestic, industrial or municipal waste or refuse, ashes, garbage, refuse and other materials designated under the *Environmental Protection Act, 1990*.

A "waste disposal site" means:

- Any land upon, into, in or through which, or building or structure in which, waste is deposited, disposed of, handled, stored, transferred, treated or processed;
- Any operation carried out or machinery or equipment used in connection with the depositing, disposal, handling, storage, transfer, treatment or processing of waste.

"Waste" includes ashes, garbage, refuse, domestic waste, industrial waste, or municipal refuse and other materials designated in the *Environmental Protection Act, 1990* regulations.

### Why is Waste a Threat to Drinking Water Sources?

A number of chemicals and pathogens from the application, handling and storage of waste, could make their way into drinking water sources. There are 10 potential sub-categories of this threat, three of which have been identified as existing significant threats in the CVSPA and TRSPA:

- Storage of hazardous or liquid industrial waste at disposal sites (see circumstances #1884-1913)
- Storage of waste described in clauses p, q, r, s, t, or u of the definition of hazardous waste in O. Reg. 347 of EPA (*small quantity wastes*)<sup>1</sup> (see circumstances #1914-1943)
- Application of hauled, untreated sewage (septage) to land (see circumstances #96-101, 1969)

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<sup>1</sup> These refer to small quantities of hazardous waste, empty hazardous waste containers, and cleanup materials from small spills.

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The other seven sub-categories of waste threats are:

- Storage, Treatment and Discharge of Tailings from Mines (see circumstances #1533-1584)
- Landfarming of Petroleum Refining Waste (see circumstances #1585-1602)
- Landfilling (Hazardous Waste) (see circumstances #1603-1638)
- Landfilling (Municipal Waste) (see circumstances #1639-1674)
- Landfilling (Solid Non Hazardous Industrial or Commercial) (see circumstances #1675-1710)
- Liquid Industrial Waste Injection into a Well (see circumstances #1711-1878)
- PCB Waste Storage (see circumstances #1879-1883)

The Ministry of Environment's *Tables of Drinking Water Threats* identify a number of chemicals that could make their way from waste disposal sites into the groundwater and/or surface water under certain conditions. Pathogens may also be a concern, for example from hauled septage. Contaminants of concern for drinking water sources that may occur in waste include:

- Arsenic
- Barium
- Cadmium
- Chromium VI
- Copper
- Dichlorophenoxy acetic-acid
- Lead
- Mercury
- Nitrogen
- Phosphorus
- Selenium
- Silver
- Trichlorophenoxyacetic acid-2,4,5
- Vinyl Chloride
- Pathogens

See **Table 10-2** for when and where waste is a significant drinking water threat.



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**Table 10-2: When/where waste is a significant drinking water threat**

Prescribed Drinking Water Threat	Waste Threat Sub-category	Area and Vulnerability Score (VS)
The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act	Storage of hazardous or liquid industrial waste at disposal sites	WHPA-A (VS=10) WHPA-B (VS ≥ 8) WHPA-C (VS=8) WHPA-E (VS ≥ 9)
	Storage of wastes described in clauses (p), (q), (r), (s), (t) or (u) of the definition of hazardous waste	WHPA-A (VS=10) WHPA-B (VS ≥ 8) WHPA-C (VS=8) WHPA-E (VS=10)
	Application of untreated septage to land	WHPA-A (VS=10) WHPA-B (VS=10) WHPA-E (VS ≥ 8) In an ICA for Nitrates or Pathogens
	Storage, treatment and discharge of tailings from mines	WHPA-A (VS=10) WHPA-B (VS=10) WHPA-E (VS ≥ 9)
	Landfarming of petroleum refining waste	WHPA-A (VS=10) WHPA-B (VS=10) WHPA-E (VS ≥ 9)
	Landfilling of hazardous waste	WHPA-A (VS=10) WHPA-B (VS=10) WHPA-E (VS ≥ 9)
	Landfilling of municipal waste or solid non-hazardous industrial or commercial waste	WHPA-A (VS=10) WHPA-B (VS ≥ 8) WHPA-C (VS=8) WHPA-E (VS ≥ 9)
	Liquid industrial waste injection into a well	WHPA-A (VS=10) WHPA-B (VS ≥ 8) WHPA-C (VS=8)
	PCB waste storage	WHPA-A (VS=10) WHPA-B (VS=10) WHPA-E (VS=10)

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
WST-1	Storage of Hazardous or Liquid Industrial Waste at Disposal Sites	MOE	C	<p><b>Prescribed Instrument</b></p> <p>Where the storage of hazardous or liquid industrial waste or the storage of wastes described in clauses (p), (q), (r), (s), (t) or (u) of the definition of hazardous waste, or in clause (d) of the definition of liquid industrial waste that require an approval under the <i>Environmental Protection Act</i> is in an area where the activity is, or would be, a significant drinking water threat, the Environmental Compliance Approval that governs the activity shall be reviewed to ensure appropriate terms and conditions are included so that the activity ceases to be, or does not become, a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-B (VS=10) (existing, future); or</li> <li>• WHPA-C (VS=8) (existing, future); or</li> <li>• WHPA-E (VS ≥ 9) (hazardous/liquid industrial waste) (existing, future); or</li> <li>• WHPA-E (VS=10) (wastes described in clauses (p), (q), (r), (s), (t) or (u) of the definition of hazardous waste, or in clause (d) of the definition of liquid industrial waste) (existing, future).</li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-3)	GEN-5 WST-2	MON-4
	Storage of wastes described in clauses (p), (q), (r), (s), (t) or (u) of the definition of hazardous waste, or in clause (d) of the definition of liquid industrial waste			<p><del>1) Waste disposal sites shall be prohibited where the activity would be a significant drinking water threat, where waste disposal sites include:</del></p> <p>a) <del>Storage of hazardous or liquid industrial waste at disposal sites in any of the following areas:</del></p> <ul style="list-style-type: none"> <li>• <del>WHPA A (future); or</del></li> <li>• <del>WHPA B (VS ≥ 8) (future); or</del></li> <li>• <del>WHPA C (VS=8) (future); or</del></li> <li>• <del>WHPA E (VS ≥ 9) (future);</del></li> </ul> <p>b) <del>Storage of wastes described in clauses (p), (q), (r), (s), (t) or (u) of the definition of hazardous waste in any of the following areas:</del></p> <ul style="list-style-type: none"> <li>• <del>WHPA A (future); or</del></li> <li>• <del>WHPA B (VS ≥ 8) (future); or</del></li> <li>• <del>WHPA C (VS=8) (future); or</del></li> <li>• <del>WHPA E (VS=10) (future);</del></li> </ul> <p>2) Where a waste disposal site is in an area where the activity is a significant drinking water threat, the Environmental Compliance Approval that governs the activity shall be reviewed to ensure appropriate terms and conditions are included so that the activity ceases to be a significant drinking water threat, where waste disposal sites include:</p> <p>a) Storage of hazardous or liquid industrial waste at disposal sites in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA A (existing); or</li> <li>• WHPA B (VS ≥ 8) (existing); or</li> <li>• WHPA C (VS=8) (existing); or</li> <li>• WHPA E (VS ≥ 9) (existing);</li> </ul>		Existing: 3 years (T-1)	GEN-5	MON-4

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
				<p>b) Storage of wastes described in clauses (p), (q), (r), (s), (t) or (u) of the definition of hazardous waste in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing); or</li> <li>• WHPA-B (VS ≥ 8) (existing); or</li> <li>• WHPA-C (VS=8) (existing); or</li> <li>• WHPA-E (VS ≥ 10) (existing).</li> </ul>				
<b>WST-2</b>	<p>Storage of Hazardous or Liquid Industrial Waste at Disposal Sites</p> <p>Storage of wastes described in clauses (p), (q), (r), (s), (t) or (u) of the definition of hazardous waste, or in clause (d) of the definition of liquid industrial waste</p>	<b>RMO</b>	<p><b>H</b></p> <p><b>A</b></p>	<p><b>Part IV, s.58</b></p> <p>The storage of hazardous or liquid industrial waste or the storage of wastes described in clauses (p), (q), (r), (s), (t) or (u) of the definition of hazardous waste, or in clause (d) of the definition of liquid industrial waste, that do not require an approval under the <i>Environmental Protection Act</i> are designated for the purpose of s.58 under the <i>Clean Water Act</i>, requiring risk management plans, where the threat is, or would be, significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-B (VS=10) (existing, future); or</li> <li>• WHPA-C (VS=8) (existing, future); or</li> <li>• WHPA-E (VS ≥ 9) (hazardous/liquid industrial waste) (existing, future); or</li> <li>• WHPA-E (VS=10) (wastes described in clauses (p), (q), (r), (s), (t) or (u) of the definition of hazardous waste, or in clause (d) of the definition of liquid industrial waste) (existing, future).</li> </ul> <p><b>Land Use Planning</b></p> <p>Waste disposal sites shall be prohibited where the activity would be a significant drinking water threat, where waste disposal sites include:</p> <p>a) Storage of hazardous or liquid industrial waste at disposal sites in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future); or</li> <li>• WHPA-B (VS ≥ 8) (future); or</li> <li>• WHPA-C (VS=8) (future); or</li> <li>• WHPA-E (VS ≥ 9) (future).</li> </ul> <p>b) Storage of wastes described in clauses (p), (q), (r), (s), (t) or (u) of the definition of hazardous waste in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future); or</li> <li>• WHPA-B (VS ≥ 8) (future); or</li> <li>• WHPA-C (VS=8) (future); or</li> <li>• WHPA-E (VS=10) (future).</li> </ul>	See Maps 1.1 - 1.21	<p>Future: Immediately (T-7)</p> <p>Existing: 1 year/5 years (T-6)</p> <p>Future: Immediately (T-9)</p> <p>Amend OPs and ZBLs for conformity within 5 years (T-8)</p>	<p>GEN-1</p> <p>WST-1</p> <p>See Explanatory Notes</p>	<p>MON-2</p> <p>MON-1</p>

**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
WST-3	Application of Untreated Septage to Land	MOE	C	<p><b>Prescribed Instrument</b></p> <p>1) The application of untreated septage to land shall be prohibited where the activity would be a significant drinking water threat in the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (<b>existing</b>, future); or</li> <li>• WHPA-B (VS=10) (future); or</li> <li>• WHPA-E (VS ≥ 8) (future); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates or Pathogens (future).</li> </ul>	See Maps 1.1 - 1.21	<p>Future: Immediately (T-3)</p> <p>Existing: Upon expiry or within 5 years (T-2)</p>	N/A  See Explanatory Notes	MON-4
				<p>2) The application of untreated septage to land (<del>existing</del>) may continue only until the expiry of the current approval, after which time it shall be considered a future activity <b>in any of the following areas:</b></p> <ul style="list-style-type: none"> <li>• WHPA-B (VS=10) (<b>existing</b>); or</li> <li>• WHPA-E (VS ≥ 8) (<b>existing</b>); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates or Pathogens (<b>existing</b>).</li> </ul>		<p>Existing: Upon expiry or within 5 years (T-2)</p>	N/A  See Explanatory Notes	MON-4

**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
WST-4	<ul style="list-style-type: none"> <li>▪ Storage, Treatment, and Discharge of Tailings from Mines</li> <li>▪ Landfarming of Petroleum Refining Waste</li> <li>▪ Landfilling (Hazardous Waste)</li> <li>▪ Landfilling (Municipal Waste)</li> <li>▪ Landfilling (Solid Non Hazardous Industrial or Commercial)</li> <li>▪ Liquid Industrial Waste Injection into a Well</li> <li>▪ Storage of wastes described in clauses (p), (q), (r), (s), (t) or (u) of the definition of hazardous waste, or in clause (d) of the definition of liquid industrial waste (large facilities such as landfills and transfer stations)</li> <li>▪ Storage of Hazardous or Liquid Industrial Waste (large facilities such as landfills and transfer stations)</li> </ul>	MOE	C	<p><b>Prescribed Instrument</b></p> <p>1) Waste disposal sites shall be prohibited where the storage, generation or management of waste would be a significant drinking water threat, where these activities include:</p> <p>a) Storage, treatment, and discharge of tailings from mines; landfarming of petroleum refining waste; and landfilling (hazardous waste) in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future); or</li> <li>• WHPA-B (VS=10)(future); or</li> <li>• WHPA-E (VS ≥ 9) (future).</li> </ul> <p>b) Landfilling (municipal waste), <del>and</del> landfilling (solid non-hazardous industrial or commercial), and the storage of hazardous or liquid industrial waste in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future); or</li> <li>• WHPA-B (VS ≥ 8) (future); or</li> <li>• WHPA-C (VS=8) (future); or</li> <li>• WHPA-E (VS ≥ 9) (future).</li> </ul> <p>c) Liquid industrial waste injection into a well in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future), or</li> <li>• WHPA-B (VS ≥ 8) (future); or</li> <li>• WHPA-C (VS=8) (future).</li> </ul> <p>d) Storage of wastes described in clauses (p), (q), (r), (s), (t) or (u) of the definition of hazardous waste, or in clause (d) of the definition of liquid industrial waste in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future); or</li> <li>• WHPA-B (VS ≥ 8) (future); or</li> <li>• WHPA-C (VS=8) (future); or</li> <li>• WHPA-E (VS=10) (future).</li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-3)	WST-5	MON-4
				<p>2) Where a waste disposal site is in an area where the storage, generation or management of waste is a significant drinking water threat, the Environmental Compliance Approval that governs the activity shall be reviewed to ensure appropriate terms and conditions are included so that the activity ceases to be a significant drinking water threat, where waste disposal sites include:</p> <p>a) Storage, treatment, and discharge of tailings from mines; landfarming of petroleum refining waste; and landfilling (hazardous waste) in any of the following areas:</p>		Existing: 3 years (T-1)	GEN-5	MON-4

**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
				<ul style="list-style-type: none"> <li>• WHPA-A (existing); or</li> <li>• WHPA-B (VS=10) (existing); or</li> <li>• WHPA-E (VS ≥ 9) (existing).</li> </ul> <p>b) Landfilling (municipal waste), and landfilling (solid non-hazardous industrial or commercial), and the storage of hazardous or liquid industrial waste in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing); or</li> <li>• WHPA-B (VS ≥ 8), (existing); or</li> <li>• WHPA-C (VS=8) (existing); or</li> <li>• WHPA-E (VS ≥ 9) (existing).</li> </ul> <p>c) Liquid industrial waste injection into a well in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing); or</li> <li>• WHPA-B (VS ≥ 8) (existing); or</li> <li>• WHPA-C (VS=8) (existing).</li> </ul> <p>d) Storage of wastes described in clauses (p), (q), (r), (s), (t) or (u) of the definition of hazardous waste, or in clause (d) of the definition of liquid industrial waste in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing); or</li> <li>• WHPA-B (VS ≥ 8) (existing); or</li> <li>• WHPA-C (VS=8) (existing); or</li> <li>• WHPA-E (VS=10) (existing).</li> </ul>				

**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Polices	Monitoring Policy
WST-5	<ul style="list-style-type: none"> <li>▪ Storage, Treatment, and Discharge of Tailings from Mines</li> <li>▪ Landfarming of Petroleum Refining Waste</li> <li>▪ Landfilling (Hazardous Waste)</li> <li>▪ Landfilling (Municipal Waste)</li> <li>▪ Landfilling (Solid Non Hazardous Industrial or Commercial</li> <li>▪ Liquid Industrial Waste Injection into a Well</li> <li>▪ Storage of wastes described in clauses (p), (q), (r), (s), (t) or (u) of the definition of hazardous waste, or in clause (d) of the definition of liquid industrial waste (large facilities such as landfills and transfer stations)</li> <li>▪ Storage of Hazardous or Liquid Industrial Waste (large facilities such as landfills and transfer stations)</li> </ul>	Planning Approval Authority	A	<p><b>Land Use Planning</b></p> <p>Waste disposal sites shall be prohibited where the storage or generation of waste would be a significant drinking water threat, where these activities include:</p> <p>a) Storage, treatment, and discharge of tailings from mines; landfarming of petroleum refining waste; and landfilling (hazardous waste) in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future); or</li> <li>• WHPA-B (VS=10) (future); or</li> <li>• WHPA-E (VS ≥ 9) (future).</li> </ul> <p>b) Landfilling (municipal waste), and landfilling (solid non-hazardous industrial or commercial), and the storage of hazardous or liquid industrial waste in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future); or</li> <li>• WHPA-B (VS ≥ 8)(future); or</li> <li>• WHPA-C (VS=8) (future); or</li> <li>• WHPA-E (VS ≥ 9) (future).</li> </ul> <p>c) Liquid industrial waste injection into a well in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future); or</li> <li>• WHPA-B (VS ≥ 8) (future); or</li> <li>• WHPA-C (VS=8) (future).</li> </ul> <p>d) Storage of wastes described in clauses (p), (q), (r), (s), (t) or (u) of the definition of hazardous waste, or in clause (d) of the definition of liquid industrial waste in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future); or</li> <li>• WHPA-B (VS ≥ 8) (future); or</li> <li>• WHPA-C (VS=8) (future); or</li> <li>• WHPA-E (VS=10) (future).</li> </ul>	See Maps 1.1 - 1.21	<p>Future: Immediately (T-9)</p> <p>Amend OPs and ZBLs for conformity within 5 years and ZBLs within 3 years of OP approval (T-8)</p>	WST-4  See Explanatory Notes	MON-1

**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Polices	Monitoring Policy
WST-6	PCB Waste Storage	RMO	G	<p><b>Part IV, s.57, s.58</b></p> <p>Where an approval under the Environmental Protection Act is not required, the establishment, operation or maintenance of a waste disposal site, including for the storage of PCB waste where it is, or would be, a significant drinking water threat, will require the following actions to be taken:</p> <p>1) The storage of PCB waste is designated for the purpose of s.57 under the <i>Clean Water Act</i>, and is therefore prohibited where the threat would be significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future); or</li> <li>• WHPA-B (VS=10) (future); or</li> <li>• WHPA-E (VS=10) (future).</li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-5)	GEN-1	MON-2
			H	<p>2) The storage of PCB waste is designated for the purpose of s.58 under the <i>Clean Water Act</i>, requiring risk management plans, where the threat is significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing); or</li> <li>• WHPA-B (VS=10) (existing); or</li> <li>• WHPA-E (VS=10) (existing).</li> </ul>		Existing: 1 year/5 years (T-6)	N/A	MON-2
WST-7	PCB Waste Storage (temporary waste destruction units)	MOE	C	<p><b>Prescribed Instrument</b></p> <p>Where a temporary waste destruction unit for PCBs is required in an area where the storage of PCB waste is a significant drinking water threat, the Environmental Compliance Approval that governs the activity shall be reviewed or established to ensure appropriate terms and conditions are included so that the activity ceases to be, or does not become, a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-B (VS=10) (existing, future); or</li> <li>• WHPA-E (VS=10) (existing, future).</li> </ul>	See Maps 1.1 - 1.21	<p>Future: Immediately (T-3)</p> <p>Existing: 3 years (T-1)</p>	GEN-1	MON-4



## 10.3 SEWAGE

### Definition

Sewage is the establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage. Sewage includes drainage, storm water, commercial and industrial wastes, and other matters or substances defined in the *Ontario Water Resources Act, 1990*. Sewage systems include stormwater retention pond discharges, sewage treatment plant bypasses, septic systems that service individual properties and others as identified below.

### Why is Sewage a Threat to Drinking Water Sources?

A number of chemicals and pathogens from sewage could make their way into drinking water sources. There are nine potential sub-categories of this threat, four of which have been identified as existing significant threats in the CTC:

- Septic systems (see circumstances #695-706, 1956)
- Discharge of stormwater from a stormwater retention pond (see circumstances #277-504, 1949)
- Sanitary sewers and related pipes (see circumstances #631-694, 1958)
- Storage of sewage (e.g., sewage treatment plant storage tanks) (see circumstances #904-1097, 1960)

The remaining five sub-categories are:

- Septic system holding tanks (see circumstances #707-718, 1957)
- Combined sewer discharge from a stormwater outlet to surface water (see circumstances #212-276, 1947)
- Industrial effluent discharges (see circumstances #505-630, 1950-1954)
- Sewage treatment bypass discharge to surface water (see circumstances # 719-783, 1948)
- Sewage treatment effluent discharges (including lagoons) (see circumstances #784-903, 1959)

Small septic systems (for single family homes) are regulated under the *Ontario Building Code Act, 1992*. Multi-residential septic systems and large systems (greater than 10,000L/day) are regulated under the *Ontario Water Resources Act, 1990*. From the sub-threat activities mentioned above, the specific chemicals and pathogens that threaten drinking water sources include:

## AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region

- Acetone
- Aluminum
- BTEX
- Cadmium
- Chloride
- Chromium
- Dichlorobenzene-1,4(para)
- Hexachlorobenzene
- Lead
- Mecoprop
- Mercury
- NDMA
- Nitrate
- Petroleum hydrocarbons
- Total phosphorus
- PAHs
- PCBs
- Sodium
- Trichloroethylene
- Vinyl chloride
- Pathogen

**\*\*Note:** Total phosphorus is not considered to be a threat for groundwater. It is a threat for surface water because excessive amounts of total phosphorus in surface water can result in eutrophication and toxic algae blooms.

See **Table 10-3** for when and where sewage is a significant drinking water threat.

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**Table 10-3: When/where sewage is a significant drinking water threat**

Prescribed Drinking Water Threat	Sewage Threat Sub-category	Area and Vulnerability Score (VS)
The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage	Septic system	WHPA-A (VS=10) WHPA-B (VS=10) WHPA-E (VS=10) In an ICA for Nitrates, Pathogens, Sodium or Chloride
	Septic system holding tank	WHPA-A (VS=10) WHPA-B (VS=10) WHPA-E (VS=10) In an ICA for Nitrates, Pathogens, Sodium or Chloride
	Combined sewer discharge from a stormwater outlet to surface water	WHPA-E (VS ≥ 8) In an ICA for Nitrates, Pathogens, Sodium or Chloride
	Discharge of untreated stormwater from a stormwater retention pond	WHPA-A (VS=10) WHPA-B (VS=10) WHPA-E (VS ≥ 8) In an ICA for Nitrates, Pathogens, Sodium or Chloride
	Industrial effluent discharges	WHPA-E (VS ≥ 8) In an ICA for Nitrates, Pathogens, Sodium or Chloride
	Sanitary sewers and related pipes	WHPA-A (VS=10) WHPA-B (VS=10) WHPA-E (VS=10) In an ICA for Nitrates, Pathogens, Sodium or Chloride
	Sewage treatment plant bypass discharge to surface water	WHPA-E (VS ≥ 8) In an ICA for Nitrates, Pathogens, Sodium or Chloride
	Sewage treatment plant effluent discharges (Including lagoons)	WHPA-E (VS ≥ 8) In an ICA for Nitrates, Pathogens, Sodium or Chloride
	Storage of sewage (e.g., treatment plant tanks)	WHPA-A (VS=10) WHPA-B (VS ≥ 8) WHPA-C (VS=8) WHPA-E (VS ≥ 9) In an ICA for Nitrates, Pathogens, Sodium or Chloride

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
SWG-1	Septic Systems Governed under the <i>Building Code Act</i>	Municipality	E	<p><b>Specify Action</b></p> <p>A prioritized maintenance inspection program for septic systems governed under the <i>Building Code Act</i>, in locations where the threat is, or would be, significant, shall be implemented by the municipality or Principal Authority under the Ontario Building Code no later than January 2017. Inspection efforts should be prioritized based on systems that pose the greatest risk to sources of drinking water, such as the oldest systems or those in any of the areas of highest vulnerability:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-B (VS=10) (existing, future); or</li> <li>• WHPA-E (VS=10) (existing, future); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates or Pathogens (existing, future).</li> </ul>	See Maps 1.1 - 1.21	January 2017 (T-13)	N/A  See Explanatory Notes	MON-1
SWG-2	Septic Systems Governed under the <i>Building Code Act</i>	MOE  Municipality	K  E	<p><b>Education and Outreach</b></p> <p>The Ministry of Environment should develop and produce education and outreach materials for delivery by local municipalities to landowners with septic systems governed under the <i>Building Code Act</i> within significant threat areas that explains the rationale for the maintenance inspection program and the benefits of regular maintenance and properly functioning septic systems where the threat is, or would be, significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-B (VS=10) (existing, future); or</li> <li>• WHPA-E (VS=10) (existing, future); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates or Pathogens (existing, future).</li> </ul>	See Maps 1.1 - 1.21	Existing & Future: 2 years (T-10)	GEN-6  See Explanatory Notes	MON-4
SWG-3	Septic Systems Governed under the <i>Building Code Act</i>	Municipality	E	<p><b>Specify Action</b></p> <p>Where septic systems governed under the <i>Building Code Act</i> (vacant existing lot of record) would be a significant drinking water threat, septic systems shall only be permitted if the municipality is satisfied that the activity does not become a significant drinking water threat. The hydrogeological assessment to determine appropriate development density shall be conducted by a professional licensed to carry out that work for existing lots of record in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future); or</li> <li>• WHPA-B (VS=10) (future); or</li> <li>• WHPA-E (VS=10) (future); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates or Pathogens (future).</li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-18) <del>(T-17)</del>	N/A  See Explanatory Notes	MON-1

**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
SWG-4	Septic Systems Governed under the <i>Building Code Act</i>	Planning Approval Authority	A	<b>Land Use Planning</b> 1) No new lots requiring septic systems governed under the <i>Building Code Act</i> shall be created where the activity would be a significant drinking water threat in the following area: <ul style="list-style-type: none"> <li>• WHPA-A (future).</li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-9)	N/A  See Explanatory Notes	MON-1
				2) New lots requiring septic systems governed under the <i>Building Code Act</i> in an area where the activity would be a significant drinking water threat shall only be permitted if the municipality is satisfied that the activity will not become a significant drinking water threat. The hydrogeological assessment to determine appropriate development density shall be conducted by a professional licensed to carry out that work in any of the following areas: <ul style="list-style-type: none"> <li>• WHPA-B (VS=10) (future); or</li> <li>• WHPA-E (VS=10) (future); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates, <del>or</del> Pathogens, Sodium or Chloride (future).</li> </ul>		Amend OPs and ZBLs for conformity within 5 years and ZBLs within 3 years of OP approval (T-8)		
SWG-5	Septic Systems Governed under the <i>Building Code Act</i>	MMAH	K	<b>Specify Action</b> The Ministry of Municipal Affairs and Housing is requested to amend the <i>Building Code Act</i> to permit municipalities to require higher standards for septic systems governed under the <i>Building Code Act</i> to deal with nitrate and pathogen threats where they would be a significant drinking water threat in any of the following areas: <ul style="list-style-type: none"> <li>• WHPA-A (future); or</li> <li>• WHPA-B (VS=10) (future); or</li> <li>• WHPA-E (VS=10) (future); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates or Pathogens (future).</li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-18) <del>(T-17)</del>	N/A  See Explanatory Notes	MON-4
SWG-6	Septic Systems Governed under the <i>Building Code Act</i> and <i>Ontario Water Resources Act</i>	Municipality	E	<b>Specify Action</b> Where municipal sanitary sewers and capacity are available, the municipality is encouraged to pass by-laws to require mandatory connections to the municipal sewer system for new development and existing septic systems governed under the <i>Building Code Act</i> and the <i>Ontario Water Resources Act</i> , and the decommissioning of existing systems, where they are a significant drinking water threat located in any of the following areas: <ul style="list-style-type: none"> <li>• WHPA-A (existing); or</li> <li>• WHPA-B (VS=10) (existing); or</li> <li>• WHPA-E (VS=10) (existing); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates, <del>or</del> Pathogens, Sodium or Chloride (existing).</li> </ul>	See Maps 1.1 - 1.21	Existing: Consider within 2 years (T-15)	N/A  See Explanatory Notes	MON-1

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
SWG-7	Septic Systems Governed under the <i>Building Code Act</i> and <i>Ontario Water Resources Act</i>	Municipality SPA	E	<p><b>Specify Action</b></p> <p>The municipality in cooperation with local health units and Source Protection Authorities shall provide education and outreach materials for septic systems governed under the <i>Building Code Act</i> and the <i>Ontario Water Resources Act</i> to landowners in the entire Issue Contributing Area for Sodium or Chloride regarding:</p> <p>a) the use of more efficient water softeners to reduce the discharge of salt to the septic system; and                      b) promoting best management practices to ensure outdoor taps are not connected to the softened water line.</p>	See Maps 1.2 1.3 1.11 1.14	Existing: 2 years (T-10)	GEN-6  See Explanatory Notes	MON-1 MON-3
SWG-8	Septic Systems Regulated under the <i>Ontario Water Resources Act</i>	MOE	C	<p><b>Prescribed Instrument</b></p> <p>1) Septic systems with subsurface disposal of effluent, as regulated by the <i>Ontario Water Resources Act</i>, shall be prohibited where the activity would be a significant drinking water threat in the following area:</p> <ul style="list-style-type: none"> <li>WHPA-A (future).</li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-3)	SWG-9  See Explanatory Notes	MON-4
				<p>2) Where septic systems with subsurface disposal of effluent, as regulated by the <i>Ontario Water Resources Act</i>, are in an area where the activity is, or would be, a significant drinking water threat, the Environmental Compliance Approval that governs the activity shall be reviewed or established to ensure appropriate terms and conditions are included so that the activity ceases to be, or does not become, a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> <li>WHPA-A (existing); or</li> <li>WHPA-B (VS=10) (existing, future); or</li> <li>WHPA-E (VS=10) (existing, future); or</li> <li>the remainder of an Issue Contributing Area for Nitrates, <del>or</del> Pathogens, Sodium or Chloride (existing, future).</li> </ul>		Future: Immediately (T-3)  Existing: 3 years (T-1)	GEN-5 SWG-9  See Explanatory Notes	MON-4

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
SWG-9	Septic Systems Regulated under the <i>Ontario Water Resources Act</i>	Planning Approval Authority	A	<b>Land Use Planning</b>  1) New development dependent on septic systems with subsurface disposal of effluent, as regulated by the <i>Ontario Water Resources Act</i> , shall be prohibited where the activity would be a significant drinking water threat in the following area: <ul style="list-style-type: none"> <li>• WHPA-A (future).</li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-9)  Amend OPs and ZBLs for conformity within 5 years and ZBLs within 3 years of OP approval (T-8)	SWG-8  See Explanatory Notes	MON-1
				2) New development dependent on septic systems with subsurface disposal of effluent, as regulated by the <i>Ontario Water Resources Act</i> , in an area where the activity would be a significant drinking water threat, shall only be permitted where it has been demonstrated by the proponent through an approved Environmental Assessment or similar planning process that the location for the septic system is the preferred alternative and the safety of the drinking water system has been assured in any of the following areas: <ul style="list-style-type: none"> <li>• WHPA-B (VS=10) (future); or</li> <li>• WHPA-E (VS=10) (future); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates, <del>or</del> Pathogens, Sodium or Chloride (future).</li> </ul>				
SWG-10	Septic Systems Regulated under the <i>Ontario Water Resources Act</i>	MOE	K	<b>Specify Action</b>  The Ministry of Environment is requested to develop guidelines for managing significant drinking water threats from septic systems with subsurface disposal of effluent, as regulated by the <i>Ontario Water Resources Act</i> , for distribution to developers, municipalities and other interested or affected parties in any of the following areas: <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-B (VS=10) (existing, future); or</li> <li>• WHPA-E (VS=10) (existing, future); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates, Pathogens, Sodium or Chloride (existing, future).</li> </ul>	See Maps 1.1 - 1.21	Existing & Future: Consider within 2 years (T-15)	N/A  See Explanatory Notes	MON-4

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
SWG-11	Discharge from a Stormwater Retention Pond	MOE	C	<p><b>Prescribed Instrument</b></p> <p>1) Discharge, including infiltration, from a stormwater retention pond shall be prohibited into an area where the discharge would be a significant drinking water threat in the following area:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future).</li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-3)	SWG-12  See Explanatory Notes	MON-4
				<p>2) Where the discharge from a stormwater retention pond is in an area where the activity is, or would be, a significant drinking water threat, the Environmental Compliance Approval that governs the activity shall be reviewed or established to ensure appropriate terms and conditions are included so that the activity ceases to be, or does not become, a significant drinking water threat in the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing); or</li> <li>• WHPA-B (VS=10) (existing, future); or</li> <li>• WHPA-E (VS ≥ 8) (existing, future); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates, Pathogens, Sodium or Chloride (existing, future).</li> </ul> <p>Not limiting any other conditions to be included in the Environmental Compliance Approval, the Issuing Director should include the following conditions, where possible:</p> <ul style="list-style-type: none"> <li>• no untreated stormwater is discharged from the pond into a WHPA-E where it would be classified as a significant drinking water threat;</li> <li>• existing infiltration ponds are lined to prevent infiltration of contaminants; and</li> <li>• in an Issue Contributing Area for Sodium or Chloride, require actions to reduce sodium and chloride loading into the pond from upstream lands where the application of road salt occurs.</li> </ul>		Future: Immediately (T-3)  Existing: 3 years (T-1)	GEN-5 SWG-12  See Explanatory Notes	MON-4
SWG-12	Discharge from a Stormwater Retention Pond	Planning Approval Authority	A	<p><b>Land Use Planning</b></p> <p>1) The use of land for the establishment of new stormwater retention ponds shall be prohibited where the discharge (including infiltration) of stormwater would be into a significant threat area in the following area:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future).</li> </ul> <p>2) The use of land for the discharge from a stormwater retention pond in an area where the activity would be a significant drinking water threat, shall only be permitted where it has been demonstrated by the proponent through an approved Environmental Assessment or similar planning process that the location of discharge from a stormwater retention pond is the preferred alternative and the safety of the drinking water system has been assured in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-B (VS=10) (future); or</li> <li>• WHPA-E (VS ≥ 8) (future); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates, Pathogens, Sodium or Chloride (future).</li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-9)  Amend OPs and ZBLs for conformity within 5 years and ZBLs within 3 years of OP approval (T-8)	SWG-11  See Explanatory Notes	MON-1



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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
SWG-13	Sanitary Sewers and Related Pipes	MOE	C	<p><b>Prescribed Instrument</b></p> <p>Where sanitary sewers and related pipes are in an area where the activity is, or would be, a significant drinking water threat, the Environmental Compliance Approval that governs the activity shall be reviewed or established to ensure appropriate terms and conditions so that the activity ceases to be, or does not become, a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-B (VS=10) (existing, future); or</li> <li>• WHPA-E (VS=10) (existing, future); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates or Pathogens (existing, future).</li> </ul> <p>Not limiting any other conditions to be included in the Environmental Compliance Approval, the Issuing Director should include the following conditions, where possible:</p> <ul style="list-style-type: none"> <li>• requiring higher construction standards; and</li> <li>• inspections by the owner for leaks.</li> </ul>	See Maps 1.1 - 1.21	<p>Future: Immediately (T-3)</p> <p>Existing: 3 years (T-1)</p>	<p>GEN-5 SWG-14</p> <p>See Explanatory Notes</p>	MON-4
SWG-14	Sanitary Sewers and Related Pipes	Planning Approval Authority	A	<p><b>Land Use Planning</b></p> <p>New development dependent on sanitary sewers and related pipes, in an area where the activity would be a significant drinking water threat, shall only be permitted where it has been demonstrated by the proponent through an approved Environmental Assessment or similar planning process, that the location for the sanitary sewer and related pipes is the preferred alternative and the safety of the drinking water system has been assured in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future); or</li> <li>• WHPA-B (VS=10) (future); or</li> <li>• WHPA-E (VS=10) (future); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates or Pathogens (future).</li> </ul>	See Maps 1.1 - 1.21	<p>Future: Immediately (T-9)</p> <p>Amend OPs and ZBLs for conformity within 5 years and ZBLs within 3 years of OP approval (T-8)</p>	<p>SWG-13</p> <p>See Explanatory Notes</p>	MON-1

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
SWG-15	Storage of Sewage	MOE	C	<p><b>Prescribed Instrument</b></p> <p>1) The storage of sewage shall be prohibited where the activity would be a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future); or</li> <li>• WHPA-E (VS ≥ 9) (future); or</li> <li>• WHPA-E (VS≥4.5) in an Issue Contributing Area for Nitrates or Pathogens (future).</li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-3)	SWG-16  See Explanatory Notes	MON-4
				<p>2) Where facilities for the storage of sewage are in an area where the activity is, or would be, a significant drinking water threat, the Environmental Compliance Approval that governs the activity shall be reviewed or established to ensure appropriate terms and conditions are included so that the activity ceases to be, or does not become, a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing); or</li> <li>• WHPA-B (VS ≥ 8) (existing, future); or</li> <li>• WHPA-C (VS=8) (existing, future); or</li> <li>• WHPA-E (VS ≥ 9) (existing); or</li> <li>• WHPA-E (VS≥4.5) in an Issue Contributing Area for Nitrates or Pathogens (existing); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates or Pathogens (existing, future).</li> </ul>		Future: Immediately (T-3)  Existing: 3 years (T-1)	GEN-5 SWG-16  See Explanatory Notes	MON-4
SWG-16	Storage of Sewage	Planning Approval Authority	A	<p><b>Land Use Planning</b></p> <p>1) The use of land for the establishment of facilities for the storage of sewage shall be prohibited where the activity would be a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future); or</li> <li>• WHPA-E (VS ≥ 9) (future); or</li> <li>• WHPA-E (VS≥4.5) in an Issue Contributing Area for Nitrates or Pathogens (future).</li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-9)	SWG-15	MON-1
				<p>2) The use of land for the establishment of facilities for the storage of sewage, in an area where the activity would be a significant drinking water threat, shall only be permitted where it has been demonstrated by the proponent through an approved Environmental Assessment or similar planning process that the location for the storage of sewage is the preferred alternative and the safety of the drinking water system has been assured in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-B (VS ≥ 8) (future); or</li> <li>• WHPA-C (VS=8) (future); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates or Pathogens (future).</li> </ul>		Amend OPs and ZBLs for conformity within 5 years and ZBLs within 3 years of OP approval (T-8)	See Explanatory Notes	

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Polices	Monitoring Policy
SWG-17	Combined Sewer Discharge from a Stormwater Outlet to Surface Water	MOE	C	<p><b>Prescribed Instrument</b></p> <p>1) Future sewage works shall be prohibited where the establishment, operation and maintenance of sewage works would be a significant drinking water threat, where the sewage works discharge is to surface water from:</p> <ul style="list-style-type: none"> <li>a) Combined sewer discharge from a stormwater outlet to surface water;</li> <li>b) Industrial effluent discharges;</li> <li>c) Sewage treatment bypass discharge to surface water; and</li> <li>d) Sewage treatment plant effluent discharge (includes lagoons);</li> </ul> <p>in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-E (VS ≥ 8) (future); or</li> <li>• WHPA-E (VS ≥ 4.2) in an Issue Contributing Area for Nitrates, Pathogens, Sodium or Chloride (future); and</li> </ul> <p>where the discharge is to land, also in:</p> <ul style="list-style-type: none"> <li>• the remainder of an Issue Contributing Area for Nitrates, Pathogens, Sodium or Chloride (future).</li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-3)	SWG-18  See Explanatory Notes	MON-4
	<p>Sewage Treatment Bypass Discharge to Surface Water</p> <p>Sewage Treatment Plant Effluent Discharges (Includes Lagoons)</p> <p>2) Where existing sewage works are in an area where the activity is a significant drinking water threat, the Environmental Compliance Approval that governs the activity shall be reviewed to ensure appropriate terms and conditions are included so that the activity ceases to be a significant drinking water threat, where the sewage works discharge is to surface water from:</p> <ul style="list-style-type: none"> <li>a) Combined sewer discharge from a stormwater outlet to surface water;</li> <li>b) Industrial effluent discharges;</li> <li>c) Sewage treatment bypass discharge to surface water; and</li> <li>d) Sewage treatment plant effluent discharges (includes lagoons);</li> </ul> <p>in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-E (VS ≥ 8) (existing); or</li> <li>• WHPA-E (VS ≥ 4.2) in an Issue Contributing Area for Nitrates, Pathogens, Sodium or Chloride (existing); and</li> </ul> <p>where the discharge is to land, also in:</p> <ul style="list-style-type: none"> <li>• the remainder of an Issue Contributing Area for Nitrates, Pathogens, Sodium or Chloride (existing).</li> </ul>			Existing: 3 years (T-1)		GEN-5  See Explanatory Notes	MON-4	

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Polices	Monitoring Policy
SWG-18	<p>Combined Sewer Discharge from a Stormwater Outlet to Surface Water</p> <p>Industrial Effluent Discharges</p> <p>Sewage Treatment Bypass Discharge to Surface Water</p> <p>Sewage Treatment Plant Effluent Discharges (Includes Lagoons)</p>	Planning Approval Authority	A	<p><b>Land Use Planning</b></p> <p>1) The use of land for the establishment of sewage works, or any use of land for any purpose that would be dependent on these sewage works, shall be prohibited where the activity would be a significant drinking water threat where the sewage works discharge is to surface water from:</p> <ul style="list-style-type: none"> <li>a) Combined sewer discharge from a stormwater outlet to surface water;</li> <li>b) Industrial effluent discharges;</li> <li>c) Sewage treatment bypass discharge to surface water; and</li> <li>d) Sewage treatment plant effluent discharges (includes lagoons);</li> </ul> <p>in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-E (VS ≥ 8) (future); or</li> <li>• WHPA-E (VS ≥ 4.2) in an Issue Contributing Area for Nitrates, Pathogens, Sodium or Chloride (future); and</li> </ul> <p>where the discharge is to land, also in:</p> <ul style="list-style-type: none"> <li>• the remainder of an Issue Contributing Area for Nitrates, Pathogens, Sodium or Chloride (future).</li> </ul>	See Maps 1.1 - 1.21	<p>Future: Immediately (T-9)</p> <p>Amend OPs and ZBLs for conformity within 5 years and ZBLs within 3 years of OP approval (T-8)</p>	<p>SWG-17</p> <p>See Explanatory Notes</p>	MON-1

## 10.4 AGRICULTURAL THREATS

### 10.4.1 Application, Storage and Management of ASM

#### Definition

Agricultural Source Material (ASM) is a class of nutrients that can be applied to land for the purpose of improving the growth of agricultural crops and soil conditioning. Ontario Regulation 267/03 under the *Nutrient Management Act, 2002*, lists the following sources of ASM that may be produced, applied, stored, handled, or used on a farm:

- manure produced by farm animals (includes bedding materials);
- runoff from farm-animal yards and manure storages ;
- wash water that has not been mixed with human body waste (e.g., from the milking centre);
- organic materials produced by intermediate operations that process the above materials (e.g., mushroom compost);
- anaerobic digestion output that does not include sewage biosolids or human body waste ; and
- regulated compost (which contains dead farm animals).

Storing ASM can be at or above grade in a permanent nutrient storage facility or on a temporary field nutrient storage site (solid ASM only).

#### Why is ASM a Threat to Drinking Water Sources?

A number of chemicals and pathogens from ASM could make their way into drinking water sources. The Ministry of Environment's *Tables of Drinking Water Threats* identifies the following sub-threat activities:

- The application of ASM to land (see circumstances #1-18, and 1944)
- The storage of ASM (see circumstances #1201-1224, 1962-1964)
- The management of ASM – aquaculture (see circumstance #1955) (Note: there are no existing or future significant threats possible for management of ASM)

ASM threats can occur on large or small farms – those regulated by the *Nutrient Management Act, 2002* (producing more than 300 nutrient units) and those not regulated by the *Act* (less than 300 nutrient units). ASM is produced on farms with livestock, and under certain conditions, there are specific chemicals and pathogens that are able to make their way from ASM application and storage sites into

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groundwater drinking sources. The Ministry of Environment's *Tables of Drinking Water Threats* identifies the following chemicals and pathogens as potential concerns:

- Nitrogen
- Total phosphorus
- Pathogens

Nitrogen is a concern for surface and groundwater, while phosphorus is only a concern for surface water, for example, in WHPAs where the wells are assessed as GUDI (groundwater under the influence of surface water). Permanent nutrient storage facilities are generally (but not always) located near barns and outdoor confinement areas. Temporary field nutrient storage facilities can be located near barns and outdoor confinement areas, as well as on fields where the ASM will be applied. The storage and application of ASM as potential threats to drinking water sources, is dependent on the vulnerability score of the specific area, and the combination of the percentage of managed land<sup>2</sup> and density<sup>3</sup> of livestock in the vulnerable area. See **Table 10-4** for when and where application and storage of ASM is a significant drinking water threat.

**Table 10-4: When/where application and storage of ASM is a significant drinking water threat**

Prescribed Drinking Water Threat	Application and Storage of ASM Threat Sub-category	Area and Vulnerability Score (VS)
The application of agricultural source material to land	The application of agricultural source material to land	WHPA-A (VS=10) WHPA-B (VS=10) WHPA-E (VS ≥ 8) In an ICA for Nitrates or Pathogens
The storage of agricultural source material	The storage of agricultural source material	WHPA-A (VS=10) WHPA-B (VS=10) WHPA-E (VS ≥ 8) In an ICA for Nitrates or Pathogens

<sup>2</sup> "Managed land": includes cropland, fallow land, improved pasture, golf course, sports fields and lawns to which ASM, NASM or commercial fertilizer could be applied.

<sup>3</sup> "Livestock density" is the number of farm animals in a given area. It is standardized to **nutrient units per acre** to account for the fact that different types of animals produce different amounts of manure with different nutrient values. One (1) nutrient unit is the equivalent of 43 kilograms of nitrogen or 55 kilograms of phosphorus fertilizer.

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
ASM-1	Application of Agricultural Source Material (ASM) to Land	OMAFRA	C	<p><b>Prescribed Instrument</b></p> <p>1) The application of ASM to land shall be prohibited where the activity is, or would be, a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-B (VS=10) in an Issue Contributing Area for Nitrates or Pathogens (future); or</li> <li>• WHPA-E (VS ≥ 4.2) in an Issue Contributing Area for Nitrates or Pathogens (future).</li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-3)	N/A	MON-4
				Existing: Upon expiry or within 5 years (T-2)		See Explanatory Notes		
				<p>2) Where the application of ASM to land is in an area where the activity is, or would be, a significant drinking water threat, the Nutrient Management Plan or Strategy that governs the activity shall be reviewed or established to ensure appropriate terms and conditions are included so that the activity ceases to be, or does not become, a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-B (VS=10) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</li> <li>• WHPA-E (VS ≥ 8) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</li> <li>• WHPA-B (VS=10) in an Issue Contributing Area for Nitrates or Pathogens (existing); or</li> <li>• WHPA-E (VS ≥ 4.2) in an Issue Contributing Area for Nitrates or Pathogens (existing); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates or Pathogens (existing, future).</li> </ul>		Future: Immediately (T-3)	GEN-5 ASM-5	MON-4
<p>3) Where the application of ASM to land is in an area where the activity is, or would be, a significant drinking water threat, the Nutrient Management Plan or Strategy that governs the activity shall be reviewed or established to ensure appropriate terms and conditions are included so that the activity ceases to be, or does not become, a significant drinking water threat. In addition to any other risk management measures required through the Prescribed Instrument, the Prescribed Instrument shall as a minimum ensure:</p> <p>a) the application of ASM is not applied during restricted periods, or any other time when the soil is snow covered or frozen consistent with the limitations of subsection 52.2 – 52.4 of Ontario Regulation 267/03 under the <i>Nutrient Management Act, 2002</i> to avoid runoff; and</p> <p>b) soil testing is required for plant available nitrogen each year prior to application of ASM to determine appropriate application rates, in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-B (VS=10) in an Issue Contributing Area for Nitrates (existing, future); or</li> <li>• WHPA-E (VS ≥ 4.2) in an Issue Contributing Area for Nitrates (existing); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates (existing, future).</li> </ul>	Existing: 3 years (T-1)	See Explanatory Notes						

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
ASM-2	Application of Agricultural Source Material (ASM) to Land	RMO	G	<p><b>Part IV, s.57, s.58</b></p> <p>For farms that do not require a Nutrient Management Plan or Strategy, where the application of ASM is, or would be, a significant drinking water threat, the following actions shall be taken:</p> <p>1) The application of ASM is designated for the purpose of s.57 under the <i>Clean Water Act</i>, and is therefore prohibited where the threat is, or would be, significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-B (VS=10) in an Issue Contributing Area for Nitrates or Pathogens (future); or</li> <li>• WHPA-E (VS ≥ 4.2) in an Issue Contributing Area for Nitrates or Pathogens (future).</li> </ul>	See Maps 1.1 - 1.21	<p>Future: Immediately (T-5)</p> <p>Existing: 180 days (T-4)</p>	<p>GEN-1</p> <p>See Explanatory Notes</p>	MON-2
			H	<p>2) The application of ASM is designated for the purpose of s.58 under the <i>Clean Water Act</i>, requiring risk management plans, where the threat is, or would be, significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-B (VS=10) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</li> <li>• WHPA-E (VS ≥ 8) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</li> <li>• WHPA-B (VS=10) in an Issue Contributing Area for Nitrates or Pathogens (existing); or</li> <li>• WHPA-E (VS ≥ 4.2) in an Issue Contributing Area for Nitrates or Pathogens (existing); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates or Pathogens (existing, future).</li> </ul> <p>3) The application of ASM is designated for the purpose of s.58 under the <i>Clean Water Act</i>, requiring risk management plans, where the threat is, or would be, significant. In addition to any other risk management measures required through the risk management plan, the risk management plan shall as a minimum ensure:</p> <p>a) the application of ASM is not applied during restricted periods, or any other time when the soil is snow covered or frozen consistent with the limitations of subsection 52.2 – 52.4 of Ontario Regulation 267/03 under the <i>Nutrient Management Act, 2002</i> to avoid runoff; and</p> <p>b) soil testing is required for plant available nitrogen each year prior to application of ASM to determine appropriate application rates, in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-B (VS=10) in an Issue Contributing Area for Nitrates (existing, future); or</li> <li>• WHPA-E (VS ≥ 4.2) in an Issue Contributing Area for Nitrates (existing); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates (existing, future).</li> </ul>		<p>Future: Immediately (T-7)</p> <p>Existing: 1 year/5 years (T-6)</p>	<p>GEN-1 ASM-6</p> <p>See Explanatory Notes</p>	MON-2



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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
ASM-3	Storage of Agricultural Source Material (ASM)	OMAFRA	C	<p><b>Prescribed Instrument</b></p> <p>1) The storage of ASM shall be prohibited where the activity would be a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future); or</li> <li>• WHPA-B (VS=10) in an Issue Contributing Area for Nitrates or Pathogens (future); or</li> <li>• WHPA-E (VS ≥ 4.2) in an Issue Contributing Area for Nitrates or Pathogens (future).</li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-3)	N/A  See Explanatory Notes	MON-4
				<p>2) Where the storage of ASM is in an area where the activity is, or would be, a significant drinking water threat, the Nutrient Management Plan or Strategy that governs the activity shall be reviewed or established to ensure appropriate terms and conditions are included so that the activity ceases to be, or does not become, a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing); or</li> <li>• WHPA-B (VS=10) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</li> <li>• WHPA-E (VS ≥ 8) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</li> <li>• WHPA-B (VS=10) in an Issue Contributing Area for Nitrates or Pathogens (existing); or</li> <li>• WHPA-E (VS ≥ 4.2) in an Issue Contributing Area for Nitrates or Pathogens (existing); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates or Pathogens (existing, future).</li> </ul>		Future: Immediately (T-3)  Existing: 3 years (T-1)	GEN-5 ASM-5  See Explanatory Notes	MON-4
ASM-4	Storage of Agricultural Source Material (ASM)	RMO	G	<p><b>Part IV, s.57, s.58</b></p> <p>For farms that do not require a Nutrient Management Plan or Strategy, where the storage of ASM would be a significant drinking water threat, the following actions shall be taken:</p> <p>1) The storage of ASM is designated for the purpose of s.57 under the <i>Clean Water Act</i>, and is therefore prohibited where the threat would be significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future); or</li> <li>• WHPA-B (VS=10) in an Issue Contributing Area for Nitrates or Pathogens (future); or</li> <li>• WHPA-E (VS ≥ 4.2) in an Issue Contributing Area for Nitrates or Pathogens (future).</li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-5)	GEN-1  See Explanatory Notes	MON-2
				<p>2) The storage of ASM is designated for the purpose of s.58 under the <i>Clean Water Act</i>, requiring risk management plans, where the threat is, or would be, significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing); or</li> <li>• WHPA-B (VS=10) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</li> <li>• WHPA-E (VS ≥ 8) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</li> <li>• WHPA-B (VS=10) in an Issue Contributing Area for Nitrates or Pathogens (existing); or</li> <li>• WHPA-E (VS ≥ 4.2) in an Issue Contributing Area for Nitrates or Pathogens (existing); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates or Pathogens (existing, future).</li> </ul>		Future: Immediately (T-7)  Existing: 1 year/5 years (T-6)	GEN-1 ASM-6  See Explanatory Notes	MON-2

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
ASM-5	Application of Agricultural Source Material (ASM) to Land  Storage of Agricultural Source Material (ASM)	MOE	K	<p><b>Specify Action</b></p> <p>For farms that require a Nutrient Management Plan or Strategy, the Ministry of Environment shall prioritize and conduct regular inspections of these farms where the application and storage of ASM is, or would be, a significant drinking water threat. <del>for:</del></p> <p>a) <del>the application of ASM to land in any of the following areas:</del></p> <ul style="list-style-type: none"> <li><del>• WHPA B (VS=10) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</del></li> <li><del>• WHPA E (VS ≥ 8) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</del></li> <li><del>• WHPA B (VS=10) in an Issue Contributing Area for Nitrates or Pathogens (existing); or</del></li> <li><del>• WHPA E (VS ≥ 4.2) in an Issue Contributing Area for Nitrates or Pathogens (existing); or</del></li> <li><del>• the remainder of an Issue Contributing Area for Nitrates or Pathogens (existing, future).</del></li> </ul> <p>b) <del>The storage of ASM in any of the following areas:</del></p> <ul style="list-style-type: none"> <li><del>• WHPA A (existing); or</del></li> <li><del>• WHPA B (VS=10) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</del></li> <li><del>• WHPA E (VS ≥ 8) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</del></li> <li><del>• WHPA B (VS=10) in an Issue Contributing Area for Nitrates or Pathogens (existing); or</del></li> <li><del>• WHPA E (VS ≥ 4.2) in an Issue Contributing Area for Nitrates or Pathogens (existing); or</del></li> <li><del>• the remainder of an Issue Contributing Area for Nitrates or Pathogens (existing, future).</del></li> </ul>	See Maps 1.1 - 1.21	Existing & Future: 3 years/ 5 years (GEN-5)	ASM-1 ASM-3  See Explanatory Notes	MON-4

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
<b>ASM-6</b>	Application of Agricultural Source Material (ASM) to Land  Storage of Agricultural Source Material (ASM)	Municipality	E	<p><b>Specify Action</b></p> <p>For farms and other lands that do not require a Nutrient Management Plan or Strategy, the municipality shall <b>ensure through their authority that the Risk Management Inspector responsible for enforcement will</b> prioritize and conduct regular inspections of these lands where the application and storage of ASM is, or would be, a significant drinking water threat. <b>in any of the following areas:</b></p> <p>a) <del>the application of ASM to land in any of the following areas:</del></p> <ul style="list-style-type: none"> <li>• <del>WHPA B (VS=10) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</del></li> <li>• <del>WHPA E (VS ≥ 8) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</del></li> <li>• <del>WHPA B (VS=10) in an Issue Contributing Area for Nitrates or Pathogens (existing); or</del></li> <li>• <del>WHPA E (VS ≥ 4.2) in an Issue Contributing Area for Nitrates or Pathogens (existing); or</del></li> <li>• <del>the remainder of an Issue Contributing Area for Nitrates or Pathogens (existing, future).</del></li> </ul> <p>b) <del>The storage of ASM in any of the following areas:</del></p> <ul style="list-style-type: none"> <li>• <del>WHPA A (existing); or</del></li> <li>• <del>WHPA B (VS=10) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</del></li> <li>• <del>WHPA E (VS ≥ 8) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</del></li> <li>• <del>WHPA B (VS=10) in an Issue Contributing Area for Nitrates or Pathogens (existing); or</del></li> <li>• <del>WHPA E (VS ≥ 4.2) in an Issue Contributing Area for Nitrates or Pathogens (existing); or</del></li> <li>• <del>the remainder of an Issue Contributing Area for Nitrates or Pathogens (existing, future).</del></li> </ul>	See Maps 1.1 - 1.21	After RMP is approved per policy ASM-2 and ASM-4	ASM-2 ASM-4  <b>See Explanatory Notes</b>	MON-1
<b>ASM-7</b>	Management of Agricultural Source Material (ASM) (Aquaculture)	MOE	C	<p><b>Prescribed Instrument</b></p> <p>The management of ASM (Aquaculture) shall be prohibited where the activity is, or would be, a significant drinking water threat in the following areas:</p> <ul style="list-style-type: none"> <li>• An Issue Contributing Area for Pathogens (existing, future).</li> </ul>	See Map 1.9	Future: Immediately (T-3)  Existing: Upon expiry or within 5 years (T-2)	N/A  <b>See Explanatory Notes</b>	MON-4

## **10.4.2 Application, Handling and Storage of NASM**

### **Definition**

The application to land, handling and storage of non-agricultural source material (NASM) are prescribed drinking water threats listed in Regulation 287/07 under the *Clean Water Act, 2006*. NASM is one class of nutrients that are not produced on a farm, and can be applied to land for the purpose of improving the growth of agricultural crops and for soil conditioning. NASM includes the following materials that are intended to be applied to land as nutrients:

- Pulp and paper biosolids;
- Sewage biosolids;
- Anaerobic digestion output, where less than 50% of the total material is on-farm anaerobic digestion materials (anaerobic digestion is a process used to decompose organic matter by bacteria in an oxygen-limited environment); and
- Any other material that is not from an agricultural source and that is capable of being applied to land as a nutrient (such as materials from dairy product or animal food manufacturing).

Furthermore, the Categories of NASM are broken into 3 groups:

- Category 1 – unprocessed plant based materials such as fruit and vegetable peels;
- Category 2 – processed plant based materials such as bakery washwater;
- Category 3 – animal based materials such as meat and dairy washwater, sewage biosolids, and any material that is not listed in the other categories.

NASM can be applied to both agricultural and non-agricultural lands for nutrient enhancement and soil conditioning purposes. NASM that will be applied to fields on a farm can be stored in a permanent nutrient storage facility (usually a steel or concrete tank), or on a temporary field nutrient storage site (only for solid NASM stored for more than 24 hours). There are restrictions about what types of NASM can be stored on a farm and for how long.

### **Why is NASM a Threat to Drinking Water Sources?**

Chemicals and pathogens from NASM could make their way into drinking water sources. The Ministry of Environment's *Tables of Drinking Water Threats* identifies the following sub-threat activities:

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- The application of NASM to land (including treated septage) (see circumstances #37-54, 1970-1971)
- The handling and storage of NASM (see circumstances #1409-1432, 1965-1968)

Under certain conditions, specific chemicals and pathogens can make their way from NASM application, handling or storage sites into groundwater drinking sources. The Ministry of Environment's *Tables of Drinking Water Threats* identifies the following chemicals and pathogens as potential concerns:

- Nitrogen
- Total phosphorus
- Pathogens

Nitrogen is a concern for both surface and groundwater, but phosphorus is mainly a concern for surface water. Nitrogen and phosphorus, are typically associated with human waste, household and personal care products (such as soap and detergents), and animal by-products.

Pathogens are associated with the following sources of NASM:

- seafood processing operations
- dairy producers
- dairy product manufacturing operations
- pulp and paper mills
- animal food manufacturing operations (from animal sources)
- meat plants
- sewage works

The assessment of chemical threats for the application of NASM to land considered the geographic location, percentage of managed land and livestock density. The assessment of pathogen threats for the application of NASM to land considered the geographic location and the source of the material. The assessment of NASM storage sites, considered the geographic location, whether the storage facility is temporary or permanent, the source of the material, and whether the material is stored above or below grade. See **Table 10-5** for when and where application and storage of NASM is a significant drinking water threat.

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**Table 10-5: When/where application and storage of NASM is a significant drinking water threat**

Prescribed Drinking Water Threat	Application, Handling and Storage of NASM Threat Sub-category	Area and Vulnerability Score (VS)
The application of non-agricultural source material to land	The application of non-agricultural source material to land (including treated septage)	WHPA-A (VS=10) WHPA-B (VS=10) WHPA-E (VS ≥ 8) In an ICA for Nitrates or Pathogens
The handling and storage of non-agricultural source material	The storage of non-agricultural source material	WHPA-A (VS=10) WHPA-B (VS=10) WHPA-E (VS ≥ 9) In an ICA for Nitrates or Pathogens

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
NASM-1	Application of Non-Agricultural Source Material (NASM) to Land (Category 1)	RMO OMAFRA MOE	G	<p><b>Part IV, s.57, s.58 Prescribed Instrument</b></p> <p>Where the application of NASM (Category 1) to land is, or would be, a significant drinking water threat, the following actions shall be taken:</p> <p>1) The application of NASM (Category 1) is designated for the purpose of s.57 under the Clean Water Act, and is therefore prohibited where the threat is, or would be, significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing, future).</li> <li>• <del>WHPA-E (VS ≥ 4.2) in an Issue Contributing Area for Pathogens (future).</del></li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-5)	GEN-1  See Explanatory Notes	MON-2
			H	<p>2) The application of NASM (Category 1) to land is designated for the purpose of s.58 under the Clean Water Act, requiring risk management plans, where the threat is significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-B (VS=10) which is not in an Issue Contributing Area for Nitrates <del>or Pathogens</del> (existing, future); or</li> <li>• WHPA-E (VS ≥ 8) which is not in an Issue Contributing Area for Nitrates <del>or Pathogens</del> (existing, future); or</li> <li>• <del>WHPA-E (VS ≥ 4.2) in an Issue Contributing Area for Pathogens (existing).</del></li> <li>• the remainder of an Issue Contributing Area for Nitrates <del>or Pathogens</del> (existing, future).</li> </ul>		Future: Immediately (T-7)	GEN-1 NASM-5  See Explanatory Notes	MON-2
NASM-2	Handling and Storage of Non-Agricultural Source Material (NASM) (Category 1)	RMO OMAFRA MOE	G	<p><b>Part IV, s.57, s.58 Prescribed Instrument</b></p> <p>Where the handling and storage of NASM (Category 1) to land is, or would be, a significant drinking water threat, the following actions shall be taken:</p> <p>1) The handling and storage of NASM (Category 1) is designated for the purpose of s.57 under the Clean Water Act, as is therefore prohibited where the threat would be significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future).</li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-5)	GEN-1  See Explanatory Notes	MON-2
			H	<p>2) The handling and storage of NASM (Category 1) is designated for the purpose of s.58 under the Clean Water Act, requiring risk management plans, where the threat is significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing); or</li> <li>• WHPA-B (VS=10) (existing, future); or</li> <li>• WHPA-E (VS ≥ 9) (existing, future); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates <del>or Pathogens</del> (existing, future).</li> </ul>		Future: Immediately (T-7)	GEN-1 NASM-5  See Explanatory Notes	MON-2

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
NASM-3	Application of Non-Agricultural Source Material (NASM) to Land (Category 2 and 3) including Treated Septage	OMAFRA MOE	C	<b>Prescribed Instrument</b> 1) The application of NASM (Category 2 and 3) to land shall be prohibited where the activity would be a significant drinking water threat in any of the following areas: <ul style="list-style-type: none"> <li>• WHPA-A (future); or</li> <li>• WHPA-B (VS=10) (future); or</li> <li>• WHPA-E (VS ≥ 8) (future); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates or Pathogens (future).</li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-3)	N/A  See Explanatory Notes	MON-4
				2) The application of NASM to land (existing) may continue only until the expiry of the current approval, after which time it would be considered as a future activity.		Existing: Upon expiry or within 5 years (T-2)	N/A See Explanatory Notes	MON-4
NASM-4	Handling and Storage of Non-Agricultural Source Material (NASM) (Category 2 and 3) including Treated Septage	OMAFRA MOE	C	<b>Prescribed Instrument</b> The handling and storage of NASM (Category 2 and 3) shall be prohibited where the activity is, or would be, a significant drinking water threat in any of the following areas: <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-B (VS=10) (existing, future); or</li> <li>• WHPA-E (VS ≥ 9) (existing, future); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates or Pathogens (existing, future).</li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-3)  Existing: Upon expiry or within 5 years (T-2)	N/A  See Explanatory Notes	MON-4
NASM-5	Application of NASM to Land (Category 1)  Handling and Storage of NASM (Category 1)	OMAFRA MOE	K	<b>Education and Outreach</b> The Ministry of Environment and OMAFRA are requested to provide to landowners and haulers that have a NASM Plan or Environmental Compliance Approval to haul, store or apply NASM (Category 1), information on the importance of protecting source water and the location of the nearby municipal wells where the application, handling and storage of NASM is, or would be, a significant drinking water threat in any of the following areas: <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-B (VS=10) (existing, future); or</li> <li>• WHPA-E (VS ≥ 8 for application; VS ≥ 9 for handling and storage) (existing, future); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates (existing, future).</li> </ul>	See Maps 1.1 - 1.21	Existing & Future: Consider within 2 years (T-15)	GEN-6 NASM-1 NASM-2  See Explanatory Notes	MON-4



### 10.4.3 Livestock

#### Definition

The use of land for livestock grazing or pasturing, an outdoor confinement area or a farm-animal yard is prescribed drinking water threat #21 listed in Regulation 287/07 under the *Clean Water Act, 2006*.

- **Livestock** includes dairy, beef, swine, poultry, horses, goats, sheep, ratites (flightless birds), fur-bearing animals, deer, elk, game animals and birds, and other animals identified in the Minimum Distance Separation Guidelines ([http://www.omafra.gov.on.ca/english/landuse/guide\\_toc.htm](http://www.omafra.gov.on.ca/english/landuse/guide_toc.htm)).
- **Grazing and pasturing land** is considered to be the land on which livestock eats growing herbaceous plants.
- An **outdoor confinement area** is an enclosure for livestock, deer, elk or game animals, and is further defined in O. Reg. 267/03 under the *Nutrient Management Act* as follows:
  1. It has no roof, except as described below in #3;
  2. It is composed of fences, pens, corrals or similar structures;
  3. It may contain a shelter to protect the animals from the wind or another shelter with a roof of an area of less than 20 square metres;
  4. It has permanent or portable feeding or watering equipment;
  5. The animals are fed or watered at the enclosure;
  6. The animals may or may not have access to other buildings or structures for shelter, feeding or watering; and
  7. Grazing and foraging provides less than 50 percent of dry matter intake.
- **Farm-animal yards** are outdoor livestock areas lined with concrete other than those meeting the definition of an outdoor confinement area. Food and water are not provided in farm-animal yards. They are generally used as outdoor exercise areas or as holding areas when barns are being cleaned.

### Why is Livestock Grazing, Pasturing and Outdoor Confinement a Threat to Drinking Water Sources?

Livestock threats can be on large or small farms – those regulated by the *Nutrient Management Act, 2002* (producing more than 5<sup>4</sup> nutrient units) and those not regulated by the *Act* (less than 5 nutrient units). Chemicals and pathogens from the use of land as livestock grazing, pasturing, outdoor confinement, or farm-animal yard, could make their way into drinking water sources. The Ministry of Environment's *Tables of Drinking Water Threats* identifies the following sub-threat activities and the contaminants that could make their way into drinking water sources:

- Management or handling of Agricultural Source Material (ASM) – ASM generation –
  - livestock/grazing (see circumstances #200-205)
  - outdoor confinement (see circumstances #206-211)
- Management or handling of ASM generation (see circumstances #1945-1946)
- Contaminants - nitrogen, total phosphorus and pathogens

Nitrogen is a concern for both surface and groundwater, while phosphorus is a concern primarily for surface water. Generally speaking, the greater the number of livestock kept in a space, the greater the accumulation of manure, and the greater the risk of contaminating water sources with these nutrients and pathogens. Accordingly, the assessment of the potential threat to drinking water sources from use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard is dependent on the concentration of manure in a given area. See **Table 10-6** for when and where livestock is a significant drinking water threat.

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<sup>4</sup> The requirements of the *Nutrient Management Act* are being phased in by the province. Initially all farms with more than 300 nutrient units were required to comply. Remaining farms become subject when they undertake a change which requires a municipal approval such as a building permit for a new structure or expansion.

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**Table 10-6: When/where is livestock a significant drinking water threat**

Prescribed Drinking Water Threat	Livestock Threat Sub-category	Area and Vulnerability Score (VS)
The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard.	The use of land as livestock grazing or pasturing land	WHPA-A (VS=10) WHPA-B (VS=10) WHPA-E (VS ≥ 8) In an ICA for Nitrates or Pathogens
	The use of land as an outdoor confinement area or a farm-animal yard	WHPA-A (VS=10) WHPA-B (VS=10) WHPA-E (VS ≥ 8) In an ICA for Nitrates or Pathogens

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
LIV-1	The use of Land as Livestock Grazing or Pasturing Land (O. Reg. 385/08, s.3)	RMO	G	<p><b>Part IV, s. 57, s.58</b></p> <p>Where the use of land as livestock grazing or pasturing land is, or would be, a significant drinking water threat, the following actions shall be taken:</p> <p>1) The use of land as livestock grazing or pasturing land (with an animal density &gt;1 Nutrient Unit per acre) is designated for the purpose of s.57 under the <i>Clean Water Act</i>, and is therefore prohibited where the threat is, or would be, significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A in an Issue Contributing Area for Nitrates or Pathogens (existing, future).</li> </ul>	See Maps 1.1 - 1.21	<p>Future: Immediately (T-5)</p> <p>Existing: 180 days (T-4)</p>	<p>GEN-1</p> <p>See Explanatory Notes</p>	MON-2
			H	<p>2) The use of land as livestock grazing or pasturing land is designated for the purpose of s.58 under the Clean Water Act, requiring risk management plans, where the threat is, or would be, significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</li> <li>• WHPA-A in an Issue Contributing Area for Nitrates or Pathogens with an animal density &lt;1 Nutrient Unit per acre (existing, future); or</li> <li>• WHPA-B (VS=10) (existing, future); or</li> <li>• WHPA-E (VS ≥ 8) (existing, future); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates or Pathogens (existing, future).</li> </ul>		<p>Future: Immediately (T-7)</p> <p>Existing: 1 year/5 years (T-6)</p>	<p>GEN-1 LIV-5</p> <p>See Explanatory Notes</p>	MON-2

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
LIV-2	The use of Land as an Outdoor Confinement Area or a Farm-Animal Yard (O. Reg. 385/08, s.3)	OMAFRA	C	<b>Prescribed Instrument</b> 1) The use of land as an outdoor confinement area or farm-animal yard shall be prohibited where the activity would be a significant drinking water threat in any of the following areas: <ul style="list-style-type: none"> <li>• WHPA-A (future); or</li> <li>• WHPA-B (VS=10) in an Issue Contributing Area for Nitrates or Pathogens (future); or</li> <li>• WHPA-E (VS ≥ 4.2) in an Issue Contributing Area for Nitrates or Pathogens (future).</li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-3)	N/A  See Explanatory Notes	MON-4
				2) Where the use of land as an outdoor confinement area or farm-animal yard is in an area where the activity is, or would be, a significant drinking water threat, the Nutrient Management Plan or Strategy that governs the activity shall be reviewed or established to ensure appropriate terms and conditions are included so that the activity ceases to be, or does not become, a significant drinking water threat in any of the following areas: <ul style="list-style-type: none"> <li>• WHPA-A (existing); or</li> <li>• WHPA-B (VS=10) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</li> <li>• WHPA-E (VS ≥ 8) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</li> <li>• WHPA-B (VS=10) in an Issue Contributing Area for Nitrates or Pathogens (existing); or</li> <li>• WHPA-E (VS ≥ 4.2) in an Issue Contributing Area for Nitrates or Pathogens (existing); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates or Pathogens (existing, future).</li> </ul>		Future: Immediately (T-3)  Existing: 3 years (T-1)	GEN-5 LIV-4  See Explanatory Notes	MON-4
LIV-3	The use of Land as an Outdoor Confinement Area or a Farm-Animal Yard (O. Reg. 385/08, s.3)	RMO	G	<b>Part IV, s.57, s.58</b> For lands that do not require a Nutrient Management Plan or Strategy, where the use of land as an outdoor confinement area or farm-animal yard is, or would be, a significant drinking water threat, the following actions shall be taken: 1) The use of land for an outdoor confinement area or farm-animal yard is designated for the purpose of s.57 under the <i>Clean Water Act</i> , and is therefore prohibited where it would be significant in any of the following areas: <ul style="list-style-type: none"> <li>• WHPA-A (future); or</li> <li>• WHPA-B (VS=10) in an Issue Contributing Area for Nitrates or Pathogens (future); or</li> <li>• WHPA-E (VS ≥ 4.2) in an Issue Contributing Area for Nitrates or Pathogens (future).</li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-5)	GEN-1  See Explanatory Notes	MON-2
				2) The use of land as an outdoor confinement area or farm animal yard is designated for the purpose of s.58 under the <i>Clean Water Act</i> , requiring risk management plans, where the threat is, or would be, significant in any of the following areas: <ul style="list-style-type: none"> <li>• WHPA-A (existing); or</li> <li>• WHPA-B (VS=10) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</li> <li>• WHPA-E (VS ≥ 8) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</li> <li>• WHPA-B (VS=10) in an Issue Contributing Area for Nitrates or Pathogens (existing); or</li> <li>• WHPA-E (VS ≥ 4.2) in an Issue Contributing Area for Nitrates or Pathogens (existing); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates or Pathogens (existing, future).</li> </ul>		Future: Immediately (T-7)  Existing: 1 year/5 years (T-6)	GEN-1 LIV-5  See Explanatory Notes	MON-2

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
LIV-4	The use of Land as an Outdoor Confinement Area or a Farm-Animal Yard (O. Reg. 385/08, s.3)	MOE	K	<p><b>Specify Action</b></p> <p>For farms that require a Nutrient Management Plan or Strategy, the Ministry of Environment shall prioritize and conduct regular inspections of these farms where the use of land as an outdoor confinement area or a farm-animal yard is, or would be, a significant drinking water threat. <del>in any of the following areas:</del></p> <ul style="list-style-type: none"> <li><del>• WHPA A (existing); or</del></li> <li><del>• WHPA B (VS=10) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</del></li> <li><del>• WHPA E (VS ≥ 8) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</del></li> <li><del>• WHPA B (VS=10) in an Issue Contributing Area for Nitrates or Pathogens (existing); or</del></li> <li><del>• WHPA E (VS ≥ 4.2) in an Issue Contributing Area for Nitrates or Pathogens (existing); or</del></li> <li>• the remainder of an Issue Contributing Area for Nitrates or Pathogens (existing, future).</li> </ul>	See Maps 1.1 - 1.21	Existing & Future: 3 years/ 5 years (GEN-5)	LIV-2  See Explanatory Notes	MON-4
LIV-5	The use of Land as Livestock Grazing or Pasturing Land (O. Reg. 385/08, s.3)  The use of Land as an Outdoor Confinement Area or a Farm-Animal Yard (O. Reg. 385/08, s.3)	Municipality	E	<p><b>Specify Action</b></p> <p>For farms and other lands that do not require a Nutrient Management Plan or Strategy, the municipality shall <b>ensure through their authority that the Risk Management Inspector responsible for enforcement will</b> prioritize and conduct regular inspections of these farms where the use of land for livestock grazing or pasturing and/or an outdoor confinement area or a farm-animal yard is, or would be, a significant drinking water threat. <del>for:</del></p> <p>a) the use of land as livestock grazing or pasturing land in any of the following areas:</p> <ul style="list-style-type: none"> <li><del>• WHPA A not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</del></li> <li><del>• WHPA A in an Issue Contributing Area for Nitrates or Pathogens with an animal density &lt;1 Nutrient Unit per acre (existing, future); or</del></li> <li><del>• WHPA B (VS=10) (existing, future); or</del></li> <li><del>• WHPA E (VS ≥ 8) (existing, future); or</del></li> <li><del>• the remainder of an Issue Contributing Area for Nitrates or Pathogens (existing, future).</del></li> </ul> <p>b) the use of land as an outdoor confinement area or a farm-animal yard in any of the following areas:</p> <ul style="list-style-type: none"> <li><del>• WHPA A (existing); or</del></li> <li><del>• WHPA B (VS=10) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</del></li> <li><del>• WHPA E (VS ≥ 8) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</del></li> <li><del>• WHPA B (VS=10) in an Issue Contributing Area for Nitrates or Pathogens (existing); or</del></li> <li><del>• WHPA E (VS ≥ 4.2) in an Issue Contributing Area for Nitrates or Pathogens (existing); or</del></li> <li>• the remainder of an Issue Contributing Area for Nitrates or Pathogens (existing, future).</li> </ul>	See Maps 1.1 - 1.21	After RMP is approved per policy LIV-1 and LIV-3	LIV-1 LIV-3  See Explanatory Notes	MON-1

## 10.5 COMMERCIAL FERTILIZER

### Definition

Commercial fertilizer is one of the prescribed drinking water threats listed in Regulation 287/07 under the *Clean Water Act, 2006*. Commercial fertilizer is a manufactured compound containing nitrogen, phosphorus, potassium or other minerals intended for use as a plant nutrient. In the drinking water source protection process, commercial fertilizer is distinguished from other nutrient sources – agricultural source material (ASM), and non-agricultural source material (NASM).

### Why is Fertilizer a Threat to Drinking Water Sources?

Chemicals from the application, handling and storage of fertilizer, could make their way into drinking water sources. The Ministry of Environment's *Tables of Drinking Water Threats* identifies the following sub-threat activities:

- The application of commercial fertilizer to land (see circumstances #19-36)
- The handling and storage of commercial fertilizer (see circumstances #1273-1288)

The nitrogen and phosphorus in commercial fertilizer can enter drinking water sources due to the improper use and storage of the fertilizer. The improper use of fertilizer includes the application of fertilizer without consideration for nutrients already available in the soil and plant requirements, or the inappropriate timing of application for plant growth cycles and weather conditions. Potential impacts of storing fertilizer relate to leaks and spills from aging infrastructure or improper storage techniques. Phosphorus is often associated with runoff and soil erosion from both the storage and application of commercial fertilizer.

The Ministry of Environment's *Tables of Drinking Water Threats* identifies the following chemicals as potential concerns:

- Nitrogen
- Total phosphorus

Nitrogen is a concern for both surface and groundwater, but phosphorus is primarily a concern for surface water. The assessment of potential threats to drinking water sources from commercial fertilizer application and storage is dependent on the location, the combination of the percentage of managed

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land, and livestock density in the vulnerable area and the quantity of fertilizer. See **Table 10-7** for when and where application and storage of commercial fertilizer is a significant drinking water threat.

**Table 10-7: When/where application and storage of commercial fertilizer is a significant drinking water threat**

Prescribed Drinking Water Threat	Commercial Fertilizer Threat Sub-category	Area and Vulnerability Score (VS)
The application of commercial fertilizer to land	The application of commercial fertilizer to land	WHPA-A (VS=10) WHPA-B (VS=10) WHPA-E (VS ≥ 9) In an ICA for Nitrates
The handling and storage of commercial fertilizer	The storage of commercial fertilizer	WHPA-A (VS=10) WHPA-B (VS=10) WHPA-E (VS=10) In an ICA for Nitrates



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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
FER-1	Application of Commercial Fertilizer to Land	OMAFRA	C	<p><b>Prescribed Instrument</b></p> <p>1) The application of commercial fertilizer (containing nitrogen) to land shall be prohibited where the activity is, or would be, a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-E (VS ≥ 4.5) in an Issue Contributing Area for Nitrates (future).</li> </ul>	See Maps 1.1 - 1.21	<p>Future: Immediately (T-3)</p> <p>Existing: Upon expiry or within 5 years (T-2)</p>	N/A  See Explanatory Notes	MON-4
				<p>2) Where the application of commercial fertilizer (containing nitrogen or phosphorus) to land is in an area where the activity is, or would be, a significant drinking water threat, the Nutrient Management Plan or Strategy that governs the activity shall be reviewed or established to ensure appropriate terms and conditions are included so that the activity ceases to be, or does not become, a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-B (VS=10) (existing, future); or</li> <li>• WHPA-E (VS ≥ 9) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</li> <li>• WHPA-E (VS ≥ 4.5) in an Issue Contributing Area for Nitrates (existing); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates (existing, future).</li> </ul>		<p>Future: Immediately (T-3)</p> <p>Existing: 3 years (T-1)</p>	GEN-5 FER-4  See Explanatory Notes	MON-4
FER-2	Application of Commercial Fertilizer to Land	RMO	G	<p><b>Part IV, s.57, s.58</b></p> <p>For lands that do not require a Nutrient Management Plan or Strategy, where the application of commercial fertilizer to land is, or would be, a significant drinking water threat (excluding incidental quantities for personal use), the following actions shall be taken:</p> <p>1) The application of commercial fertilizer with (containing nitrogen) is designated for the purpose of s.57 under the <i>Clean Water Act</i>, and is therefore prohibited where the threat is, or would be, significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-E (VS ≥ 4.5) in an Issue Contributing Area for Nitrates (future).</li> </ul>	See Maps 1.1 - 1.21	<p>Future: Immediately (T-5)</p> <p>Existing: 180 days (T-4)</p>	GEN-1  See Explanatory Notes	MON-2
				<p>2) The application of commercial fertilizer (containing nitrogen or phosphorus) to land is designated for the purpose of s.58 under the <i>Clean Water Act</i>, requiring risk management plans, where the threat is, or would be, significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• <del>WHPA-A (existing or future use of fertilizer without Nitrogen); or</del></li> <li>• WHPA-B (VS=10) (existing, or future use of any fertilizer); or</li> <li>• WHPA-E (VS ≥ 9) which is not in an Issue Contributing Area for Nitrates (existing, or future use of any fertilizer); or</li> <li>• WHPA-E (VS ≥ 4.5) in an Issue Contributing Area for Nitrates (existing use of any fertilizer); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates (existing, or future use of any fertilizer).</li> </ul>		<p>Future: Immediately (T-7)</p> <p>Existing: 1 year/5 years (T-6)</p>	GEN-1 FER-5  See Explanatory Notes	MON-2

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
FER-3	Handling and Storage of Commercial Fertilizer	RMO	G	<p><b>Part IV, s.57, s.58</b></p> <p>For farms and other lands, where the handling and storage of commercial fertilizer to land is, or would be, a significant drinking water threat (excluding incidental quantities for personal use), the following actions shall be taken:</p> <p>1) The handling and storage of commercial fertilizer is designated for the purpose of s.57 under the <i>Clean Water Act</i>, and is therefore prohibited where the threat would be significant in the following area:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future).</li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-5)	GEN-1  See Explanatory Notes	MON-2
			H	<p>2) The handling and storage of commercial fertilizer to land is designated for the purpose of s.58 under the <i>Clean Water Act</i>, requiring risk management plans, where the threat is, or would be, significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing); or</li> <li>• WHPA-B (VS=10) (existing, future); or</li> <li>• WHPA-E (VS=10) (existing, future); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates (existing, future).</li> </ul> <p>Without limiting other requirements, risk management plans shall include conditions to require storage of quantities over 2,500 kg to be within a covered structure.</p>		Future: Immediately (T-7)  Existing: 1 year/5 years (T-6)	GEN-1 FER-5  See Explanatory Notes	MON-2
FER-4	Application of Commercial Fertilizer	MOE	K	<p><b>Specify Action</b></p> <p>For farms that require a Nutrient Management Plan or Strategy, the Ministry of Environment shall prioritize and conduct regular inspections of these farms where the application of commercial fertilizer to land is, or would be, a significant drinking water threat. <del>in any of the following areas:</del></p> <ul style="list-style-type: none"> <li><del>• WHPA-B (VS=10) (existing, future); or</del></li> <li><del>• WHPA-E (VS ≥ 9) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or</del></li> <li><del>• WHPA-E (VS ≥ 4.5) in an Issue Contributing Area for Nitrates (existing); or</del></li> <li><del>the remainder of an Issue Contributing Area for Nitrates (existing, future).</del></li> </ul>	See Maps 1.1 - 1.21	Existing & Future: 3 years/ 5 years (GEN-5)	FER-1  See Explanatory Notes	MON-4

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
FER-5	Application of Commercial Fertilizer  Handling and Storage of Commercial Fertilizer	Municipality	E	<p><b>Specify Action</b></p> <p>For farms and other lands (excluding incidental quantities for personal use) that do not require a Nutrient Management Plan or Strategy, the municipality shall <b>ensure through their authority that the Risk Management Inspector responsible for enforcement will</b> prioritize and conduct regular inspections of these lands where the application, handling and storage of commercial fertilizer is, or would be, a significant drinking water threat.,<del>for:</del></p> <p>a) <del>application of commercial fertilizer to land in any of the following areas:</del></p> <ul style="list-style-type: none"> <li><del>• WHPA A (existing or future use of fertilizer without Nitrogen); or</del></li> <li><del>• WHPA B (VS=10) (existing or future use of any fertilizer); or</del></li> <li><del>• WHPA E (VS ≥ 9) which is not in an Issue Contributing Area for Nitrates (existing or future use of any fertilizer); or</del></li> <li><del>• WHPA E (VS ≥ 4.5) in an Issue Contributing Area for Nitrates (existing use of any fertilizer); or</del></li> <li><del>• the remainder of an Issue Contributing Area for Nitrates (existing or future use of any fertilizer).</del></li> </ul> <p>b) <del>handling and storage of commercial fertilizer in any of the following areas:</del></p> <ul style="list-style-type: none"> <li><del>• WHPA A (existing); or</del></li> <li><del>• WHPA B (VS=10) (existing, future); or</del></li> <li><del>• WHPA E (VS=10) (existing, future); or</del></li> <li><del>• the remainder of an Issue Contributing Area for Nitrates (existing, future).</del></li> </ul>	See Maps 1.1 - 1.21	After RMP is approved per policy FER-2 and FER-3	FER-2 FER-3  See Explanatory Notes	MON-1
FER-6	Application of Commercial Fertilizer to Land  Handling and Storage of Commercial Fertilizer	Municipality  MOE	E  K	<p><b>Education and Outreach</b></p> <p>The municipality shall deliver education and outreach materials and programs where the application, handling and storage of commercial fertilizer is, or would be, a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-B (VS=10) (existing, future); or</li> <li>• WHPA-E (VS ≥ 9 for application; VS=10 for handling and storage) (existing, future); or</li> <li>• the remainder of an Issue Contributing Area for Nitrates (existing, future).</li> </ul> <p>Where education and outreach materials prepared by the Ministry of Environment are available, the municipality shall deliver those materials, targeted towards:</p> <p>a) an individual for personal use to promote timely fertilizer application and best management practices in urban settings; and</p> <p>b) non-agricultural lands to promote best management practices to safeguard water supplies from drinking water threats.</p>	See Maps 1.1 - 1.21	Existing & Future: 2 years (T-10)	GEN-6  See Explanatory Notes	MON-1  MON-4

## 10.6 PESTICIDES

### Definition

The application of pesticide to land and the handling and storage of pesticide are prescribed drinking water threats listed in Regulation 287/07 under the *Clean Water Act, 2006*. Pesticide is defined in the Ontario *Pesticides Act, 1990* 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 of 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, 2002*. Pesticides are typically chemicals, but could be organisms, that are used to control undesirable pests such as weeds, insects, and fungi. Eleven pesticides are considered drinking water threats under the *Clean Water Act, 2006* (see below).

### Why is Pesticide a Threat to Drinking Water Sources?

The Ministry of Environment’s *Tables of Drinking Water Threats* identify the following sub-threats as potential concerns:

- The application of pesticide to land (circumstances #55-87)
- The handling and storage of pesticide (circumstances #1113-1200)

The 11 chemicals that could make their way, under certain conditions, from the application, storage or handling of pesticide into drinking water sources, are:

- Atrazine
- Dicamba
- Dichlorophenoxy Acetic Acid (2,4-D)
- Dichloropropene-1,3
- Glyphosate
- MCPA (2-methyl-4-chlorophenoxyacetic acid)
- MCPB (4-(4-chloro-2-methylphenoxy) butanoic acid)
- Mecoprop
- Metalaxyl
- Metolachlor or s-Metolachlor
- Pendimethalin

These substances are herbicides except for dichloropropene-1, 3, which is a nematicide (used to control nematodes) and Metalaxyl, which is a fungicide. Other pesticides are not considered to be drinking water threats.

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Pesticide has historically been applied to agricultural, recreational, institutional, industrial, commercial and residential land uses. Since 2009, there has been a ban on the cosmetic use of pesticide in Ontario on lawns, vegetable and ornamental gardens, patios, driveways, cemeteries, parks and school yards.

The major uses for pesticide will continue to be in agriculture and on golf courses.

The assessment of potential threats to drinking water sources from the application of commercial pesticide to land is dependent on the area of land to which the pesticide is applied: less than 1 hectare; between 1 and 10 hectares; or greater than 10 hectares. In general, the greater the application area, the greater the risk to drinking water. The assessment of potential threats to drinking water sources from the handling and storage of pesticide is dependent on the location, the type of storage (whether at a facility where it is manufactured or processed, or at a facility for retail sale or extermination), and the amount of pesticide stored. See **Table 10-8** for when and where application, handling and storage of pesticides is a significant drinking water threat.

**Table 10-8: When/where application, handling and storage of pesticide is a significant drinking water threat**

Prescribed Drinking Water Threat	Pesticides Threat Sub-category	Area and Vulnerability Score (VS)
The application of pesticide to land	The application of pesticide to land	WHPA-A (VS=10) WHPA-B (VS=10) WHPA-E (VS ≥ 8.1)
The handling and storage of pesticide	The handling and storage of pesticide	WHPA-A (VS=10) WHPA-B (VS=10) WHPA-E (VS ≥ 9)

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
PES-1	Application of Pesticide to Land	RMO	H	<p><b>Part IV, s.58</b></p> <p>The application of pesticide to land is designated for the purpose of s.58 under the <i>Clean Water Act</i>, requiring risk management plans, where the threat is, or would be, significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-B (VS=10) (existing, future); or</li> <li>• WHPA-E (VS ≥ 8.1) (existing, future).</li> </ul> <p>Without limiting other requirements, risk management plans shall incorporate appropriate agri-environmental best management practices and standards to ensure the activity ceases to be, or does not become, a significant drinking water threat.</p>	See Maps 1.1 - 1.21	<p>Future: Immediately (T-7)</p> <p>Existing: 1 year/5 years (T-6)</p>	GEN-1	MON-2
PES-2	Handling and Storage of Pesticide	RMO	G	<p><b>Part IV, s.57, s.58</b></p> <p>Where the handling and storage of pesticide is, or would be, a significant drinking water threat, the following actions shall be taken:</p> <p>1) The handling and storage of pesticide is designated for the purpose of s.57 under the <i>Clean Water Act</i>, and is therefore prohibited where the threat would be significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future); or</li> <li>• WHPA-B (VS=10) (future); or</li> <li>• WHPA-E (VS ≥ 9) (future).</li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-5)	GEN-1	MON-2
			H	<p>2) The handling and storage of pesticide is designated for the purpose of s.58 under the <i>Clean Water Act</i>, requiring risk management plans, where the threat is significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing); or</li> <li>• WHPA-B (VS=10) (existing); or</li> <li>• WHPA-E (VS ≥ 9) (existing).</li> </ul> <p>Without limiting other requirements, risk management plans shall incorporate appropriate agri-environmental best management practices and standards to ensure the activity ceases to be a significant drinking water threat.</p>		Existing: 1 year/5 years (T-6)	N/A	MON-2

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
PES-3	Application of Pesticide to Land Handling and Storage of Pesticide	MOE	K	<p><b>Education and Outreach</b></p> <p>Where the application, handling and storage of pesticide is, or would be, a significant drinking water threat, the Ministry of Environment should develop education, training and outreach programs promoting integrated pest management and alternative pest control best management practices, particularly for farms, golf courses and sports fields where the threat is, or would be, significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-B (VS=10) (existing, future); or</li> <li>• WHPA-E (VS ≥ 8.1 for application; VS ≥ 9 for handling and storage) (existing, future).</li> </ul>	See Maps 1.1 - 1.21	Existing & Future: Consider within 2 years (T-15)	GEN-6  See Explanatory Notes	MON-4
PES-4	Application of Pesticide to Land Handling and Storage of Pesticide	Municipality	E	<p><b>Incentive</b></p> <p>Where the application, handling and storage of pesticide is, or would be, a significant drinking water threat, the municipality shall consider providing incentive programs to encourage best management practices for agricultural/rural landowners to reduce the risks to groundwater where the threat is, or would be, significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing); or</li> <li>• WHPA-B (VS=10) (existing); or</li> <li>• WHPA-E (VS ≥ 8.1 for application; VS ≥ 9 for handling and storage) (existing).</li> </ul>	See Maps 1.1 - 1.21	Existing: Consider within 2 years (T-11)	N/A	MON-1

## 10.7 ROAD SALT

### Definition

The application, handling and storage of road salt is a prescribed drinking water threat listed in O. Reg. 287/07 under the *Clean Water Act, 2006*. Road salt is any product containing sodium and/or chloride that is used to maintain roads, parking lots and pedestrian areas. Most road salt is used as a de-icer or an ice prevention agent, but can also be used for dust suppression. The most commonly used products for de-icing and preventing ice formation on roads are sodium chloride and calcium chloride because they are effective and inexpensive. Road salt application works by breaking the bond formed between the pavement and the ice/compacted snow. Salt prevents this bond from forming because it reacts with moisture to create a layer of salty water (brine) which has a freezing point below zero degrees Celsius.

### Why is Road Salt a Threat to Drinking Water Sources?

Chemicals from the application, handling and storage of road salt, could make their way into drinking water sources. The Ministry of Environment's *Tables of Drinking Water Threats* identifies the following sub-threat activities:

- The application of road salt (see circumstances #88-95)
- The handling and storage of road salt (see circumstances #1433-1444)

The Ministry of Environment's *Tables of Drinking Water Threats* identify the chemicals that could make their way from the application or storage and handling of road salt under certain conditions into drinking water sources. Sodium and chloride can threaten drinking water sources in certain situations by making it unpalatable or unsafe. The aesthetic Ontario Drinking Water Objective (ODWO) for sodium is 200 mg/L. However, since sodium intake can present a health issue for some people, the local Medical Officer of Health should be notified when concentrations are greater than 20 mg/L. At a concentration of 250 mg/L, chloride imparts a salty taste to drinking water. See **Table 10-9** for when and where the application, handling and storage of road salt is a significant drinking water threat.



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**Table 10-9: Where/when the application, handling and storage of road salt is a significant drinking water threat**

Prescribed Drinking Water Threat	Road Salt Sub-category	Area and Vulnerability Score (VS)
The application of road salt	The application of road salt	WHPA-A (VS=10) WHPA-B (VS=10) WHPA-E (VS ≥ 9) In an ICA for Sodium or Chloride
The handling and storage of road salt	The storage of road salt	WHPA-A (VS=10) WHPA-B (VS=10) WHPA-E (VS ≥ 9) In an ICA for Sodium or Chloride

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
SAL-1	Application of Road Salt (Unassumed Roads and Private Parking Lots)	RMO	H	<p><b>Part IV, s.58</b></p> <p>For unassumed roads and private parking lots (excluding parking for <del>low density residential</del> <b>single family dwellings</b>), the application of road salt is designated for the purpose of s.58 under the <i>Clean Water Act</i>, requiring risk management plans, where the threat is, or would be, significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-B (VS=10) (existing, future); or</li> <li>• WHPA-E (VS ≥ 9) (existing, future); or</li> <li>• the remainder of an Issue Contributing Area for Sodium or Chloride (existing, future).</li> </ul> <p>Without limiting other requirements, risk management plans shall include a goal to minimize salt usage through alternative measures, while maintaining roadway safety for users.</p>	See Maps 1.1 - 1.21	<p>Future: Immediately (T-7)</p> <p>Existing: 1 year/5 years (T-6)</p>	<p>GEN-1</p> <p>See Explanatory Notes</p>	MON-2
SAL-2	Application of Road Salt (Public Roads)	RMO	H	<p><b>Part IV, s.58</b></p> <p>For public roads, the application of road salt (existing, future) is designated for the purpose of s.58 under the <i>Clean Water Act</i>, requiring risk management plans, where the threat is, or would, be significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-B (VS=10) (existing, future); or</li> <li>• WHPA-E (VS ≥ 9) (existing, future); or</li> <li>• the remainder of an Issue Contributing Area for Sodium or Chloride (existing, future).</li> </ul> <p>Without limiting other requirements, risk management plans shall include provisions for:</p> <p>a) the reduction of salt usage through best management practices such as alternative de-icer materials (with lower sodium and chloride) and/or contemporary technology; and</p> <p>b) the use of trained individuals in the application of road salt (could include technicians and technologists and others responsible for salt management plans, winter maintenance supervisors, patrollers, equipment operators, mechanics, and contract employees).</p>	See Maps 1.1 - 1.21	<p>Future: Immediately (T-7)</p> <p>Existing: 1 year/5 years (T-6)</p>	<p>GEN-1</p> <p>See Explanatory Notes</p>	MON-2

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
SAL-3	Application of Road Salt	Planning Approval Authority	A	<p><b>Land Use Planning</b></p> <p>Where the application of road salt to roads and parking lots would be a significant drinking water threat, the planning approval authority shall:</p> <ol style="list-style-type: none"> <li>prohibit the establishment of new parking lots with greater than 2000 square metres (approximately 80 spaces) of paved surface in: <ul style="list-style-type: none"> <li>WHPA-A not in an Issue Contributing Area for Sodium or Chloride (future);</li> </ul> </li> <li>prohibit the establishment of new parking lots with greater than 200 square metres (approximately 8 spaces) of paved surface in: <ul style="list-style-type: none"> <li>WHPA-A in an Issue Contributing Area for Sodium or Chloride (future); and</li> </ul> </li> <li>require a salt management plan, which includes a reduction in the future use of salt, as part of a complete application for development which includes new roads and parking lots where the application of road salt is significant in any of the following areas: <ul style="list-style-type: none"> <li>WHPA-B (VS=10) (future); or</li> <li>WHPA-E (VS ≥ 9) (future); or</li> <li>the remainder of an Issue Contributing Area for Sodium or Chloride (future).</li> </ul> </li> </ol> <p>Such plans should include but not be limited to mitigation measures regarding design of parking lots, roadways and sidewalks to minimize the need for repeat application of road salt such as reducing ponding in parking areas; and directing stormwater discharge outside of vulnerable areas where possible.</p>	See Maps 1.1 - 1.21	<p>Future: Immediately (T-9)</p> <p>Amend OPs and ZBLs for conformity within 5 years and ZBLs within 3 years of OP approval (T-8)</p>	N/A  See Explanatory Notes	MON-1
SAL-4	Application of Road Salt	MOE	K	<p><b>Specify Action</b></p> <p>Where the application of road salt is, or would be, a significant drinking water threat, the Ministry of Environment in consultation with other provincial ministries and municipal associations should promote best management practices for the application of road salt, to protect sources of municipal drinking water in any of the following areas:</p> <ul style="list-style-type: none"> <li>WHPA-A (existing, future); or</li> <li>WHPA-B (VS=10) (existing, future); or</li> <li>WHPA-E (VS ≥ 9) (existing, future); or</li> <li>the remainder of an Issue Contributing Area for Sodium or Chloride (existing, future).</li> </ul>	See Maps 1.1 - 1.21	Existing & Future: Consider within 2 years (T-15)	N/A  See Explanatory Notes	MON-4

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
SAL-5	Application of Road Salt	MOE	K	<p><b>Specify Action</b></p> <p>Where the application of road salt is, or would be, a significant drinking water threat, the Ministry of Environment in consultation with other provincial ministries and municipal associations should develop a licensing and accreditation program for Snow and Ice Contractors for the application of road salt, to protect sources of municipal drinking water in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-B (VS=10) (existing, future); or</li> <li>• WHPA-E (VS ≥ 9) (existing, future); or</li> <li>• the remainder of an Issue Contributing Area for Sodium or Chloride (existing, future).</li> </ul>	See Maps 1.1 - 1.21	Existing & Future: Consider within 2 years (T-15)	N/A  See Explanatory Notes	MON-4
SAL-6	Application of Road Salt (Provincial Highways)	Ministry of Transportation	K	<p><b>Specify Action</b></p> <p>For provincial highways where the application of road salt is, or would be, a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-B (VS=10) (existing, future); or</li> <li>• WHPA-E (VS ≥ 9) (existing, future); or</li> <li>• the remainder of an Issue Contributing Area for Sodium or Chloride (existing, future);</li> </ul> <p>the Ministry of Transportation should:</p> <p>a) continue the proactive implementation of their salt management plans with their supporting de-icing contractors and the use of best management practices within wellhead protection areas;</p> <p>b) update their salt management plan, as required, to ensure consistency with the most current versions of Environment Canada’s Code of Practice for the Environmental Management of Road Salts and Transportation Association of Canada’s Synthesis of Best Practices;</p> <p>c) investigate and implement where practical, alternative products and mitigation practices and technologies for road salt application and the management of highway runoff and infiltration;</p> <p>d) in consultation with the Source Protection Authority, consider the information contained in the CTC Source Protection Assessment Reports for the siting and prioritization of future <del>pilot projects</del> <b>assessments</b> related to road salt application and the management of highway runoff and infiltration. In particular, <del>a pilot project</del> <b>an assessment of application rates and options for reducing the application of salt</b> should be undertaken at those wells in Orangeville immediately adjacent to Highways 9 and 10; and</p> <p>e) forward upon request to the Source Protection Authority the results of monitoring data on specific pilot projects.</p>	See Maps 1.1 - 1.21	Existing & Future: Consider within 2 years (T-15)	N/A  See Explanatory Notes	MON-4

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
SAL-7	Handling and Storage of Road Salt	RMO	G	<p><b>Part IV, s.57, s.58</b></p> <p>Where the handling and storage of road salt is, or would be, a significant drinking water threat (<b>excluding incidental quantities for personal use</b>), the following actions shall be taken:</p> <p>1) The handling and storage of road salt is designated for the purpose of s.57 under the <i>Clean Water Act</i>, and is therefore prohibited where the threat would be significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future); or</li> <li>• WHPA-B (VS=10) (future); or</li> <li>• WHPA-E (VS ≥9) (future); or</li> <li>• the remainder of an Issue Contributing Area for Sodium or Chloride (future).</li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-5)	GEN-1  See Explanatory Notes	MON-2
			H	<p>2) The handling and storage of road salt is designated for the purpose of s.58 under the <i>Clean Water Act</i>, requiring risk management plans, where the threat is significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing); or</li> <li>• WHPA-B (VS=10) (existing); or</li> <li>• WHPA-E (VS ≥9) (existing); or</li> <li>• the remainder of an Issue Contributing Area for Sodium or Chloride (existing).</li> </ul>		Existing: 1 year/5 years (T-6)	N/A  See Explanatory Notes	MON-2

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
SAL-8	Application of Road Salt	Municipality	E	<p><b>Education and Outreach</b></p> <p>The municipality shall deliver education and outreach materials and programs where the application, handling and storage of road salt is, or would be, a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-B (VS=10) (existing, future); or</li> <li>• WHPA-E (VS ≥ 9) (existing, future); or</li> <li>• the remainder of an Issue Contributing Area for Sodium or Chloride (existing, future).</li> </ul> <p>Where appropriate education and outreach materials prepared by the Ministry of Environment are available, the municipality shall deliver those materials, targeted towards:</p> <p>a) owners/tenants of residences and small businesses where the application, handling and storage of road salt (existing, future) is, or would be, a significant drinking water threat about the impact of salt on municipal drinking water and what they can do to reduce their use of salt to ensure that the activity ceases to be or does not become a significant drinking water threat; and</p> <p>b) commercial and industrial sectors to address the importance of source protection planning and the impacts of road salt on drinking water sources, with the key message being responsible salt storage and application, and the use of contemporary technology.</p>	See Maps 1.1 - 1.21	Existing & Future: 2 years (T-10)	GEN-6  See Explanatory Notes	MON-1
	Handling and Storage of Road Salt	MOE	K					MON-4
SAL-9	Application of Road Salt Handling and Storage of Road Salt	SPA Municipality	F	<p><b>Monitoring</b></p> <p>Where the application, handling and storage of road salt (existing, future) is, or would be, a significant drinking water threat in an Issue Contributing Area for Sodium or Chloride:</p> <p>a) the responsible Source Protection Authority, in partnership with affected municipalities, shall conduct an investigation on the source and nature of sodium and chloride threats, contingent on funding;</p> <p>b) the municipality shall undertake monthly sampling of sodium and chloride levels in raw water at affected wells and report the results to the Source Protection Authority; and</p> <p>c) the Source Protection Authority shall assess the information for any increasing trends and advise the Source Protection Committee on the need for new source protection plan policies to be developed to prevent future drinking water Issues.</p>	See Maps 1.2 1.3 1.11 1.14	Existing & Future: Initiate within 2 years (T-16)	N/A  See Explanatory Notes	MON-3  MON-1

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
SAL-10	Moderate/ Low Threats Application of Road Salt	Planning Approval Authority	B	<p><b>Land Use Planning</b></p> <p>Where the application of road salt would be a moderate or low drinking water threat, the planning approval authority is encouraged to require a salt management plan, which includes a reduction in the future use of salt, as part of a complete application for development which includes new roads and parking lots in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-B (VS&lt;10) (future); or</li> <li>• WHPA-C (future); or</li> <li>• WHPA-D (future); or</li> <li>• WHPA-E (VS ≥ 4.5 and &lt;9) (future); or</li> <li>• HVA (future); or</li> <li>• SGRA (VS ≥ 6) (future).</li> </ul> <p>Such plans should include, but not be limited to, mitigation measures regarding design of parking lots, roadways and sidewalks to minimize the need for repeat application of road salt such as reducing ponding in parking areas, directing stormwater discharge outside of vulnerable areas where possible, and provisions to hire certified contractors.</p>	See Chapter 5 of the respective Assessment Reports	<p>Future: Immediately (T-9)</p> <p>Amend OPs and ZBLs for conformity within 5 years and ZBLs within 3 years of OP approval (T-8)</p>	N/A  See Explanatory Notes	N/A
SAL-11	Moderate/ Low Threats Application of Road Salt	MOE	J	<p><b>Specify Action</b></p> <p>Where the application of road salt is, or would be, a moderate or low drinking water threat, the Ministry of Environment in consultation with other provincial ministries and municipal associations should promote best management practices for the application of road salt, to protect sources of municipal drinking water in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-B (VS&lt;10) (existing, future); or</li> <li>• WHPA-C (existing, future); or</li> <li>• WHPA-D (existing, future); or</li> <li>• WHPA-E (VS ≥ 4.5 and &lt;9) (existing, future); or</li> <li>• HVA (existing, future); or</li> <li>• SGRA (VS ≥ 6) (existing, future).</li> </ul>	See Chapter 5 of the respective Assessment Reports	<p>Existing &amp; Future: Consider within 2 years (T-15)</p>	N/A  See Explanatory Notes	N/A

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
SAL-12	Moderate/ Low Threats Application of Road Salt	Municipality	J	<p><b>Specify Action</b></p> <p>Where the application of road salt on unassumed roads and private parking lots (excluding parking for <del>low density residential</del> <b>single family dwellings</b>) is, or would be, a moderate or low drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-B (VS&lt;10) (existing, future); or</li> <li>• WHPA-C (existing, future); or</li> <li>• WHPA-D (existing, future); or</li> <li>• WHPA-E (VS ≥ 4.5 and &lt;9) (existing, future); or</li> <li>• HVA (existing, future); or</li> <li>• SGRA (VS ≥ 6) (existing, future).</li> </ul> <p>the municipality is encouraged to:</p> <p>a) require implementation of a salt management plan which includes the goal to minimize salt usage through alternative measures, while maintaining public safety; and</p> <p>b) require the use of trained individuals in the application of road salt (could include technicians and technologists and others responsible for salt management plans, winter maintenance supervisors, patrollers, equipment operators, mechanics, and contract employees).</p>	See Chapter 5 of the respective Assessment Reports	Existing & Future: Consider within 2 years (T-15)	N/A  See Explanatory Notes	N/A
SAL-13	Moderate/ Low Threats Application of Road Salt  Handling and Storage of Road Salt	SPA  Municipality	J	<p><b>Specify Action</b></p> <p>Where the application, handling and storage of road salt is, or would be, a moderate or low drinking water threat, the municipality is requested to report the results of its sodium and chloride monitoring conducted under the <i>Safe Drinking Water Act</i> and any other monitoring programs annually to the Source Protection Authority. The Source Protection Authority shall assess the information for any increasing trends and advise the Source Protection Committee on the need for new source protection plan policies to be developed to prevent future drinking water issues, in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-B (VS&lt;10) (existing, future); or</li> <li>• WHPA-C (existing, future); or</li> <li>• WHPA-D (existing, future); or</li> <li>• WHPA-E (VS ≥ 4.5 and &lt;9) (existing, future); or</li> <li>• HVA (existing, future); or</li> <li>• SGRA (VS ≥ 6) (existing, future).</li> </ul>	See Chapter 5 of the respective Assessment Reports	Existing & Future: Consider within 2 years (T-15)	N/A  See Explanatory Notes	N/A



## 10.8 STORAGE OF SNOW

### Definition

The storage of snow is a prescribed drinking water threat under O. Reg. 287/07 under the *Clean Water Act, 2006*. Under heavy winter weather conditions, the accumulation of snow inhibits traffic flow on the roads. Snow is able to pick up and hold any contaminants that are on roadways as it is being transferred to another location for storage.

### Why is Snow Storage a Threat to Drinking Water Sources?

Snow removed from roads and parking lots can be contaminated with salt, oil, grease and heavy metals from vehicles, litter and airborne pollutants. The activities around snow storage and handling include:

- Snow that is pushed into large piles on a property (e.g., stored in parking lots);
- Snow 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 (if accumulation meets **the size requirements per the *Tables of Drinking Water Threats* – calculate area based on width of shoulder where snow is plowed onto the length of road within the applicable vulnerable area**) ~~area circumstances identified below~~).

Snow banks on roads and parking areas either melt on site or are transported elsewhere to be melted or stockpiled. Snow that stays on site must be handled and stored in ways that protect water sources. A number of chemicals from the storage of snow could make their way into drinking water sources. The Ministry of Environment's *Tables of Drinking Water Threats* identifies the following sub-threat activities:

- The storage of snow (see circumstances #1445-1532)

The Ministry of Environment's *Tables of Drinking Water Threats* identifies the following chemicals as potential concerns:

- Chloride
- Copper
- Cyanide
- Lead
- Nitrogen
- Petroleum hydrocarbons F1 to F4
- Sodium
- Zinc

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This threat is closely linked to the application, handling and storage of road salt, because snow is able to pick up the salt that has been applied to roads. A reduction in the amount of salt applied to roads and parking areas could reduce the amount of road salt that contaminates snow. The main source of sodium, chloride and cyanide in snow is road salt; the other contaminants are generally from vehicle fluids, exhaust, brake linings, and tire and engine wear. The assessment of the threat from a snow storage area is dependent on its specific location (vulnerability score) to drinking water sources, whether the snow is stored above or below grade, and the size of the storage area.

In general, the greater the snow storage area (and therefore the volume of snow stored), the greater the risk to drinking water. See **Table 10-10** for when and where the storage of snow is a significant drinking water threat.

**Table 10-10: Where/when the storage of snow is a significant drinking water threat**

Prescribed Drinking Water Threat	Storage of Snow Sub-category	Area and Vulnerability Score (VS)
The storage of snow	The storage of snow	WHPA-A (VS=10) WHPA-B (VS=10) WHPA-E (VS ≥ 9) In an ICA for Sodium or Chloride

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
SNO-1	Storage of Snow	RMO	G	<p><b>Part IV, s.57, s.58</b></p> <p>Where the storage of snow is, or would be, a significant drinking water threat, the following actions shall be taken:</p> <p>1) The storage of snow is designated for the purpose of s.57 under the <i>Clean Water Act</i>, and is therefore prohibited where the threat is, or would be, significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-B (VS=10) (future); or</li> <li>• WHPA-E (VS ≥ 9) (future); or</li> <li>• the remainder of an Issue Contributing Area for Sodium or Chloride (future).</li> </ul> <p>Notwithstanding the above, emergency snow storage may be permitted outside of WHPA-A as determined by the risk management official and the municipality responsible for snow storage.</p>	See Maps 1.1 - 1.21	<p>Future: Immediately (T-5)</p> <p>Existing: 180 days (T-4)</p>	<p>GEN-1</p> <p>See Explanatory Notes</p>	MON-2
			H	<p>2) The storage of snow is designated for the purpose of s.58 under the <i>Clean Water Act</i>, requiring risk management plans, where the threat is significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-B (VS=10) (existing); or</li> <li>• WHPA-E (VS ≥ 9) (existing); or</li> <li>• The remainder of an Issue Contributing Area for Sodium or Chloride (existing).</li> </ul> <p>Without limiting other requirements, risk management plans shall include appropriate terms and conditions to ensure the storage of snow, and associated runoff, ceases to be a significant drinking water threat.</p>		<p>Existing: 1 year/5 years (T-6)</p>	<p>N/A</p> <p>See Explanatory Notes</p>	MON-2

## 10.9 FUEL

### Definition

The handling and storage of fuels is a prescribed drinking water threat under O. Reg. 287/07 under the *Clean Water Act, 2006*. Fuels include diesel, kerosene and hydrocarbon fuel (e.g., gasoline). The main activities that pose a threat to drinking water sources includes the handling of liquid fuel in relation to its storage and the storage of fuel. The types of fuel storage facilities include:

- bulk plants or facilities where fuels are manufactured or refined;
- permanent or mobile retail outlets;
- marinas;
- cardlocks/ keylocks;
- private outlets (e.g., public works yard, contractor yard);
- farms; and
- furnace oil tanks for home and business heating purposes.

Most of these storage facilities are defined in O. Reg. 213/01 (Fuel Oil) or O. Reg. 217/01 (Liquid Fuels) which are made under the *Technical Standards and Safety Act, 2000 (TSSA)*. Facilities where fuel is manufactured or refined are not included in the TSSA Regulations because they are regulated under the *Environmental Protection Act, 1990* and *Ontario Water Resources Act, 1990*.

### Why is Fuel a Threat to Drinking Water Sources?

A number of chemicals from the handling and storage of fuel could make their way into drinking water sources. The Ministry of Environment's *Tables of Drinking Water Threats* identifies the following sub-threat activities:

- the handling of fuel (see circumstances #112-191)
- the storage of fuel (see circumstances #1289-1408),

and the following chemicals as potential concerns:

- Benzene, Toluene, Ethylbenzene and Xylene (referred to as BTEX)
- Petroleum hydrocarbons F1 to F4 (referred to as PHC)

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BTEX is a non-aqueous phase liquid that does not easily dissolve into water and persists in the environment. It can lead to contamination of groundwater over a long period of time and the BTEX contaminated water can travel over long distances. BTEX compounds have strong odours and tastes, which generally discourages any accidental consumption of drinking water. However, benzene is a known carcinogen, and some research has suggested that ethylbenzene may be carcinogenic and produce birth defects. ~~BTEX compounds are highly water soluble, and can travel long distances in groundwater and surface water environments.~~

Petroleum hydrocarbons can cause an array of negative health effects to the reproductive, respiratory, immune and nervous systems and can also harm the kidneys, liver, skin, eyes, and blood. PHCs may also affect the odour, taste, and appearance of water. See **Table 10-11** for when and where the handling and/or storage of fuel is a significant drinking water threat.

**Table 10-11: Where/when the handling and/or storage of fuel is a significant drinking water threat**

Prescribed Drinking Water Threat	Fuel Sub-category	Area and Vulnerability Score (VS)
The handling and storage of fuel	The handling and storage of fuel	WHPA-A (VS=10) WHPA-B & E (VS=10)

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
FUEL-1	Handling and Storage of Fuel (Municipal Wellheads)	MOE	C	<p><b>Prescribed Instrument</b></p> <p>Where the handling and storage of fuel at a municipal wellhead is in an area where the activity is, or would be, a significant drinking water threat, drinking water licences under the <i>Safe Drinking Water Act</i> shall be reviewed to ensure that appropriate terms and conditions are included so that the activity ceases to be, or does not become, a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-B (VS=10) (existing, future); or</li> <li>• WHPA-E (VS=10) (existing, future).</li> </ul>	See Maps 1.1 - 1.21	<p>Future: Immediately (T-3)</p> <p>Existing: 3 years (T-1)</p>	<p>GEN-5</p> <p>See Explanatory Notes</p>	MON-4
FUEL-2	Handling and Storage of Fuel (Aggregate Extraction Sites)	MNR	C	<p><b>Prescribed Instrument</b></p> <p>1) The handling and storage of fuel at an aggregate extraction site shall be prohibited where the activity would be a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future); or</li> <li>• WHPA-B (VS=10) (future); or</li> <li>• WHPA-E (VS=10) (future).</li> </ul>	See Maps 1.1 - 1.21	<p>Future: Immediately (T-3)</p>	<p>N/A</p> <p>See Explanatory Notes</p>	MON-4
				<p>2) Where the handling and storage of fuel at an aggregate extraction site is in an area where the activity is a significant drinking water threat, the license, site plan or permit that governs the activity shall be reviewed to ensure appropriate terms and conditions are included so that the activity ceases to be a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing); or</li> <li>• WHPA-B (VS=10) (existing); or</li> <li>• WHPA-E (VS=10) (existing).</li> </ul>		<p>Existing: 3 years (T-1)</p>	<p>GEN-5</p> <p>See Explanatory Notes</p>	MON-4

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
FUEL-3	Handling and Storage of Fuel  (Liquid Fuel and Fuel Oil in Non-Residential (includes ICI, Farm), and Multi-unit Residential and Small Business)	RMO	G	<p><b>Part IV, s.57, s.58</b></p> <p>Where the handling and storage of liquid fuel and fuel oil at non-residential or multi-unit residential properties is in an area where the activity is, or would be, a significant drinking water threat, the following actions shall be taken:</p> <p>1) The handling and storage of fuel is designated for the purpose of s.57 under the <i>Clean Water Act</i>, and is therefore prohibited where the threat would be significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future); or</li> <li>• WHPA-B (VS=10) (future); or</li> <li>• WHPA-E (VS=10) (future).</li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-5)	GEN-1	MON-2
			H	<p>2) The handling and storage of fuel is designated for the purpose of s.58 under the <i>Clean Water Act</i>, requiring risk management plans, where the threat is significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing); or</li> <li>• WHPA-B (VS=10) (existing); or</li> <li>• WHPA-E (VS=10) (existing).</li> </ul> <p>Without limiting other requirements, risk management plans shall incorporate appropriate provisions of Ontario Regulations 213/01 and 217/01 and their codes, best management practices and standards as amended from time to time to ensure the activity ceases to be a significant drinking water threat.</p>		Existing: 1 year/5 years (T-6)	N/A	MON-2
		SPA	E	<p>3) The Source Protection Authority shall:</p> <p>a) request information from the Technical Standards and Safety Association Authority (TSSA) on the location and number of existing storage tanks that are significant drinking water threats which have been brought into compliance with the new standards under Regs. 213/01 and 217/01, and the location and number of tanks remaining to be upgraded to current standards; and</p> <p>b) provide this information to the Risk Management Official to aid in prioritizing the development of the risk management plans for those that pose the greatest risk first; and</p> <p>c) provide to TSSA any information received from Risk Management Officials or through Source Protection Area staff work on the location or nature of drinking water threats associated with handling and storage of fuel.</p>		Existing: 180 days (T-14)	N/A  See Explanatory Notes	MON-3

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
FUEL-4	Handling and Storage of Fuel  (Liquid Fuel and Fuel Oil in Non-Residential (includes ICI, Farm), Multi-unit Residential, Residential, and Small Business)	Municipality  MOE TSSA MCS	E	<p><b>Education and Outreach</b></p> <p>Where the handling and storage of liquid fuel and fuel oil is, or would be, a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-B (VS=10) (existing, future); or</li> <li>• WHPA-E (VS=10) (existing, future);</li> </ul> <p>the Ministry of Environment shall collaborate with TSSA and MCS to:</p> <p>a) provide education and outreach materials for delivery by local municipalities to residences and small businesses about how to prevent spills or leaks from contaminating water and what to do if a spill happens or is suspected;</p>	See Maps 1.1 - 1.21	Existing & Future: 2 years (T-10)	GEN-6  See Explanatory Notes	MON-1
			K	<p>b) include source water safety information into current public education vehicles, such as TSSA’s website and seasonal brochures;</p> <p>c) work with fuel industry associations to facilitate distribution of educational materials to fuel suppliers; and</p> <p>d) provide colleges with source water awareness information that can be integrated into fuel technician training programs.</p> <p>The municipality shall prepare and deliver education and outreach materials and programs to residences and small businesses where the handling and storage of liquid fuel and fuel oil is, or would be, a significant drinking water threat to advise the owner/tenant about the actions to take to ensure that the activity ceases to be, or does not become, a significant drinking water threat. Where appropriate education and outreach materials prepared by the Ministry of Environment, TSSA or other parties are available, the municipality shall deliver those materials.</p>				MON-4



## 10.10 DNAPLS AND ORGANIC SOLVENTS

### Definition of DNAPLs

The handling and storage of a dense non-aqueous phase liquid (DNAPL) is a prescribed drinking water threat under O. Reg. 287/07 under the *Clean Water Act, 2006*.

A DNAPL is an organic liquid that is denser than water and tends to be insoluble in water, meaning that it does not mix with water. When released into the environment, DNAPLs sink through to the bottom of groundwater aquifers (until they hit bedrock, for example) as well as through surface water bodies. However, after ‘sinking’, a DNAPL will continue to flow through the ground, at which time it will only then start to mix with water. Water that is contaminated with DNAPLs can spread over a number of kilometres and persist over a long period of time, as DNAPLs can be present in the aquifer for decades or centuries before they have been completely depleted. This accounts for their “special” status in Source Water Protection evaluation (i.e., the fact that they are considered to be a significant threat in the 5-year time of travel zone or WHPA-C).

DNAPLs have been readily used in vast quantities for decades in industrial and commercial applications such as dry cleaning, cleaning/degreasing solvents, electronics, aerosols, plastics, pesticides, pharmaceuticals, wood preservation, asphalt operations, varnishes and the repair of motor vehicles and equipment. These chemicals can also be found in small quantities in common household products such as adhesives and cleaners. “Handling” of DNAPLs is not specifically defined in regulations.

### Why are DNAPLs a Threat to Drinking Water Sources?

A number of chemicals from the handling and storage of DNAPLs could make their way into drinking water sources. The Ministry of Environment’s *Tables of Drinking Water Threats* identifies the following sub-threat activities:

- The handling and storage of a DNAPL (see circumstances #102-111, 1098-1112)

The Ministry of Environment’s *Tables of Drinking Water Threats* identify the specific chemicals that could make their way from DNAPL handling and storage into drinking water sources, which include:

- Dioxane-1,4 (a stabilizer)
- Polycyclic aromatic hydrocarbons (PAHs)

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- Tetrachloroethylene (also known as Perchloroethylene or PCE) (dry cleaning solvent, de-grease metals, paint strippers)
- Trichloroethylene (TCE) (industrial applications)
- Vinyl chloride (VC) (polymer production)

There is no minimum quantity for a DNAPL – any amount of a DNAPL is considered a significant drinking water threat in specific vulnerable areas. See **Table 10-12** for when and where the handling and/or storage of DNAPL is a significant drinking water threat.

**Table 10-12: Where/when the handling and/or storage a DNAPL is a significant drinking water threat**

Prescribed Drinking Water Threat	DNAPLs Sub-category	Area and Vulnerability Score (VS)
The handling and storage of a dense non-aqueous phase liquid	The handling and storage of a dense non-aqueous phase liquid	WHPA-A, B & C (VS ≥ 2) WHPA-E (VS=10)

### Definition of Organic Solvents

The handling and storage of an organic solvent is a prescribed drinking water threat under O. Reg. 287/07 under the *Clean Water Act, 2006*. Organic solvents are liquid organic compounds (i.e., containing carbon) with the power to dissolve solids, gases, or liquids. Most organic solvents have a lower density than water, which means they are lighter and will sit as a separate layer on top of water. Organic solvents have been readily used in vast quantities for decades in industrial and commercial applications such as paints, cleaning/degreasing, dry cleaning, electronics, aerosols, plastics, pesticides, pharmaceuticals, wood preservation, asphalt operations, varnishes and the repair of motor vehicles and equipment. ~~These chemicals~~ **Organic solvents** can also be found in small quantities in common household products such as ~~adhesives and~~ cleaners.

### Why are Organic Solvents a Threat to Drinking Water Sources?

Chemicals from organic solvents could make their way into drinking water sources. The Ministry of Environment's *Tables of Drinking Water Threats* identifies the following sub-threat activity:

- The handling and storage of an organic solvent (see circumstances #1225-1272)

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The Ministry of Environment's *Tables of Drinking Water Threats* identify the following four chemicals that could make their way from the handling and storage of organic solvents into water sources, which include:

- Carbon tetrachloride
- Chloroform
- Dichloromethane
- Pentachlorophenol

See **Table 10-13** for when and where the handling and/or storage of an organic solvent is a significant drinking water threat.

**Table 10-13: Where/when the handling and/or storage of an organic solvent is a significant drinking water threat**

Prescribed Drinking Water Threat	Organic Solvents Sub-category	Area and Vulnerability Score (VS)
The handling and storage of an organic solvent	The handling and storage of an organic solvent	WHPA-A (VS=10) WHPA-B & E (VS=10)

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
DNAP-1	Handling and Storage of a Dense Non-Aqueous Phase Liquid	RMO	G	<p><b>Part IV, s.57, s.58</b></p> <p>Where the handling and storage of a DNAPL is, or would be, a significant drinking water threat, the following actions shall be taken:</p> <p>1) The handling and storage of a DNAPL in any quantity (excluding incidental quantities for personal use) is designated for the purpose of s.57 under the <i>Clean Water Act</i>, and is therefore prohibited where the threat would be significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (VS ≥ 2) (future); or</li> <li>• WHPA-B (VS ≥ 2) (future); or</li> <li>• WHPA-C (VS ≥ 2) (future); or</li> <li>• WHPA-E (VS=10) (future).</li> </ul>	See Maps 2.1 - 2.21	Future: Immediately (T-5)	GEN-1  See Explanatory Notes	MON-2
			H	<p>2) The handling and storage of a DNAPL in any quantity (excluding incidental quantities for personal use) is designated for the purpose of s.58 under the <i>Clean Water Act</i>, requiring risk management plans, where the threat is significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (VS ≥ 2) (existing); or</li> <li>• WHPA-B (VS ≥ 2) (existing); or</li> <li>• WHPA-C (VS ≥ 2) (existing); or</li> <li>• WHPA-E (VS=10) (existing).</li> </ul>		Existing: 1 year/5 years (T-6)	N/A  See Explanatory Notes	MON-2

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
<b>DNAP-2</b>	Handling and Storage of a Dense Non-Aqueous Phase Liquid	Municipality  MOE	E  K	<p><b>Education and Outreach</b></p> <p>The municipality shall deliver education and outreach materials and programs where the handling and storage of a DNAPL is, or would be, a significant drinking water threat in any of the following areas in any quantity:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-B (VS ≥ 0) (existing, future); or</li> <li>• WHPA-C (VS ≥ 0) (existing, future); or</li> <li>• WHPA-E (VS=10) (existing, future).</li> </ul> <p>Where education and outreach materials prepared by the Ministry of Environment are available, the municipality shall deliver those materials, targeted towards:</p> <p>a) an individual for personal use to promote the use of non-toxic products and additional opportunities for participation in household hazardous waste disposal and to advise the owner/tenant about the actions to take to ensure that the activity ceases to be, or does not become, a significant drinking water threat; and</p> <p>b) industrial and commercial users to promote the use of alternatives to DNAPLs (including non-toxic products), pollution prevention approaches, best management practices, and safe disposal.</p>	See Maps 2.1 - 2.21	Existing & Future: 2 years (T-10)	GEN-6  See Explanatory Notes	MON-1  MON-4
<b>DNAP-3</b>	<b>Moderate/ Low Threats</b> Handling and Storage of a Dense Non-Aqueous Phase Liquid	Municipality	J	<p><b>Specify Action</b></p> <p>Where the handling and storage of a DNAPL is, or would be, a moderate or low drinking water threat, the municipality is encouraged to specify and promote best management practices for the handling and storage of DNAPL for ICI land uses in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-D (existing, future); or</li> <li>• WHPA-E (VS ≥ 4.8 and &lt;10) (existing, future); or</li> <li>• HVA (existing, future); or</li> <li>• SGRA (VS=6) (existing, future).</li> </ul>	See Chapter 5 of the respective Assessment Reports	Existing & Future: Consider within 2 years (T-15)	N/A  See Explanatory Notes	N/A

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
OS-1	Handling and Storage of an Organic Solvent	RMO	G	<p><b>Part IV, s.57, s.58</b></p> <p>Where the handling and storage of an organic solvent is, or would be, a significant drinking water threat, the following actions shall be taken:</p> <p>1) The handling and storage of an organic solvent is designated for the purpose of s.57 under the <i>Clean Water Act</i>, and is therefore prohibited where the threat would be significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future); or</li> <li>• WHPA-B (VS=10) (future); or</li> <li>• WHPA-E (VS=10) (future).</li> </ul>	See Maps 1.1 - 1.21	Future: Immediately (T-5)	GEN-1  See Explanatory Notes	MON-2
			H	<p>2) The handling and storage of an organic solvent is designated for the purpose of s.58 under the <i>Clean Water Act</i>, requiring risk management plans, where the threat is significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing); or</li> <li>• WHPA-B (VS=10) (existing); or</li> <li>• WHPA-E (VS=10) (existing).</li> </ul>		Existing: 1 year/5 years (T-6)	N/A  See Explanatory Notes	MON-2

**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
OS-2	Handling and Storage of an Organic Solvent	Municipality  MOE	E  K	<p><b>Education and Outreach</b></p> <p>The municipality shall deliver education and outreach materials and programs where the handling and storage of an organic solvent is, or would be, a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-B (VS=10) (existing, future); or</li> <li>• WHPA-E (VS=10) (existing, future).</li> </ul> <p>Where education and outreach materials prepared by the Ministry of Environment are available, the municipality shall deliver those materials, targeted towards:</p> <p>a) an individual for personal use to promote the use of non-toxic products and additional opportunities for participation in household hazardous waste disposal and to advise the owner/tenant about the actions to take to ensure that the activity ceases to be, or does not become, a significant drinking water threat; and</p> <p>b) industrial and commercial users to promote the use of alternatives to these chemicals (including non-toxic products), pollution prevention approaches, Best Management Practices, and safe disposal.</p>	See Maps 1.1 - 1.21	Existing & Future: 2 years (T-10)	GEN-6  See Explanatory Notes	MON-1  MON-4
OS-3	<b>Moderate/ Low Threats</b> Handling and Storage of an Organic Solvent	Municipality	J	<p><b>Specify Action</b></p> <p>Where the handling and storage of an organic solvent is, or would be, a moderate or low drinking water threat, the municipality is encouraged to specify and promote best management practices for the handling and storage of organic solvent for ICI land uses in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-B (VS &lt;10) (existing, future); or</li> <li>• WHPA-C (existing, future); or</li> <li>• WHPA-D (existing, future); or</li> <li>• WHPA-E (VS ≥ 4.8 and &lt;10) (existing, future); or</li> <li>• HVA (existing, future); or</li> <li>• SGRA (VS ≥ 6) (existing, future).</li> </ul>	See Chapter 5 of the respective Assessment Reports	Existing & Future: Consider within 2 years (T-15)	N/A  See Explanatory Notes	N/A

## 10.11 AIRCRAFT DE-ICING

### Definition

Aircrafts that have frost, ice or snow on any of its critical structures (e.g., wings) are not permitted to attempt take-off under the Canadian Aviation Regulations. During weather conditions that would result in frost, ice or snow, the aircraft may be sprayed with de-icing and/or anti-icing fluids prior to take-off.

### Why are Chemicals that De-ice Aircraft a Threat to Drinking Water Sources?

A number of chemicals used in the de-icing aircraft, could make their way into drinking water sources. The Ministry of Environment's *Tables of Drinking Water Threats* identifies the following sub-threat activity:

- The management of runoff that contains chemicals used in the de-icing of aircraft (see circumstances #192-199); and

the following chemicals as potential concerns:

- Dioxane-1,4
- Ethylene Glycol

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 is classified as a significant threat only for airports that:

- i) have passenger traffic as part of the definition of 'regional' or 'national' airport and;
- ii) lie within an intake protection zone or wellhead protection area.

There are currently none of these threat activities in the CTC Source Protection Region.

See **Table 10-14** for when and where the handling and or storage of aircraft de-icing is a significant drinking water threat.



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**Table 10-14: Where/when the management of runoff that contains chemicals used in the de-icing of aircraft ~~handling and/or storage of aircraft de-icing~~ is a significant drinking water threat**

Prescribed Drinking Water Threat	Aircraft De-icing Sub-category	Area and Vulnerability Score (VS)
The management of runoff containing chemicals used in the de-icing of aircrafts	The management of runoff containing chemicals used in the de-icing of aircrafts	WHPA-A (VS=10) WHPA-B (VS=10) WHPA-E (VS ≥ 9)

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
DI-1	Management of runoff that contains chemicals used in the de-icing of aircraft	RMO	H	<p><b>Part IV, s.58</b></p> <p>The management of runoff that contains chemicals used in the de-icing of aircraft is designated for the purpose of s.58 under the <i>Clean Water Act</i>, requiring risk management plans, where the threat is, or would be, significant in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (existing, future); or</li> <li>• WHPA-B (VS-10) (existing, future); or</li> <li>• WHPA-E (VS ≥ 9) (existing, future).</li> </ul>	See Maps 1.1 - 1.21	<p>Future: Immediately (T-7)</p> <p>Existing: 1 year/5 years (T-6)</p>	<p>GEN-1</p> <p>See Explanatory Notes</p>	MON-2
DI-2	Management of runoff that contains chemicals used in the de-icing of aircraft	Municipality	E	<p><b>Specify Action</b></p> <p>When developing new airports, the municipality shall encourage the federal and other government agencies to locate facilities for the de-icing of aircraft and the management of de-icing fluid runoff, outside of areas where the activity would be a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> <li>• WHPA-A (future); or</li> <li>• WHPA-B (VS-10) (future); or</li> <li>• WHPA-E (VS ≥ 9) (future).</li> </ul>	See Maps 1.1 - 1.21	<p>Future: Immediately (T-18) <del>(T-17)</del></p>	<p>N/A</p> <p>See Explanatory Notes</p>	MON-1

## **10.12 LAKE ONTARIO THREATS**

The Ministry of the Environment under the Director's Technical Rules for the preparation of assessment reports provides for the use of an events based modelling approach as a tool to identify activities that could be significant threats to drinking water sources in the Great Lakes. There is also a requirement to delineate an area known as an Intake Protection Zone 3 (IPZ-3) related to the location of the threat activity on land and the drinking water intake that is impacted. Source Protection Committees must develop policies to address significant drinking water threats from existing or future threat activities. In carrying out the events-based modelling, no consideration was made to determine whether there are existing risk management measures in place to manage the threat or to assess the adequacy of any such measures. The SPC did consider the current regulatory controls in place in developing policies to address the threat. Using the events based modelling approach, the storage and handling of fuel and sewage systems have been identified as significant threat activities to Lake Ontario drinking water sources at specific locations within the CTC. The CTC SPC received approval from the MOE Director to add two additional local threats relating to Lake Ontario intakes. These activities were also assessed using the events based modeling approach:

- Pipeline transporting petroleum products (containing benzene) crossing tributaries of Lake Ontario; and
- Spill of tritium from a nuclear generating station.

### **10.12.1 All Threats**

These policies apply to all significant threat activities identified for Lake Ontario intakes in the CTC.

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
LO-G-1	All Lake Ontario Threats	MOE	J K	<p><b>Specify Action</b> (Spill Prevention/Contingency and Emergency Response)</p> <p>To protect drinking water sources from potential spills <del>where event-based modelling has identified activities that are a significant drinking water threat (IPZ-3)</del> and along highways, shipping lanes and railways, the Ministry of the Environment shall:</p> <p>a) in consultation with the Spills Action Centre and other appropriate bodies, update notification protocols for spills to ensure direct notification of all potentially affected water treatment plant operators and appropriate communication to the public and media;</p> <p>b) in consultation with the Spills Action Centre and the affected municipalities, review the <del>reporting notification protocol thresholds</del> for significant threat activities and adjust the <del>reporting threshold protocols</del> as required <b>to ensure that water plant operators are notified appropriately for a given magnitude of spill;</b></p> <p>c) ensure that information is communicated to all responsible parties (e.g., the originators of the spill, emergency response/clean-up personnel, medical officer of health, municipal water owner and water operating authority) who are responding to the spill;</p> <p>d) in consultation with the owners and operators of municipal drinking water systems, require that a Contingency Plan is developed, reviewed and/or updated under the Drinking Water Quality Management Standard to ensure that significant drinking water threats identified in the Assessment Report are included and amend the municipal drinking water license, as required;</p> <p>e) in consultation with Emergency Management Ontario and other appropriate bodies, ensure that testing of the Contingency Plan is carried out within 3 years from the date the Source Water Protection Plan takes effect, followed by regular (frequency and priority to be determined in consultation) emergency response preparedness exercises to address the significant threats identified;</p> <p>f) in consultation with appropriate bodies, promote spill prevention and share information about source protection with the public.</p>	IPZ-3 See Map 4.1	Existing & Future: Consider within 2 years (T-15)	N/A  See Explanatory Notes	MON-4

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
LO-G-2	All Lake Ontario Threats	MOE	K	<p><b>Research</b> (Lake Ontario Circulation and Water Quality Monitoring, to support the Lake Ontario Collaborative Model)</p> <p>Where event based modelling has identified activities that are a significant drinking water threat (IPZ-3), the Ministry of the Environment, in collaboration with Environment Canada should:</p> <ul style="list-style-type: none"> <li>a) use the 3-D Hydrodynamic Circulation and Water Quality Simulation Model, or other 3-D models as appropriate, to run proactive simulation of potential spills in order to be able to predict the extent and duration of contamination and to help determine the parties to be notified in the event of a spill;</li> <li>b) install permanent instrumentation (e.g. continuous recording current meters, with wireless telephone link to Ministry of the Environment Monitoring and Reporting Branch) to provide real-time monitoring of current speed, direction and <b>temperature throughout the water column</b> <del>water chemistry</del> for use with the 3-D Hydrodynamic Circulation Model for future forecasting of spills impact assessments and assessing spill prevention strategies;</li> <li>c) ensure that the real-time data are available to municipalities and conservation authorities; and undertake Lake Ontario nearshore monitoring yearly; and make the data available to municipalities and conservation authorities.</li> </ul>	IPZ-3 See Map 4.1	Existing & Future: Consider within 2 years (T-15)	N/A  See Explanatory Notes	MON-4
LO-G-3	All Lake Ontario Threats	MOE	K	<p><b>Research</b> (Lake Ontario 3-D Hydrodynamic Circulation and Water Quality Simulation Model)</p> <p>Where event based modelling has identified activities that are a significant drinking water threat (IPZ-3), the Ministry of the Environment should, in consultation with responsible parties:</p> <ul style="list-style-type: none"> <li>a) maintain and further develop the 3-D Hydrodynamic Circulation Model with particular focus to the nearshore of Lake Ontario for future forecasting of activities to determine their potential to be significant drinking water threats;</li> <li>b) maintain specialized modeling expertise to undertake spills scenario modeling;</li> <li>c) lead the development of typical lake circulation spill base cases to provide tools for quick assessments of spills to provide early warning impact assessment; and</li> <li>d) use this model as a consistent approach for assessing potential impact from new/ proposed/ changed discharges, including spill scenario assessment and to assess actual spills.</li> </ul>	IPZ-3 See Map 4.1	Existing & Future: Consider within 2 years (T-15)	N/A  See Explanatory Notes	MON-4

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
LO-G-4	All Lake Ontario Threats	MOE	K	<p><b>Research</b> (Undertake Additional Spill Scenario Modelling)</p> <p>Where event based modelling has identified activities that are a significant drinking water threat (IPZ-3), the Ministry of the Environment, in consultation with responsible parties for the significant threat activities and applicable lead Source Protection Authority, should fund additional scenario modeling, to:</p> <ul style="list-style-type: none"> <li>a) undertake additional spill scenarios to assess other potential threats (locations, spill quantities, activities, contaminants), for example, pumping station overflow; and</li> <li>b) assess the effectiveness of Source Protection Plan policies relying on risk management measures and spill contingency measures to reduce the risk.</li> </ul>	IPZ-3 See Map 4.1	Existing & Future: Consider within 2 years (T-15)	N/A  See Explanatory Notes	MON-4
LO-G-5	All Lake Ontario Threats	MOE	K	<p><b>Research</b> (Inspect Stream Crossings)</p> <p>Where event based modelling has identified activities that are a significant drinking water threat (IPZ-3), the Ministry of the Environment should, with information provided by facility owners, compile an inventory of all pipe facilities which cross tributaries that drain into Lake Ontario to further understand risks associated with pipe break scenarios and to update respective Assessment Reports. Inventory should be shared with the Source Protection Authority and is intended to include:</p> <ul style="list-style-type: none"> <li>a) the state of the infrastructure (e.g., age, diameter, design life, quantity and type of products transported) to assess the potential threats;</li> <li>b) a map of the location of each crossing to produce a composite map;</li> <li>c) a prioritized list of facilities to be inspected/ maintained based on potential risk to drinking water; and</li> <li>d) all petroleum pipeline system failure (spill) sensing and shut down measures and policies.</li> </ul>	IPZ-3 See Map 4.1	Existing & Future: Consider within 2 years (T-15)	LO-SEW-1  LO-PIPE-1  See Explanatory Notes	MON-4
LO-G-6	<p><b>Significant/ Moderate/ Low Threats</b></p> <p>All Lake Ontario Threats</p>	MOE	J K	<p><b>Education and Outreach</b></p> <p><del>Where event based modelling has identified activities that are significant drinking water threats (IPZ-3) or where the Tables of Drinking Water Threats (Ontario Regulation 287/07 under the Clean Water Act, 2006) identifies moderate or low drinking water threats (IPZ-2, IPZ-1);</del> The Ministry of the Environment is requested to establish an outreach program to discuss the findings and policies arising from the source water protection program with Environment Canada, Health Canada, New York State and US government agencies in order to:</p> <ul style="list-style-type: none"> <li>a) encourage collaboration on protecting our shared drinking water sources;</li> <li>b) assess emerging threats to drinking water (e.g. discharge of fracking waste water through sewage treatment plants, climate change, etc.);</li> <li>c) raise profile of the importance of Lake Ontario as a source of drinking water for Ontario; and</li> <li>d) assess the threats to the near shore water quality from the cumulative impacts of point and non-point sources of contaminants.</li> </ul>	IPZ-3 See Map 4.1  IPZ-1, 2 See Chapter 5 of the respective Assessment Reports	Existing & Future: Consider within 2 years (T-15)	N/A  See Explanatory Notes	MON-4

**10.12.2 Nuclear Generating Station (Local Threat)**

Model scenarios were undertaken to determine if a spill of tritium in water from the Pickering or Darlington nuclear power plants would cause deterioration of the quality of raw water for the intakes located in Lake Ontario. The modeled parameter of concern was tritium and the threshold selected by the SPC to identify a significant drinking water threat was the ODWS for tritium (7000 Bq/L). The scenario was based on the volume and duration of a 1992 spill event which was a release of 2900 kg of wastewater with a tritium level of  $7.9 \times 10^{11}$  Bq/L and using a series of wind and lake current conditions normally found in the vicinity of these two facilities. These were not extreme weather conditions. The model was used to simulate the contaminant pathway within Lake Ontario and the concentrations at the nearby municipal drinking water intakes to determine if the tritium levels could exceed the current ODWS. More details on this work can be found in each of Assessment Reports for the CTC Source Protection Areas.

**Why is a Tritium Spill a Threat to Drinking Water Sources?**

Tritium is not removed in the treatment process in municipal drinking water plants. In order to meet the ODWS in the finished water municipal operators may need to shut off pumps at the intake during a spill event to avoid bringing raw water containing elevated tritium levels into the treatment plant.

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
LO-NGS-1	Spill of Tritium From NGS	MOE	K	<p><b>Specify Action</b> (Risk Mitigation/Reduction Plans)</p> <p>Where event based modelling has shown that a spill from a nuclear generating station would cause the storage and/or use of tritium contaminated heavy water to be a significant drinking water threat (IPZ-3), the Ministry of the Environment should, in consultation with the appropriate authorities:</p> <ul style="list-style-type: none"> <li>a) update spill notification protocols jointly with Spills Action Centre to ensure direct notification to all potentially affected water treatment plant operators and appropriate communication to the public and media;</li> <li>b) review the reporting thresholds jointly with affected municipalities, including consideration to lowering of the spill notification threshold to municipalities for significant threat activities and adjust the reporting threshold as required;</li> <li>c) ensure that information is communicated to all responsible parties (e.g., the originators of the spill, emergency response/clean-up personnel, medical officer of health, municipal water owner and water operating authority) who are responding to the spill;</li> <li>d) investigate and evaluate existing Risk Mitigation Plan/Risk Reduction Plan/Risk Contingency Plans make modifications where necessary with priority on reducing the likelihood of spills (such as potential additional design and operational Best Management Practices and operational procedures), which would impair drinking water sources;</li> <li>e) work with Emergency Management Ontario to ensure that testing of the Risk Mitigation/Risk Reduction/Risk Contingency Plan is carried out within 3 years of the Source Water Protection Plan coming into effect, followed by regular (frequency and priority to be determined in consultation) emergency response preparedness exercises to address the significant threats identified;</li> <li>f) use the 3-D Hydrodynamic Circulation and Water Quality Simulation Model, or other 3-D models as appropriate, to run proactive simulation of potential spills in order to be able to predict the extent and duration of contamination and to help determine the parties to be notified in the event of a spill;</li> <li>g) install permanent instrumentation (e.g. continuous recording current meters, with wireless telephone link to Ministry of the Environment Monitoring and Reporting Branch) to provide real-time monitoring of current speed, direction and temperature for use with the 3-D Hydrodynamic Circulation Model or other models as appropriate, for future forecasting of spills impact assessments and assessing spill prevention strategies; and</li> <li>h) ensure that the real-time lake current speed and direction data are available to municipalities and conservation authorities.</li> </ul>	IPZ-3 See Map 4.1	Existing & Future: Consider within 2 years (T-15)	N/A  See Explanatory Notes	MON-4



### 10.12.3 Pathogen Threat Activities -Wastewater Treatment Plant and Sanitary Sewer (Sewage)

#### Wastewater Treatment Plant (WWTP) Disinfection Failure

Modelling scenarios were undertaken to determine if disinfection failures at wastewater treatment plants (WWT) would cause deterioration of the quality of raw water above the normal range observed at the nearby municipal drinking water intakes. The modelled parameter of concern for these scenarios was *E. coli* and the recreational standard for *E. coli* (100 colony forming units per 100 millilitres (CFU/100 ml)) was selected by the SPC as the threshold to identify a significant drinking water threat. The scenarios were modelled for each waste water treatment plant using a series of wind and lake current conditions normally found in the vicinity of the facilities. These were not extreme weather conditions. The model was used to simulate the contaminant pathway within Lake Ontario and to determine the concentrations of the contaminant at the intakes. More details on this work can be found in each of Assessment Reports for the CTC Source Protection Areas.

#### Sanitary Trunk Sewer Breaks

A series of scenarios were modelled to determine if a large trunk sewer break along the shoreline of Lake Ontario could result in *E. coli* levels above the normal range observed at the nearby municipal drinking water intakes. Five trunk sewer break locations were modelled within the Toronto and Region Source Protection Area. The modelled parameter of concern for these scenarios was *E. coli* and the recreational standard for *E. coli* (100 colony forming units per 100 millilitres (CFU/100ml)) was selected by the SPC as the threshold to identify a significant drinking water threat. The scenarios were modelled for each wastewater treatment plant using a series of wind and lake current conditions normally found in the vicinity of the facilities. These were not extreme weather conditions. The model was used to simulate the contaminant pathway within Lake Ontario and to determine the concentrations of the contaminant at the intakes. More details on this work can be found in each of Assessment Reports for the CTC Source Protection Areas.

#### Why are Elevated *E. coli* Levels a Threat to Drinking Water Sources?

Water treatment plant operators are required to regularly measure the *E. coli* level in raw water in order to make adjustments to their disinfection process to ensure that all pathogens are killed. The *E. coli* levels normally found in the vicinity of the Lake Ontario intakes in the CTC are below 10 CFU/100 ml. The

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ODWS for *E. coli* in drinking water is zero CFU/100 ml. Since *E. coli* are living organisms and the test requires growing a culture for a period of time, monitoring results require approximately 24 hours. It is not an immediate result. When *E. coli* levels increase quickly due to a spill, it can make the proper disinfection treatment process more difficult.

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
LO-SEW-1	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage	MOE	C	<p><b>Prescribed Instrument</b> (Review and Enhancement of Spill Prevention and Contingency Plans)</p> <p>Where event based modelling has shown that a disinfection interruption at a waste water treatment plant would cause a sewage treatment plant by-pass discharge to surface water or sewage treatment plant effluent to be a significant drinking water threat (IPZ-3), the Ministry of the Environment should:</p> <ul style="list-style-type: none"> <li>a) review and amend Environmental Compliance Approvals to ensure they contain terms and conditions that ensure that the threats cease to be significant. Terms and conditions shall include a spill prevention and contingency plan. Consideration <b>should also be given to the need</b> for a year-round disinfection system and sufficient redundancy in the disinfection system to minimize the length of time that the disinfection system would not be working;</li> <li>b) update spill notification protocols jointly with Spills Action Centre to ensure direct notification to all potentially affected water treatment plant operators and appropriate communication to the public and media;</li> <li>c) review the <b>notification protocols reporting thresholds</b> for significant threat activities and adjust the reporting <del>threshold</del> <b>protocols as required to ensure that water plant operators are notified appropriately for a given magnitude of spill</b>;</li> <li>d) ensure that information is communicated to all responsible parties (e.g., the originators of the spill, emergency response/clean-up personnel, medical officer of health, municipal water owner and water operating authority) who are responding to the spill;</li> <li>e) work with Emergency Management Ontario to ensure that testing of the Contingency Plan is carried out within 3 years of the Source Water Protection Plan coming into effect, followed by regular (frequency and priority to be determined in consultation) emergency response preparedness exercises to address the significant threats identified;</li> <li>f) use the 3-D Hydrodynamic Circulation and Water Quality Simulation Model, or other <b>3-D</b> models as appropriate, to run proactive simulation of potential spills in order to be able to predict the extent and duration of contamination and to help determine the parties to be notified in the event of a spill;</li> <li>g) install permanent instrumentation (e.g. continuous recording current meters, with wireless telephone link to Ministry of the Environment Monitoring and Reporting Branch) to provide real-time monitoring of current speed, direction and <b>temperature</b> <del>water chemistry</del> for use with the 3-D Hydrodynamic Circulation Model for future forecasting of spills impact assessments and assessing spill prevention strategies; and</li> <li>h) ensure that the real-time data are available to municipalities and conservation authorities.</li> </ul>	IPZ-3 See Map 4.1	Existing: 3 years (T-1)  Future: Immediately (T-3)	GEN-5  <b>See Explanatory Notes</b>	MON-4

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
LO-SEW-2	Sanitary Trunk Sewer Spill (STS)	MOE	C	<p><b>Prescribed Instrument</b> (Spill Prevention and Contingency Plan)</p> <p>Where event based modelling has shown that a spill from a sanitary trunk sewer would be a significant drinking water threat (IPZ-3), the Ministry of the Environment should:</p> <ul style="list-style-type: none"> <li>a) review and amend Environmental Compliance Approvals to ensure that the threat ceases to be significant. Terms and conditions should include a spill prevention and contingency plan incorporating a requirement for assessment of erosion and flooding risks in tributaries which could jeopardize the integrity of the sanitary sewer systems identified as a significant threat. Re-inspections shall also be required with the frequency commensurate with the level of risk identified during the initial inspection;</li> <li>b) update spill notification protocols jointly with Spills Action Centre to ensure direct notification to all potentially affected water treatment plant operators and appropriate communication to the public and media;</li> <li>c) review the <b>notification protocols reporting thresholds</b> for significant threat activities and adjust the reporting <b>threshold protocol</b> as required <b>to ensure that water plant operators are notified appropriately for a given magnitude of spill</b>;</li> <li>d) ensure that information is communicated to all responsible parties (e.g., the originators of the spill, emergency response/clean-up personnel, medical officer of health, municipal water owner and water operating authority) who are responding to the spill;</li> <li>e) work with Emergency Management Ontario to ensure that testing of the Contingency Plan is carried out within 3 years of the Source Water Protection Plan coming into effect, followed by regular (frequency and priority to be determined in consultation) emergency response preparedness exercises to address the significant threats identified;</li> <li>f) use the 3-D Hydrodynamic Circulation and Water Quality Simulation Model, or <b>3-D</b> other models as appropriate, to run proactive simulation of potential spills in order to be able to predict the extent and duration of contamination and to help determine the parties to be notified in the event of a spill;</li> <li>g) install permanent instrumentation (e.g. continuous recording current meters, with wireless telephone link to Ministry of the Environment Monitoring and Reporting Branch) to provide real-time monitoring of current speed, direction and water chemistry for use with the 3-D Hydrodynamic Circulation Model for future forecasting of spills impact assessments and assessing spill prevention strategies; and</li> <li>h) ensure that the real-time data are available to municipalities and conservation authorities.</li> </ul>	IPZ-3 See Map 4.1	Existing: 3 years (T-1)  Future: Immediately (T-3)	GEN-5 <b>LO-G-5</b>	MON-4

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
LO-SEW-3	<b>Moderate/ Low Threats</b> All threats that are Linked to Storm Sewers	MOE	J	<p><b>Specify Action</b> (Storm Sewers)</p> <p>Where a spill from a facility could reach an off-site storm sewer such that it would be a moderate or low drinking water threat as identified in the <i>Tables of Drinking Water Threats</i> (Ontario Regulation 287/07 under the <i>Clean Water Act, 2006</i> in IPZ-2, IPZ-1), the Ministry of the Environment should enact the necessary legislation/regulation <b>or tools</b> to require such facility owners to be subject to provincial approvals for spill prevention/mitigation plans.</p>	IPZ-1, 2 See Chapter 5 of the respective Assessment Reports	<b>Existing &amp; Future:</b> <b>Consider within 2 years (T-15)</b>	N/A  <b>See Explanatory Notes</b>	MON-4
LO-SEW-4	<b>Significant/ Moderate/ Low Threats</b> All Pathogen Threats	MOE  Health Canada	J  K	<p><b>Specify Action</b> (Development of Pathogen Risk Assessment)</p> <p>Where event based modelling has identified activities that are significant pathogen drinking water threats (IPZ-3) or where the <i>Tables of Drinking Water Threats</i> (Ontario Regulation 287/07 under the <i>Clean Water Act, 2006</i>) identifies moderate or low pathogen drinking water threats (IPZ-2, IPZ-1), the Ministry of the Environment and Health Canada should provide technical and financial support to the Lake Ontario Collaborative member municipalities to undertake the development of a pathogen (not limited to <i>E. coli</i>) risk assessment, including:</p> <p>a) identifying the pathogens and the respective densities at different times;</p> <p>b) assessing the associated risk at intakes due to pathogens in non-disinfected wastewater and other known specific sources of these pathogens; and</p> <p>c) undertaking quantitative microbial risk assessments, using a structured research &amp; development design (such as based on the protocols established by the US EPA) to assess the threat and adequacy of existing treatment on a plant-by-plant basis.</p>	IPZ-3 See Map 4.1  IPZ-1, 2 See Chapter 5 of the respective Assessment Reports	<b>Existing &amp; Future:</b> <b>Consider within 2 years (T-15)</b>	N/A  <b>See Explanatory Notes</b>	MON-4

#### **10.12.4 Petroleum Product Spills Containing Benzene**

##### **Oil/Gas Pipelines (Local Threat)**

Modelling scenarios were undertaken to determine if benzene in gasoline spilled from an oil pipeline rupture as it crosses various rivers (tributaries) would reach any of the drinking water intakes and cause deterioration of the quality of raw water. The contaminant of concern for these scenarios was benzene and the threshold selected by the SPC to identify a significant threat from benzene was the ODWS (0.005 mg/l). The spill parameters used in the scenario was based on the pipeline spill that occurred near Kalamazoo, Michigan in the summer of 2010, adjusted for the size and product volumes carried in the specific portions of the Ontario pipelines. The model was used to simulate the contaminant pathway within Lake Ontario to assess potential concentrations at the intakes. More details on this work can be found in each of Assessment Reports for the CTC Source Protection Areas.

##### **Petroleum Tank Farm (Fuel)**

Two modelling scenarios were undertaken to determine if the release of gasoline containing benzene from bulk petroleum storage and handling facilities in Oakville or North York would reach water treatment plant intakes and cause deterioration of the quality of raw water. One scenario involved was based on a complete loss of product from a tank and the second estimated losses of smaller volumes during loading/unloading from shore to ship. The modeled contaminant of concern for these scenarios was benzene and the threshold selected by the SPC to identify a significant the threat from benzene was the ODWS (0.005 mg/l). The model was used to simulate the contaminant pathway within Lake Ontario to assess potential concentrations at the intakes. More details on this work can be found in each of Assessment Reports for the CTC Source Protection Areas.

##### **Why is a Spill Containing Benzene a Threat to Drinking Water Sources?**

Benzene is not removed in the conventional treatment process in municipal drinking water plants. In order to meet the ODWS in the finished water, municipal operators may need to shut off pumps at the intake during a spill event to avoid bringing raw water containing elevated benzene levels into the treatment plant.

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
LO-PIPE -1	Pipelines Transporting Petroleum Product (Containing Benzene) Crossing Tributaries of Lake Ontario	MOE	K	<p><b>Specify Action</b> (Spill Prevention/Contingency and Emergency Response)</p> <p>Where event based modelling has shown that a spill from a petroleum pipeline system reaching a tributary would be a significant drinking water threat (IPZ-3), the Ministry of the Environment should:</p> <p>a) <b>work with facility owners and provincial and federal regulators to develop</b> review and recommend necessary improvements to existing spill prevention, spill management, risk reduction, and contingency plans to ensure the following:</p> <ul style="list-style-type: none"> <li>i) plans are based on the depth of ground cover at surface water crossings;</li> <li>ii) spill response time frames are established;</li> <li>iii) responsibilities of first responders are established to ensure a prompt unified regulatory command structure to manage the spill response;</li> <li>iv) notification protocols are established jointly with the Spills Action Centre to ensure direct notification to all potentially affected water treatment plant operators and appropriate communication to the public and media;</li> <li>v) <b>reporting notification protocols thresholds are established for significant threat activities to ensure that water plant operators are notified appropriately for a given magnitude of spill;</b></li> <li>vi) that information is communicated to all responsible parties (e.g., the originators of the spill, emergency response/clean-up personnel, medical officer of health, municipal water owner and water operating authority) who are responding to the spill;</li> <li>vii) that there are appropriate spills response plans for each crossing;</li> <li>viii) that appropriate pipeline system failure and shut down measures and policies are included;</li> <li>ix) a review is undertaken on the depth of ground cover over the pipeline at each crossing, including an assessment of erosion and flood risk;</li> <li>x) that an assessment of condition of the pipe system is provided;</li> <li>xi) that the pipeline design and operational Best Management Practices are in place (including potential additional design and operational Best Management Practices); and</li> <li>xii) that any new or expansions or pipeline replacements are constructed to meet current best design criteria;</li> <li>xiii) a provision is included in the contingency plan that the facility owner work with Emergency Management Ontario to ensure that testing of the contingency plan is carried out within 3 years of the Source Water Protection Plan coming into effect, followed by regular (frequency and priority to be determined in consultation) emergency response preparedness exercises to address the significant threats identified;</li> </ul>	IPZ-3 See Map 4.1	<b>Existing &amp; Future: Consider within 2 years (T-15)</b>	LO-G-5	MON-4

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			<p>b) in collaboration with Environment Canada:</p> <ul style="list-style-type: none"> <li>i) use the 3-D Hydrodynamic Circulation and Water Quality Simulation Model, or other 3-D models as appropriate, to run proactive simulation of potential spills in order to be able to predict the extent and duration of contamination and to help determine the parties to be notified in the event of a spill;</li> <li>ii) install permanent instrumentation (e.g. continuous recording current meters, with wireless telephone link to Ministry of the Environment Monitoring and Reporting Branch) to provide real-time monitoring of current speed, direction and temperature water chemistry for use with the 3-D Hydrodynamic Circulation Model for future forecasting of spills impact assessments and assessing spill prevention strategies;</li> <li>iii) ensure that the real-time data are available to municipalities and conservation authorities; and</li> <li>iv) undertake Lake Ontario nearshore monitoring yearly; and make the data available to municipalities and conservation authorities.</li> </ul>				
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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
LO-FUEL-1	Handling and Storage of Fuel (Spill from Petroleum Tank Farm)	MOE	K	<p><b>Specify Action</b> (Spill Prevention/Contingency Plan)</p> <p>Where event based modelling of a spill from a petroleum tank farm has shown that it would be a significant drinking water threat (IPZ-3), the Ministry of the Environment shall require a risk reduction plan for the tank farm. Ministry of the Environment, in consultation with the applicable regulating authorities (e.g. Technical Standards and Safety Authority) should:</p> <ul style="list-style-type: none"> <li>a) investigate and evaluate existing Spills Prevention Plans/ Spill Contingency Plans;</li> <li>b) recommend additional measures to reduce the likelihood that a spill from a storage facility would impair drinking water source quality;</li> <li>c) incorporate all applicable provisions of Ontario Regulations 213/01 and 217/01 and their codes as well as other measures to ensure the protection of drinking water sources into a Risk Management Plan for the facility, which may include but not be limited to: <ul style="list-style-type: none"> <li>i. best management practices;</li> <li>ii. site characterization as necessary;</li> <li>iii. proof of ability to pay for clean-up of potential contamination; and</li> <li>iv. the appropriate frequency of inspections.</li> </ul> </li> <li>d) review existing Environmental Compliance Approvals for discharges to surface water at the identified sites to determine if there are adequate safeguards to protect drinking water sources;</li> <li>e) determine if additional works or procedures are required to reduce the likelihood of contaminants discharging to Lake Ontario in the event of a spill or equipment failure/malfunction;</li> <li>f) ensure provisions for spill notification protocols are established jointly with Spills Action Centre to ensure direct notification to all potentially affected water treatment plant operators and appropriate communication to the public and media;</li> <li>g) establish reporting notification protocols thresholds for significant threat activities to ensure that water plant operators are notified appropriately for a given magnitude of spill;</li> <li>h) ensure that information is communicated to all (e.g., the originators of the spill, emergency response/clean-up personnel, medical officer of health, municipal water owner and water operating authority) responsible parties who are responding to the spill;</li> <li>i) include a provision that the facility owner work with Emergency Management Ontario to ensure that testing of the Contingency Plan is carried out within 3 years of the Source Water Protection Plan coming into effect, followed by regular (frequency and priority to be determined in consultation) emergency response preparedness exercises to address the significant threats identified;</li> <li>j) use the 3-D Hydrodynamic Circulation and Water Quality Simulation Model, or other 3-D models as appropriate, to run proactive simulation of potential spills in order to be able to predict the extent and duration of contamination and to</li> </ul>	IPZ-3 See Map 4.1	Existing & Future: Consider within 2 years (T-15)	N/A  See Explanatory Notes	MON-4

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
				help determine the parties to be notified in the event of a spill; k) install permanent instrumentation (e.g. continuous recording current meters, with wireless telephone link to Ministry of the Environment Monitoring and Reporting Branch) to provide real-time monitoring of current speed, direction and water chemistry for use with the 3-D Hydrodynamic Circulation Model for future forecasting of spills impact assessments and assessing spill prevention strategies; and l) ensure that the real-time data is available to municipalities and conservation authorities.				
<b>LO-FUEL-2</b>	Handling and Storage of Fuel (Spill from Petroleum Tank Farm)	MOE	K	<b>Specify Action (Storm Sewers)</b>  Where event based modelling of a spill from a facility has shown that it could reach an off-site storm sewer such that it would be a significant drinking water threat (IPZ-3), the Ministry of the Environment should enact the necessary legislation/regulation to require such facility owners to be subject to provincial approvals for spill prevention/mitigation plans.	IPZ-3 See Map 4.1	Existing & Future: Consider within 2 years (T-15)	N/A  See Explanatory Notes	MON-4
<b>LO-FUEL-3</b>	<b>Significant/ Moderate/ Low Threats</b> Handling and Storage of Fuel (Spill from Petroleum Storage Tanks)	MOE	J K	<b>Education and Outreach (Fuel Tank Farms)</b>  Where event based modelling has identified activities that are significant drinking water threats (IPZ-3) or where the <i>Tables of Drinking Water Threats</i> (Ontario Regulation 287/07 under the <i>Clean Water Act, 2006</i> ) identifies moderate or low drinking water threats (IPZ-2, IPZ-1), the Ministry of the Environment shall, in consultation with appropriate authorities, work with the facility owner to:  a) support the investigation and evaluation of existing Spills Prevention Plans/ Spill Contingency Plans; and  b) identify the need for potential additional design and operational Best Management Practices which would reduce the likelihood that a spill from a storage facility would impair drinking water source quality for tanks located on federal lands.	IPZ-3 See Map 4.1  IPZ-1, 2 See Chapter 5 of the respective Assessment Reports	Existing & Future: Consider within 2 years (T-15)	N/A	MON-4

### **10.13 WATER QUANTITY**

All of the drinking water quantity threats identified in the CTC Source Protection Region are threats to groundwater-sourced municipal drinking water supplies. Through a tiered process of water budget analyses as set out in the *Technical Rules* under section 107 of the *Clean Water Act, 2006*, SPCs are required to identify the vulnerable areas, enumerate the activities that pose a drinking water threat, and determine the threat level of the activity. At the final stage (Tier 3 water budget analysis), specific vulnerable areas (Local Areas) are delineated and significant drinking water threat activities are identified. The Tier 3 water budget for the areas around municipal wells in Orangeville, Mono and Amaranth was completed in early 2011. This is the only Tier 3 Water Budget that has been completed for the CTC – two others are on-going (Halton Hills and Whitchurch-Stouffville). The policies outlined below were developed for the Orangeville and area water quantity threats only. The future update of the Source Protection Plan will address the other two Tier 3 water budgets.

#### **10.13.1 Taking Water Without Returning It to the Same Aquifer**

##### **Definition**

Any activity that takes water from an aquifer, without returning the water to that aquifer is a threat if it results in a depletion of available supply which could impair the long-term viability of a water system. The province establishes thresholds, to protect the ecosystem and other users, to determine if the water taking is sustainable. Municipal and private wells are typical examples of such water taking activities, along with industrial uses such as agriculture irrigation and aggregate extraction below the water table which requires pumping operations.

##### **Why is this Activity a Threat to Drinking Water Sources?**

Taking water without returning it to the same aquifer can lead to the depletion of water in the aquifer, which reduces the amount of water available for municipal water supplies. If the available water in the aquifer drops below the safe threshold levels, municipal wells cannot produce enough to supply water demands which can lead to a water shortage.

#### **10.13.2 Recharge Reduction**

##### **Definition**

When recharge to an aquifer is reduced, the available water supply becomes depleted and can impair the long-term viability of a water system. Typical examples which reduce recharge include existing and

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planned land use developments, such as residential subdivisions, employment areas and undifferentiated suburban lands. Any conversions of land to an impervious surface, such as paved parking lots, do not let water travel through the ground to recharge the aquifer.

### Why is this Activity a Threat to Drinking Water Sources?

Activities that reduce the recharge of an aquifer, reduces the water available for municipal water supplies. Impervious surfaces impede the ability for the aquifer to recharge and continue to provide water over the long term.

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Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
DEM-1	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	MOE	C	<p><b>Prescribed Instrument</b> (PTTW Policies in <b>WHPA-Q1 with Local Areas with Quantity-related Significant Drinking-Water Quantity Threats</b>)</p> <p>Within the Tier 3 Water Budget <b>WHPA-Q1 Local Areas</b> identified as having significant water quantity threats the Ministry of Environment shall ensure each water taking threat ceases to be, or does not become significant through actions the Director considers appropriate on a case by case basis, such as:</p> <p>1) Reviewing all existing Permits To Take Water, in consultation with <b>other Ministries (as required), the Ministry of Natural Resources</b> the affected municipality and relevant conservation authorities, <b>and permit holders</b>, and amend the permits where necessary to ensure:</p> <ul style="list-style-type: none"> <li>a) that municipal water supply requirements for the <b>allocated and planned quantity current and planned service capacity</b> (per the current approved population <b>and employment</b> projections of the most recent Growth Plan for the Greater Golden Horseshoe) will be met on a sustainable basis; and</li> <li><del>b)</del> that the <b>ecological and hydrological integrity of municipal wells in the WHPA-Q1 key hydrologic features, functions and aquatic systems in the Local Area</b> will be maintained.</li> </ul> <p>2) Issuing Permits To Take Water for new or increased takings only if it can be satisfactorily demonstrated, <b>using the findings of the most recently approved Tier 3 Water Budget Model and where appropriate other available data, using Tier 3 Water Budget Model where appropriate</b> that the taking:</p> <ul style="list-style-type: none"> <li>a) can be maintained on a sustainable basis;</li> <li>b) will not affect the ability of the aquifer to meet the municipal water supply requirements for the current and planned service capacity; <b>or interfere with other permitted takings;</b> and</li> <li>c) will ensure the <b>ecological and hydrological integrity of municipal wells of key hydrologic features, functions and aquatic systems</b> will be maintained.</li> </ul>	Existing & Future: <b>WHPA-Q1 with a significant risk level</b>  Future: <b>WHPA-Q1 with a moderate risk level</b> <del>Tier 3 Water Budget Local Areas (where identified as Significant Drinking Water Quantity Threats in Assessment Reports)</del>	Future: Immediately (T-3)  Existing: 3 years (T-1)	GEN-5 <b>DEM-8</b>  See Explanatory Notes	MON-4

**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
DEM-2	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	Planning Approval Authority	A	<p><b>Land Use Planning</b> (Planning Policies in <b>WHPA-Q1 with Local Areas with Quantity-related Significant Drinking Water Quantity Threats</b>)</p> <p>Within the Tier 3 Water Budget <b>WHPA-Q1 Local Areas</b> identified as having significant water quantity threats the relevant Planning Approval Authority shall ensure water taking does not become a significant drinking water threat by:</p> <p>1) <b>Only permitting new development if the new development does not require a new or amended PTTW; or</b>  <del>Only permitting new development or site alteration that requires new or increased water takings beyond the planned future service capacity if the following applies:</del></p> <ul style="list-style-type: none"> <li>a) <del>the development or site alteration is minor as determined per the Planning Approval Authority, including not requiring a new/amended PTTW; or</del></li> <li>b) <del>it can be satisfactorily demonstrated that the increase in water demand can be accommodated on a sustainable basis; and</del></li> <li>c) <del>the ecological and hydrological integrity of key hydrologic features, functions and aquatic systems will be maintained.</del></li> </ul> <p>2) <b>Only providing final approval for new development that requires new or amended PTTW once the Ministry of the Environment has determined that the proposed taking does not become a significant water quantity threat ; or</b>  <del>In relation to clause 1 b) above, where it is deemed necessary to require demonstration that an increase in water demand associated with a planning application can be accommodated on a sustainable basis, require submission of a satisfactory detailed assessment, using the Tier 3 Water Budget Model where appropriate, to ensure that:</del></p> <ul style="list-style-type: none"> <li>a) <del>the increased taking will not adversely impact the aquifer’s ability to meet the municipal water supply requirements for current and planned service capacity, or for other permitted takings; and</del></li> <li>b) <del>the ecological and hydrological integrity of key hydrologic features, functions and aquatic systems will be maintained.</del></li> </ul> <p>3) Only approving settlement area expansions, <b>within WHPA-Q1</b> as part of a municipal comprehensive review where the applicable provincial planning criteria have been met and the following has been demonstrated:</p> <ul style="list-style-type: none"> <li>a) the aquifer has sufficient capacity to sustainably provide municipal water services to the expanded settlement area;</li> <li>b) the expansion will not adversely impact the aquifers ability to meet the municipal water supply requirements for current and planned service capacity, for other permitted takings, or for wastewater receiving bodies; and</li> <li>c) the <del>ecological and hydrological integrity of</del> <b>municipal wells will</b> <del>key hydrologic features, functions and aquatic systems be maintained.</del></li> </ul>	<p><b>Existing &amp; Future: WHPA-Q1 with a significant risk level</b></p> <p><b>Future: WHPA-Q1 with a moderate risk level</b></p> <p><del>Tier 3 Water Budget Local Areas (where identified as Significant Drinking Water Quantity Threats in Assessment Reports)</del></p>	<p>Future: Immediately (T-9)</p> <p>Amend OPs <del>and ZBLs</del> for conformity within 5 years <b>and ZBLs within 3 years of OP approval</b> (T-8)</p>	<p><b>DEM-1 N/A</b></p> <p><b>See Explanatory Notes</b></p>	MON-1

**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
DEM-3	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	MMAH MOI MOE	K	<p><b>Specify Action</b> (Growth Management/Planning Ministries to Review Growth in <b>WHPA-Q1 with Significant Water Quantity Threats</b>) <del>Local Areas with Quantity related Significant Drinking Water Threats</del>)</p> <p>Within any Tier 3 Water Budget <b>WHPA-Q1 Local Area</b> identified as having significant water quantity threats the Provincial Ministries specified below <del>should shall</del> undertake the following to <b>ensure the provision and distribution of water supply for municipal population and employment growth forecasts does not create a new or increase an existing significant water quantity threat: ensure municipal population growth forecasts and distributions are sustainable based on available water systems:</b></p> <p>1) <del>The Ministry of Municipal Affairs and Housing shall use the Tier 3 water budget information to ensure that municipal Official Plan growth forecasts and distributions, in consultation with the Ministry of Environment and relevant municipalities will not result in creating or worsening a significant water quantity threat, given water quantity constraints identified in Tier 3 Water Budget model areas; and</del>  <del>The Ministry of Municipal Affairs and Housing shall use the Tier 3 water budget information to ensure that municipal Official Plan growth forecasts and distributions, in consultation with the Ministry of Environment and relevant municipalities will not result in creating a significant drinking water quantity threat, given water quantity constraints identified in Tier 3 Water Budget model areas; and</del></p> <p>2) The Ministry of Infrastructure <del>should shall</del> take into consideration water quantity constraints identified through Tier 3 water budgets, <b>and other data available</b>, during its review of the population forecasts contained in the Growth Plan for the Greater Golden Horseshoe, in consultation with relevant municipalities.</p>	<p><b>Existing &amp; Future:</b> WHPA-Q1 with a significant risk level</p> <p><b>Future:</b> WHPA-Q1 with a moderate risk level</p> <p><del>Tier 3 Water Budget Local Areas (where identified as Significant Drinking Water Quantity Threats in Assessment Reports)</del></p>	<p><b>Existing &amp; Future:</b> Consider within 2 years (T-15)</p>	<p>N/A</p> <p>See Explanatory Notes</p>	MON-4

**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
DEM-4	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	Municipality	E	<p><b>Specify Action</b> (Municipal Water Conservation Plans)</p> <p>Municipalities responsible for the <b>production, treatment, storage of water, who have a municipal well and/or whose residents are served by a municipal water supply</b> for supplying water within the Tier 3 Water Budget <b>WHPA-Q1 Local Areas</b> shall develop and/or update Water Conservation Plans to ensure they are an effective tool to support sustainable water quantity by reducing consumption and therefore the demand for water.</p>	<p><b>Existing &amp; Future:</b> WHPA-Q1 with a significant risk level</p> <p><b>Future:</b> WHPA-Q1 with a moderate risk level</p> <p><b>Tier 3 Water Budget Local Areas</b> (where identified as Significant Drinking Water Quantity Threats in Assessment Reports)</p>	<p><b>Existing &amp; Future:</b> Initiate within 2 years (T-16)</p>	<p>N/A</p> <p>See Explanatory Notes</p>	MON-1



**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
DEM-5	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	Municipality	E	<p><b>Education and Outreach</b></p> <p>Municipalities responsible for <b>production, treatment and storage of water and/or jurisdictional lands</b> supplying water within any Tier 3 Water Budget <b>WHPA-Q1 Local Area</b> identified as having significant water quantity threats shall undertake the following education and outreach initiatives to help ensure water supplies are protected and increase the effectiveness of water conservation efforts in their jurisdictions to reduce consumption and therefore demand:</p> <p>1) <b>Shall Develop and implement</b> education and outreach programs to ensure that property owners and businesses <b>focus on: understand:</b></p> <ul style="list-style-type: none"> <li>a) their role in protecting water supplies and conserving water;</li> <li>b) actions that can be taken to protect water supplies and use less water; and</li> <li>c) financial incentive programs and projects that may be eligible for funding under future funding of the Ontario Drinking Water Stewardship Program; or</li> </ul> <p>2) Review any similar programs that may already exist and update them where necessary to ensure their effectiveness.</p>	Existing & Future: <b>WHPA-Q1 with a significant risk level</b> <b>Tier 3 Water Budget Local Areas</b> (where identified as Significant Drinking Water Quantity Threats in Assessment Reports)	Existing & Future: 2 years (T-10) (T-16)	GEN-6  See Explanatory Notes	MON-1
		MOE	K	3) <b>The Ministry of the Environment should provide municipalities with a list of appropriate education and outreach materials that provide information and guide to actions that can be taken to reduce the usage of drinking water for delivery by the municipality.</b>				MON-4

**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
DEM-6	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	Municipality	E	<p><b>Specify Action</b> (Joint Municipal Water Management)</p> <p>The Dufferin County municipalities that share a water source within a Tier 3 Water Budget <del>WHPA-Q1 Local Area</del> identified as having significant water quantity threats shall develop a Joint Municipal Water Supply Management model, and implement within 3 years of approval of the Source Protection Plan. This management model shall facilitate the planning and management of water supply sources to ensure sustainability of a long term water supply in each municipality and ensure that water quality and quantity is maintained or improved such that activities cease to be, or do not become, significant drinking water threats in the <del>WHPA-Q1 Local Area-A</del>. The municipalities shall report to MOE and MMAH, on the options and proposed management model within 1 year of the approval of the Source Protection Plan.</p>	<p>WHPA-Q1 with a significant risk level (Orangeville, Amaranth, East Garafraxa and Mono)</p> <p><del>Local Area-A (as identified in Tier 3 Water Budget for Orangeville, Amaranth and Mono)</del></p>	See Policy	<p>DEM-7 N/A</p> <p>See Explanatory Notes</p>	MON-1

**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
DEM-7	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	MOE	K	<p><b>Specify Action</b> (Province to Support Joint Municipal Water Management System or Authority)</p> <p>The Ministry of the Environment, in collaboration with the Ministry of Municipal Affairs and Housing and other affected provincial ministries and other agencies, as required, should initiate meetings with the Dufferin County municipalities that share a water source within a Tier 3 WHPA-Q1 are wholly or partially within the Orangeville, Mono and Amaranth Tier 3 Local Area identified as having Significant Water Quality and Quantity Threats within 1 year, to support the municipalities in developing mutually beneficial solutions to address water quantity and quality constraints. And further, the MOE should provide technical support to the municipalities.</p>	<p>WHPA-Q1 with a significant risk level (Orangeville, Amaranth, East Garafraxa and Mono)</p> <p>Local Area (as identified in Assessment Reports and Tier 3 Water Budget for Orangeville, Amaranth and Mono)</p>	See Policy	<p>DEM-6 N/A</p> <p>See Explanatory Notes</p>	MON-4

**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
DEM-8	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	MOE	K	<p><b>Specify Action</b> (MOE to Adopt and Fund Maintenance of the Tier 3 Water Budget Model)</p> <p>The Ministry of Environment should adopt and fund a Tier 3 Water Budget Model for each <del>WHPA-Q1 Local Area</del> identified as having <b>existing or future</b> significant water quantity threats and undertake the following to ensure it is maintained as the primary model to review existing and future PTTWs, to allow municipalities and other Provincial Ministries (i.e. Ministry of Municipal Affairs and Housing and Ministry of Infrastructure) to evaluate growth projections and distributions, and to facilitate the review of planning applications by municipalities where necessary to ensure that these activities <b>cease to be or</b> do not become significant drinking water threats:</p> <p>1) Through the Permit To Take Water program, require municipal takers in <del>WHPA-Q1 in Local Areas identified as having significant water quantity threats</del> to monitor water quantity and supply data on a regular basis to assist in the upkeep of the model <b>to determine any increase or reduction in significant water quantity threats;</b></p> <p>2) <b>Use the model with the most up to date data as an analysis and decision making tool; and</b>  <del>Run the model using the most up to date data, to analyze its predictions for water quantity issues and make necessary refinements to the model on an ongoing basis; and</del></p> <p>3) <b>When necessary</b> contribute to funding for new continuous flow gauging stations in key surface water features and enhance Conservation Authorities existing Hydrometric Network in the <del>WHPA-Q1 Local Area</del> to monitor long term trends in surface water quantity, study impacts of urbanization and climate change on aquifer recharge, and facilitate calibration of the model.</p>	<p><b>Existing &amp; Future:</b>  <b>WHPA-Q1 with a significant risk level</b></p> <p><b>Future:</b>  <b>WHPA-Q1 with a moderate risk level</b></p> <p>Tier 3 Water Budget Local Areas (where identified as Significant Drinking Water Quantity Threats in Assessment Reports)</p>	<p><b>Existing &amp; Future:</b>  <b>Consider within 2 years (T-15)</b></p>	<p>DEM-1  DEM-3  N/A  See Explanatory Notes</p>	MON-4

**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
DEM-9	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	Municipality	E	<p><b>Specify Action</b> (Identifying Additional Water Supplies)</p> <p>Municipalities within a Tier 3 Water Budget Local Area identified as having significant water quantity threats are encouraged to identify additional water sources outside of the <b>WHPA-Q1 Local Area</b> to reduce demand from well systems which have been identified with significant water quantity stress and to report to the Source Protection Authority within 3 years on their progress.</p>	<p>Existing &amp; Future: <b>WHPA-Q1 with a significant risk level</b></p> <p>Future: <b>WHPA-Q1 with a moderate risk level</b></p> <p>Tier 3 Water Budget Local Areas (where identified as Significant Drinking Water Quantity Threats in Assessment Reports)</p>	See Policy	N/A See Explanatory Notes	MON-1
DEM-10	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	Municipality	E	<p><b>Specify Action</b></p> <p>York Region shall develop and implement a drought management plan using the Tier 3 water quantity risk assessment findings and modeling tool to prevent consumptive demand from becoming significant.</p>	WHPA-Q1 with a moderate risk level	Existing & Future: Immediately (T-18)	N/A See Explanatory Notes	MON-1

**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
REC-1	An activity that reduces recharge to an aquifer	Planning Approval Authority	A	<p><b>Land Use Planning</b> (Planning Policies for Protecting Groundwater Recharge)</p> <p>For applications under the Planning Act Within the Orangeville, Mono and Amaranth within the Tier 3 Water Budget WHPA-Q2 Local Areas identified as having significant water quantity threats the relevant Planning Approval Authority shall ensure recharge reduction ceases to be, or does not become, a significant drinking water threat by:</p> <p>1) Requiring new development for Low Density Residential (excluding subdivisions) and Agricultural lands to implement Best Management Practices such as Low Impact Development with the goal to maintain predevelopment recharge.</p> <p>1) Only permitting new development and site alteration that has the potential to reduce recharge to an aquifer under the following conditions:</p> <p>a) the development or site alteration is minor in nature per the following:</p> <p>i) if development and/or site alteration occurs on lands outside of the Settlement Area, that the activity will increase lot imperviousness to no greater than total of 10%; or</p> <p>ii) if development and/or site alteration occurs on lands within Settlement Area by requiring implementation of Best Management Practices such as Low Impact Development (LID) to maintain pre-development recharge and surface water flow regime.</p> <p>b) In the case of development/site alteration that is not minor, it can be demonstrated through submission of a satisfactory hydrogeological study that recharge functions and surface water flow regimes will be maintained and current PTTW allocations can be sustained, and the ecological and hydrological integrity of key hydrologic features, functions and aquatic systems will be maintained. The assessment of Hydrogeological impacts should consider the use of the Tier 3 Water budget Model where appropriate.</p> <p>2) Requiring that all site plan (excluding single family dwellings), subdivision, and condominium applications for new residential, commercial, industrial and institutional uses provide a water balance assessment for the proposed development to the satisfaction of the Planning Approval Authority which addresses each of the following requirements;</p> <p>a) Maintain predevelopment recharge to the greatest extent through Best Management Practices such as LID, minimizing impervious surfaces, lot level infiltration.</p> <p>b) Where necessary, implementation and maximization of off-site recharge enhancement (within the same WHPA-Q2) to compensate for any predicted loss of recharge from the development.</p> <p><b>Continued on next page</b></p>	Existing and Future: WHPA-Q2 with a significant risk level  Future: WHPA-Q2 with a moderate risk level	Future: Immediately (T-9)  Amend OPs and ZBLs for conformity within 5 years and ZBLs within 3 years of OP approval (T-8)	N/A  See Explanatory Notes	MON-1

**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
				<p>2) Requiring the use of low impact development guidelines and techniques for managing urban storm water in support of new development and site alteration to ensure that the following criteria are met:</p> <ul style="list-style-type: none"> <li>a) impervious surfaces are minimized;</li> <li>b) water balance on the site is managed such that pre-development rates of infiltration of clean water are maintained in the post-development state to the extent feasible;</li> <li>c) lot conveyance and/or end of pipe storm water management measures are used that emphasize lot level infiltration of clean water wherever appropriate;</li> <li>d) where water balance cannot be achieved on the development site, off-site compensation opportunities are explored and implemented where feasible; and</li> <li>e) where sodium and chloride have been identified as "issues", no further degradation of water quality by salt run-off infiltration shall occur.</li> </ul> <p>3) Only approving settlement area expansions as part of a municipal comprehensive review where it has been demonstrated that recharge functions and surface water flow regimes will be maintained on lands designated significant groundwater recharge areas within <b>WHPA-Q2</b> Local Area A.</p> <p>4) Amending municipal planning documents to require <b>maps showing the Significant Groundwater Recharge Areas within WHPA-Q2</b>. <del>the protection of lands demonstrated to have significant recharge functions, including recharge from surface water features such as streams or wetlands.</del></p> <p>5) For new development (excluding a minor variance) within any part of a Tier 3 Water Budget <b>WHPA-Q2</b> identified as having significant water quantity threats which also includes an Issue Contributing Area for Sodium, Chloride or Nitrates require the submission of a report that demonstrates to the satisfaction of the Planning Approval Authority how recharge will be maintained and water quality will be protected.</p>				
<b>REC-2</b>	An activity that reduces recharge to an aquifer	RMO	H	<p><b>Part IV, s.58</b></p> <p>When a Building Permit and no Planning Act application is required within a Tier 3 Water Budget <b>WHPA-Q2</b>, identified as having a significant risk level, an activity that reduces the recharge to an aquifer is designated for the purpose of s.58 under the Clean Water Act as, requiring a risk management plan where the threat would be significant.</p> <p>Without limiting other requirements, risk management plans shall require implementation of downspout disconnections and other best management practices to increase infiltration of clean water whenever modifications, additions or renovations are undertaken at existing properties or in new development with the goal of restoring or maintaining predevelopment recharge.</p>	WHPA-Q2 with a significant risk level	Future: Immediately (T-7)	GEN-1  See Explanatory Notes	MON-2

**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
REC-3	An activity that reduces recharge to an aquifer	Municipality	E	<p><b>Specify Action</b></p> <p>Within a Tier 3 Water Budget WHPA-Q2 with a significant risk level, the municipality shall develop and implement an action plan, including actions to be taken and an implementation schedule, to ensure that an activity which reduces aquifer recharge ceases to be, or does not become, a significant water quantity threat.</p> <p>The action plan may include:</p> <ul style="list-style-type: none"> <li>a) Reviewing options to maximize aquifer recharge;</li> <li>b) Deliver an education and outreach program to inform property owners about actions that can be taken to protect aquifer recharge (e.g., downspout disconnection, site grading). The program may include incentives (such as rebates) to encourage best management practices;</li> <li>c) Requiring the use of Low Impact Development (LID) in new development or retrofits.</li> </ul>	WHPA-Q2 with a significant risk level	Existing & Future: Implement within 2 years (T-17)	GEN-6  See Explanatory Notes	MON-1
		MOE	K	The Ministry of the Environment should provide municipalities with a list of appropriate education and outreach materials that provide information and guide to actions that can be taken to protect aquifer recharge for delivery by the municipality.				MON-4



**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

**10.14 MONITORING OF POLICY IMPLEMENTATION**

Policy ID	Implementing Body	Legal Effect	Monitoring Policy	Related Policies
MON-1	Municipality	F	The municipality or planning approval authority shall, by February 1 of each year, prepare and submit a report equivalent to Section 65 of O. Reg. 287/07 under the <i>Clean Water Act, 2006</i> to the Source Protection Authority on the actions taken in the previous calendar year to achieve the outcomes of the source protection policy. Where applicable, municipal planning authorities shall provide a copy of the notice of adoption of amendments to official plans and/or zoning by laws. Reporting shall include information related to the effectiveness of the policies in ensuring a threat ceases to be, or does not become significant, and any actions required to respond to a drinking water threat during the reporting period.	See Explanatory Notes
MON-2	RMO	F	The risk management official shall, by February 1 of each year, undertake the reporting requirements specified in Section 65 of O. Reg. 287/07 under the <i>Clean Water Act, 2006</i> on the actions taken in the previous calendar year to achieve the outcomes of the source protection policy. Reporting shall include information related to the effectiveness of the policies in ensuring a threat ceases to be, or does not become significant, and any actions required to respond to a drinking water threat during the reporting period.	
MON-3	SPA	F	The source protection authority shall include in the annual report pursuant to s.46 under the <i>Clean Water Act, 2006</i> , documentation on the risk reduction efforts they administered throughout the year. Reporting shall include information related to the effectiveness of the policies in ensuring a threat ceases to be, or does not become significant, and any actions required to respond to a drinking water threat during the reporting period.	
MON-4	Provincial Ministry	F	The provincial ministry shall, by February 1 of each year, prepare and submit a report to the Source Protection Authority on the actions taken in the previous calendar year to achieve the outcomes of the source protection policy. Reporting shall include information related to the effectiveness of the policies in ensuring a threat ceases to be, or does not become significant, and any actions required to respond to a drinking water threat during the reporting period.	

## AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region

### 10.15 EXPLANATORY NOTES

#### 10.15.1 Quality Policy Rationale

GEN-1	<p>This policy uses the powers under Section 59 (Restricted Land Use) of the Act and is a complementary policy that applies in all cases where there is also a policy using tools under Section 57 (Prohibition) or Section 58 (Risk Management Plan).</p> <p>Section 59 policies are required to ensure that the Risk Management Official is consulted and issues a notice that either: an activity is not prohibited under Section 57; or if it requires a Risk Management Plan under Section 58, that the required Risk Management Plan has been prepared and agreed to; before a municipal approval is given under the <i>Planning Act</i> or other authorities.</p>
GEN-2	<p>The Ontario Drinking Water Stewardship Program has been established under Section 97 of the Act. Provincial funding had been provided to support eligible early actions by landowners who took voluntary actions to protect municipal drinking water sources.</p> <p>The CTC SPC is of the opinion that this was a very useful and effective program and would like the Ministry to continue to explore funding the program after approval of the Plan. In particular, consideration should be given to landowners who are required to take action to protect municipal drinking water sources to which they are not connected and/or where the municipal water source serves another municipality.</p>
GEN-3 GEN-4	<p>These two policies apply to areas where “Issues” have been identified. The CTC SPC is of the opinion that additional technical work and regular water quality monitoring is warranted in these areas to ensure the protection of the long term sustainability of the source of municipal water (S. 45 of the Act and s. 26 O. Reg. 287/07).</p>
GEN-5	<p>The CTC SPC is of the opinion that regular inspection for compliance with approvals under a Prescribed Instrument is essential to ensure that the source of municipal drinking water is protected by the risk management measures required under the Prescribed Instrument. This policy requires that inspections are conducted on an ongoing basis and the implementing body is also required to report on their inspection activities.</p> <p>Since the policy only applies to those Prescribed Instruments in vulnerable areas where the activity is a significant drinking water threat and the re-inspections are only required every five years, the number of inspections required annually is expected to be small.</p>
GEN-6	<p>The intent of this policy is to encourage municipalities to expand the areas where they deliver education and outreach programs. Actions taken outside of the required areas will protect other drinking water sources (such as private wells).</p>
WST-1 WST-2	<p>The wastes covered by these policies are small quantities of hazardous or liquid industrial wastes that are stored at the site they are produced until collected by a licensed hauler for transport to a provincially approved transfer station or disposal site.</p>
WST-3	<p>This policy deals with the land application of wastes from the pump out of septic systems. It is important that a septic system is pumped regularly so that it continues to perform properly. There is an effort to ban land application, but where there is not sufficient municipal sewage treatment plant capacity there is still need for this disposal option.</p> <p>The CTC SPC is of the opinion that land application of untreated septage should not occur within the vulnerable areas around municipal wells where it would be a significant drinking water threat. Therefore this policy prohibits issuing a new or renewing an existing ECA in such areas.</p>
WST-5	<p>The CTC SPC has chosen in most cases to propose a suite of policies to address significant threats rather than choosing only one approach. This is intended to ensure that all responsible authorities are working in concert in making decisions. The CTC SPC recognizes that reducing or avoiding significant drinking water threats is facilitated when each decision-maker is working under the same policy direction. For example, for future threats there is generally a land use planning policy using <i>Planning Act</i> tools proposed to complement a Prescribed Instrument policy. This will also help ensure that a current or prospective property owner is aware of the special requirements that they would need to comply with or restrictions well before they would be applying to the other implementing authorities. This approach also ensures that municipal planning and building permit staff are aware of the new source water protection plan policies when providing advice and making decisions. This approach parallels the Provincial approach in developing and using the Part IV tools under the <i>CWA</i>, in that a complementary Restricted Land Use policy (s. 59) accompanies all instances where a s. 57 (Prohibition) or s. 58 (Risk Management Plan) policy is proposed, in order to ensure land use planning decisions are made that are consistent with the use of these tools.</p>

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SWG-1	The local Chief Building Official and Risk Management Office staff should consult to determine local priorities and concerns. Prioritization can consider factors such as age of the system, location, and local concerns. For example, inspections may occur around wells with nitrate ICAs before other wells.
SWG-2	<p>The intent of this policy is to reduce the burden on municipalities and unnecessary duplication of effort by requesting the Ministry provide information related to actions an owner can take in the operation and maintenance of their septic system to protect municipal sources of drinking water related to operation of septic systems. The municipality is directed to deliver the program in a manner that will be most effective for their jurisdiction. Municipalities are encouraged to consider a wide range of delivery approaches, such as: using a variety of media to deliver content – print, web, social media, demonstrations or displays, radio and local television PSAs; and to collaborate with other municipalities, local businesses, conservation authorities, community groups and schools or local events such as Children’s Water Festivals.</p> <p>Education and outreach policies have been proposed as part of the suite of tools to ensure that the information from CTC Assessment Reports that delineates vulnerable areas and significant drinking water threat activities, along with actions that can be taken to reduce the threat, is made available to property and business owners in the vulnerable areas. Voluntary actions undertaken by individuals and businesses who know what to do to protect a drinking water source can be very effective as part of the protection approach.</p>
SWG-3	The CTC SPC recognizes that prohibiting a septic system on a vacant lot where there is no municipal sewer connection available may make it impossible to build on such a lot which has received prior approval for such a use from the municipality. This was deemed to be a significant hardship for the landowner. For this reason the SPC has provided through this policy for the municipality to review a site specific assessment to decide if the threat to the municipal drinking water source can be managed. It is expected that the cost of the study and costs for review would be the responsibility of the landowner. The municipality has the ability to approve or not, or require special conditions to protect the source of the municipal drinking water.
SWG-4	The CTC SPC has chosen a land use planning policy to limit the creation of new lots requiring a septic system where the system would be a significant drinking water threat.
SWG-5	The CTC SPC had considered a policy that required special technology be used for septic systems where they would be a significant drinking water threat but were advised that the <i>Building Code Act</i> sets out the requirements for suitable systems. This policy is intended to provide the ability for a municipality to require specific systems where there is a need for additional treatment technologies to protect the source of municipal drinking water.
SWG-6	Eliminating individual septic systems in areas where they are significant drinking water threats through the provision of municipal sewer connections can be a very effective management strategy to protect municipal drinking water. Experience in the CTC has shown that property owners may not pay to connect to the available sewer and properly decommission their septic systems unless required to do so or are provided an incentive.
SWG-7	<p>This policy applies only in Issue Contributing Areas for sodium or chloride. It addresses the significant threat from these contaminants reaching the aquifer via the septic system associated with the operation of water softeners.</p> <p>The chemicals used in the water softeners contain high amounts of salts which reach the septic system when the unit backwashes and also from the discharge of softened water to the septic. More efficient models of water softeners use lower amounts of softening chemicals. If less water is softened this will also reduce both the amount of chemicals required and the volume of treated water discharged onto the ground or into the septic.</p>
SWG-8 SWG-9	The CTC SPC has chosen in this case to propose two policies to address this significant threat. This is intended to ensure that all responsible authorities are working in concert in making decisions. The CTC SPC recognizes that reducing or avoiding significant drinking water threats is facilitated when each decision-maker is working under the same policy direction. For future threats there is a land use planning policy using <i>Planning Act</i> tools proposed to complement the Prescribed Instrument policy. This will also help ensure that a current or prospective property owner is aware of the special requirements that they would need to comply with or restrictions well before they would be applying to the other implementing authorities. This approach also ensures that municipal planning and building permit staff are aware of the new source water protection plan policies when providing advice and making decisions.
SWG-10	The intent of this policy is to reduce the burden on municipalities and unnecessary duplication by requesting the Ministry provide information related to measures to protect municipal sources of drinking water related to operation of large septic systems (capacity greater than 10, 000 litres per day) for which the Ministry is the approval authority.

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<p>SWG-11</p>	<p>While the policy SWG-11 is directed to the Ministry to implement, consultation with municipal staff and bodies responsible for road maintenance is recommended to avoid to the extent possible through the land use design, directing drainage from roads and parking lots to storm water ponds or discharges outside the vulnerable area.</p> <p>There are additional requirements for storm water management ponds and discharges that are located in an Issue Contributing Area for sodium or chloride. These requirements are included to reduce the infiltration of storm water containing road salt which can be a major contributor to the elevated salt levels at the municipal well. To achieve the required protection of municipal drinking water sources, road maintenance practices that limit the use of road salt or which use alternative de-icing materials that do not contain sodium or chloride or reduced amounts, may be required.</p>
<p>SWG-12</p>	<p>The CTC SPC has chosen in this case to propose two policies to address this significant threat. This is intended to ensure that all responsible authorities are working in concert in making decisions. The CTC SPC recognizes that reducing or avoiding significant drinking water threats is facilitated when each decision-maker is working under the same policy direction. For future threats there is a land use planning policy using <i>Planning Act</i> tools proposed to complement the Prescribed Instrument policy. This will also help ensure that a current or prospective property owner is aware of the special requirements that they would need to comply with or restrictions well before they would be applying to the other implementing authorities. This approach also ensures that municipal planning and building permit staff are aware of the new source water protection plan policies when providing advice and making decisions.</p>
<p>SWG-13 SWG-14</p>	<p>The CTC SPC has chosen in this case to propose two policies to address this significant threat. This is intended to ensure that all responsible authorities are working in concert in making decisions. The CTC SPC recognizes that reducing or avoiding significant drinking water threats is facilitated when each decision-maker is working under the same policy direction. For future threats there is a land use planning policy using <i>Planning Act</i> tools proposed to complement the Prescribed Instrument policy. This will also help ensure that a current or prospective property owner is aware of the special requirements that they would need to comply with or restrictions well before they would be applying to the other implementing authorities. This approach also ensures that municipal planning and building permit staff are aware of the new source water protection plan policies when providing advice and making decisions.</p>
<p>SWG-15 SWG-16</p>	<p>The CTC SPC has chosen in this case to propose two policies to address this significant threat. This is intended to ensure that all responsible authorities are working in concert in making decisions. The CTC SPC recognizes that reducing or avoiding significant drinking water threats is facilitated when each decision-maker is working under the same policy direction. For future threats there is a land use planning policy using <i>Planning Act</i> tools proposed to complement the Prescribed Instrument policy. This will also help ensure that a current or prospective property owner is aware of the special requirements that they would need to comply with or restrictions well before they would be applying to the other implementing authorities. This approach also ensures that municipal planning and building permit staff are aware of the new source water protection plan policies when providing advice and making decisions.</p>
<p>SWG-17 SWG-18</p>	<p>The CTC SPC has chosen in this case to propose two policies to address this significant threat. This is intended to ensure that all responsible authorities are working in concert in making decisions. The CTC SPC recognizes that reducing or avoiding significant drinking water threats is facilitated when each decision-maker is working under the same policy direction. For future threats there is a land use planning policy using <i>Planning Act</i> tools proposed to complement the Prescribed Instrument policy. This will also help ensure that a current or prospective property owner is aware of the special requirements that they would need to comply with or restrictions well before they would be applying to the other implementing authorities. This approach also ensures that municipal planning and building permit staff are aware of the new source water protection plan policies when providing advice and making decisions.</p>
<p>ASM-1</p>	<p>The prohibition of the existing application of ASM to land in WHPA-A is already a requirement under the <i>Nutrient Management Act</i> for phased-in farms.</p> <p>The CTC SPC is of the opinion that wherever the land application of ASM is a significant drinking water threat as defined by the <i>CWA</i> that the activity should be carefully assessed. The <i>NMA</i> was passed prior to the province developing its scoring system for where an activity is deemed to be a significant drinking water threat. The CTC SPC considers the threat from application of ASM within an Issue Contributing Area for nitrates or pathogens to warrant extra scrutiny. Prohibiting future new threat activities is seen as being precautionary.</p> <p>This policy is a compromise between protection of the municipal source of drinking water and allowing existing farming practices to continue with the implementation of management practices to reduce runoff or infiltration of excess nitrate or pathogens.</p> <p>The municipality is also required to continue to monitor the aquifer and report on the results (see GEN-4). Should the contaminant levels continue to increase, it may be necessary to review this policy and others associated with the Issue.</p>

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ASM-2	This policy harmonizes all farms to the same standards as required under policy ASM-1.
ASM-3	<p>The prohibition of the existing storage of ASM in WHPA-A is already a requirement under the <i>Nutrient Management Act</i> for phased-in farms.</p> <p>The CTC SPC is of the opinion that wherever the storage of ASM is a significant drinking water threat as defined by the <i>CWA</i> that the activity should be carefully assessed. The <i>NMA</i> was passed prior to the province developing its scoring system for where an activity is deemed to be a significant drinking water threat. The CTC SPC considers the threat from storage of ASM within an Issue Contributing Area for nitrates or pathogens to warrant extra scrutiny.</p> <p>This policy is a compromise between protection of the municipal source of drinking water and allowing existing farming practices to continue with the implementation of management practices to reduce runoff or infiltration. The SPC did not want to create undue hardship on farmers by prohibiting existing ASM storage in vulnerable areas due to the difficulties of moving the structure and the investment already made where there is a structure. Where existing ASM is being stored, constructing a new storage structure is allowed per the existing activity definition where it provides greater protection than existing storage. However where a new structure for existing storage activities can be located outside of a vulnerable area, this is preferred. Prohibiting future new threat activities is seen as being precautionary.</p> <p>The municipality is also required to continue to monitor the aquifer and report on the results (see GEN-4). Should the contaminant levels continue to increase, it may be necessary to review this policy and others associated with the Issue. The prohibition of future activities is not seen as impacting existing livelihoods.</p>
ASM-4	This policy harmonizes all farms to the same standards as required under policy ASM-3.
ASM-5	<p>The CTC SPC is of the opinion that regular inspection for compliance with approvals under a Prescribed Instrument is essential to ensure that the source of municipal drinking water is protected by the risk management measures required under the Prescribed Instrument. This policy requires that inspections are conducted on an ongoing basis and the implementing body is also required to report on their inspection activities.</p> <p>Since the policy only applies to those Prescribed Instruments in vulnerable areas where the activity is a significant drinking water threat and the re-inspections are only required every five years, the number of inspections required annually is expected to be small.</p>
ASM-6	Prioritized inspections are required at such times as determined by the Risk Management Official (RMO). Since the RMO's legislated responsibility is protection of the municipal drinking water, the CTC SPC is of the opinion that the RMO can select an inspection frequency that is commensurate with the threat and requirements of the Risk Management Plan. It is expected that as part of the annual report to the source protection authority, the RMO will set out the rationale for the chosen inspection priorities.
ASM-7	Based on technical work in the CTC, no existing aquaculture activities which would result in the management of ASM (from the ponds) were identified where they would be significant drinking water threats, therefore the CTC SPC does not think that there is any impact from prohibiting existing activities. Prohibition of activities is seen as being precautionary.
NASM-1	<p>The prohibition of the existing application of Category 1 NASM in WHPA-A mimics the prohibition under the <i>Nutrient Management Act (NMA)</i> for farms which require approval to apply other categories of NASM. The CTC was advised that there is no Prescribed Instrument issued for this activity under the <i>NMA</i>.</p> <p>Application of NASM outside of WHPA-A is allowed subject to the appropriate risk management requirements as set out in a Risk Management Plan.</p> <p>Category 1 NASM is made up of uncomposted leaf materials and vegetable peelings which does not contain any animal matter and thus has low likelihood of containing pathogens.</p>
NASM-2	The policy requirements for storage of NASM Category 1 have been set to be the same as for application as the CTC SPC is of the opinion that the threat to municipal drinking water sources is comparable when properly managed.

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NASM-3	<p>The prohibition of the existing application of NASM Categories 2 or 3 in WHPA-A is already a requirement under the <i>Nutrient Management Act</i>.</p> <p>The CTC SPC is of the opinion that wherever the application of NASM Categories 2 or 3 is a significant drinking water threat as defined by the CWA that the activity should be carefully assessed. The NMA was passed prior to the province developing its scoring system for where an activity is deemed to be a significant drinking water threat. The CTC SPC considers the threat the application of NASM Categories 2 or 3 within an Issue Contributing Area for nitrates or pathogens to warrant extra scrutiny.</p> <p>NASM categories are defined under the NMA – a variety of vegetable processing wastes (Category 2); or other organic wastes such as meat processing, municipal or industrial sewage or other wastes that meet the contaminant guidelines (NASM Category 3). Category 2 or 3 NASMs are generally imported to the agricultural property for application and subject to time limited approvals to prevent the buildup of persistent contaminants in the soil.</p> <p>This policy is a compromise between protection of the municipal source of drinking water and allowing existing farming practices to continue until expiry of any existing approvals. Prohibiting future new threat activities is seen as being precautionary.</p> <p>The threats verification work by the source protection authority has not identified any sites where there is existing application of NASM would be a significant drinking water threat.</p>
NASM-4	<p>The policy requirements for storage of NASM Category 2 or 3 have been set to be the same as for application as the CTC SPC is of the opinion that the threat to municipal drinking water sources is comparable. The technical work did not identify any sites where there is existing storage of NASM Category 2 or 3.</p>
NASM-5	<p>Education and outreach policies have been proposed as part of the suite of tools to ensure that actions that can be taken to reduce the threat is made available to property owners in the vulnerable areas. Voluntary actions undertaken by individuals and businesses who know what to do to protect a drinking water source can be very effective as part of the protection approach.</p>
LIV-1	<p>The CTC SPC considers the threat from livestock grazing and pasturing within an Issue Contributing Area for nitrates or pathogens to warrant extra scrutiny. While the <i>Nutrient Management Act</i> does not apply to livestock grazing and pasturing, the CTC SPC felt that the threat from this activity where the density of animals is greater than 1 nutrient unit per acre is comparable to the application of ASM. The SPC is therefore of the opinion that prohibition in WHPA-A in an Issue Contributing Area for nitrate or pathogens is consistent with the prohibition of ASM application.</p> <p>In terms of impact on landowners, the CTC SPC is of the opinion that moving grazing and pasturing from WHPA-A to other areas of the farm or reducing the livestock density in WHPA-A below the threshold is a feasible risk prevention measure with limited impact.</p>
LIV-2	<p>The prohibition of the expansion of the capacity or siting a new farm-animal yard or outdoor confinement area in WHPA-A is already a requirement under the <i>Nutrient Management Act</i> for phased-in farms.</p> <p>The CTC SPC is of the opinion that wherever this is a significant drinking water threat as defined by the CWA that the activity should be carefully assessed. The NMA was passed prior to the province developing its scoring system for where an activity is deemed to be a significant drinking water threat.</p> <p>This policy is a compromise between protection of the municipal source of drinking water and allowing existing farming practices to continue with the implementation of management practices to reduce runoff or infiltration. The SPC did not want to create undue hardship on farmers by prohibiting existing livestock confinement areas or farm animal yards due to the difficulties of moving the structure and the investment already made. Where existing outdoor confinement areas or animal yards exist, constructing a new structure is allowed per the existing activity definition where it provides greater protection than the existing activity. However where a new structure can be located outside of a vulnerable area, this is preferred. Prohibiting future new threat activities is seen as being precautionary.</p> <p>The CTC SPC considers the threat from outdoor confinement areas or farm-animal yards within an Issue Contributing Area for nitrates or pathogens to warrant extra scrutiny. Thus the policy for future prohibition applies beyond the WHPA-A in an ICA for nitrates or pathogens.</p> <p>The municipality is also required to continue to monitor the aquifer and report on the results (see GEN-4). Should the contaminant levels continue to increase, it may be necessary to review this policy and others associated with the Issue.</p>

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LIV-3	This policy harmonizes all farms to the same standards as required under policy LIV-2.
LIV-4	<p>The CTC SPC is of the opinion that regular inspection for compliance with approvals under a Prescribed Instrument is essential to ensure that the source of municipal drinking water is protected by the risk management measures required under the Prescribed Instrument. This policy requires that inspections are conducted on an ongoing basis and the implementing body is also required to report on their inspection activities.</p> <p>Since the policy only applies to those Prescribed Instruments in vulnerable areas where the activity is a significant drinking water threat and the re-inspections are only required every five years, the number of inspections required annually is expected to be small.</p>
LIV-5	<p>Prioritized inspections are required at such times as determined by the Risk Management Official (RMO). Since the RMO's legislated responsibility is protection of the municipal drinking water, the CTC SPC is of the opinion that the RMO can select an inspection frequency that is commensurate with the threat and requirements of the Risk Management Plan.</p> <p>It is expected that as part of the annual report to the source protection authority, the RMO will set out the rationale for the chosen inspection priorities.</p>
FER-1	<p>The prohibition of the existing application of commercial fertilizer to land in WHPA-A is already a requirement under the <i>Nutrient Management Act</i> for phased-in farms.</p> <p>The CTC SPC considers the threat from application of nitrate containing fertilizer within an Issue Contributing Area for nitrates to warrant extra scrutiny. Thus the policy for future prohibition applies beyond the WHPA-A in an ICA for nitrates in the WHPA-E where excess fertilizer can leach into the surface water.</p> <p>The municipality is also required to continue to monitor the aquifer and report on the results (see GEN-4). Should the contaminant levels continue to increase, it may be necessary to review this policy and others associated with the Issue.</p>
FER-2	This policy harmonizes all farms to the same standards as required under policy FER-1.
FER-3	<p>The <i>Nutrient Management Act</i> does not have provisions regarding the storage of commercial fertilizer. The CTC SPC considers the threat from the storage of fertilizer to be comparable to application and therefore is of the opinion that similar policies should apply. Spillage during the loading and unloading of commercial fertilizer may result in higher levels of release at the storage site than during application.</p> <p>For large quantities of fertilizer, the SPC has required mandatory storage within a covered structure to reduce accidental release, along with any other provisions deemed necessary in the Risk Management Plan.</p> <p>The municipality is also required to continue to monitor the aquifer and report on the results (see GEN-4). Should the contaminant levels continue to increase, it may be necessary to review this policy and others associated with the nitrate Issue.</p>
FER-4	<p>The CTC SPC is of the opinion that regular inspection for compliance with approvals under a Prescribed Instrument is essential to ensure that the source of municipal drinking water is protected by the risk management measures required under the Prescribed Instrument. This policy requires that inspections are conducted on an ongoing basis and the implementing body is also required to report on their inspection activities.</p> <p>Since the policy only applies to those Prescribed Instruments in vulnerable areas where the activity is a significant drinking water threat and the re-inspections are only required every five years, the number of inspections required annually is expected to be small.</p>
FER-5	<p>Prioritized inspections are required at such times as determined by the Risk Management Official (RMO). Since the RMO's legislated responsibility is protection of the municipal drinking water, the CTC SPC is of the opinion that the RMO can select an inspection frequency that is commensurate with the threat and requirements of the Risk Management Plan.</p> <p>It is expected that as part of the annual report to the source protection authority, the RMO will set out the rationale for the chosen inspection priorities.</p>

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FER-6	<p>This policy is the only one directed to deal with the threat posed by the application and storage of the small quantities of commercial fertilizers by individuals for use on their personal property which is a significant drinking water threat only within an Issue Contributing Area for nitrates. The CTC SPC is required to develop a policy to address this threat. The SPC is of the opinion that this policy is an appropriate balance between protecting the municipal source of drinking water and avoiding the workload burden on the Risk Management Official and costs to landowners that would result from requiring a Risk Management Plan.</p> <p>The required education and outreach materials should clearly set out actions that property owners should take to reduce the threat in the vulnerable areas.</p> <p>Municipalities are also encouraged to distribute these materials to property owners in areas where the threat is low or moderate. Voluntary actions undertaken by individuals and businesses who know what to do to protect a drinking water source can be very effective as part of the protection approach.</p> <p>Furthermore, the municipality is required to continue to monitor the aquifer and report on the results (see GEN-4). Should the contaminant levels continue to increase, it may be necessary to review this policy and others associated with the nitrate Issue.</p>
PES-2	<p>The CTC SPC considers the threat from the storage of pesticides to be greater than from application as spillage during the loading and unloading of pesticides which are often in liquid form may result in higher levels of release at the storage site than during application. Note that only storage sites with more than 2500 litres or 2500 kilograms of the specified pesticides are significant drinking water threats.</p> <p>Prohibition of new storage facilities is considered a precautionary approach.</p>
PES-3	<p>Education and outreach policies have been proposed as part of the suite of tools to ensure that the information from CTC Assessment Reports that delineates vulnerable areas and significant drinking water threat activities, along with actions that can be taken to reduce the threat, is made available to property and business owners in the vulnerable areas. Voluntary actions undertaken by individuals and businesses who know what to do to protect a drinking water source can be very effective as part of the protection approach.</p>
SAL-1	<p>The application of road salt is a significant drinking water threat in the CTC Source Protection Region only within an Issue Contributing Area for sodium or chloride. Based on technical work, the application of road salt on private parking lots is estimated to be a major component of annual salt loading within the ICA. The relative estimates vary for each ICA based on the existing land uses and density of roads and parking lots, along with other sources such as road salt and snow storage, and sewage or septic discharges.</p> <p>The most prevalent Issue identified in the CTC is associated with road salt in areas where the municipal wells are fairly shallow and directly influenced by surface water (i.e. have a WHPA-E).</p>
SAL-2	<p>The CTC SPC received information from a number of parties that there are many risk management measures that can be implemented to reduce the amount of de-icing salt that is applied while still meeting safety requirements. This policy is one of a suite of policies intended to protect sources of municipal water. Risk Management Officials are encouraged to consult with the municipal staff responsible for road design and maintenance, the Ministry of Transportation, industry and non-profit organizations such as the Smart About Salt Council to get information about current best management practices, training and certification programs and to share information about where the vulnerable areas are located that require special care to protect the municipal water supply so that collaborative efforts are undertaken.</p> <p>The municipality is required to continue to monitor the aquifer and report on the results (see GEN-4). Should the contaminant levels continue to increase, it may be necessary to review this policy and others associated with the road salt Issue.</p>
SAL-3	<p>The CTC SPC has chosen to include as one of the suite of policies a land use planning policy using <i>Planning Act</i> tools for future threats associated with road salt application in parking lots. Information was provided to the CTC SPC that the need for re-application of salt can be reduced through the design of parking lots to prevent ponding. At the planning phase there is also the opportunity to select the location and design of storm water management facilities to help protect the source of municipal water (see related policy SWG-12). This policy is intended to also help ensure that a current or prospective property owner is aware of the special requirements that they would need to comply with or restrictions well before they would be applying to the other implementing authorities.</p>



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<p>SAL-4 SAL-5</p>	<p>The CTC SPC is of the opinion that provincial leadership in the development and promotion of the need for measures to reduce the overuse of road salt is necessary and will be more effective than requiring individual municipalities to carry out these tasks on their own. These two policies are directed to the Ministry in recognition of their responsibility for the <i>Clean Water Act</i> and ability to bring the required parties together.</p> <p>The SPC has concern about private contractors with no formal body to oversee them. As one of the suite of policies for this threat, the SPC is of the opinion that a formal training and certification program should be made available that includes focus on protecting municipal drinking water sources as part of the curriculum. While the Smart About Salt Council offers a program, the SPC was not able to determine if it is sufficient and therefore recommends that the province should establish the requirements for such a program which could then be delivered by others.</p>
<p>SAL-6</p>	<p>The Ministry of Transportation is the lead provincial agency dealing with road salt. They have implemented many best management practices to reduce unnecessary salt application on provincial highways that can serve as a model for municipalities who are responsible for their local roads. However the best practices do not include special measures to be taken where the sources of municipal drinking water are located near or adjacent to provincial highways. In the CTC there are several municipal wells located near provincial highways in the Orangeville area that have been identified with salt Issues. This policy is intended to identify the additional actions that can be taken to reduce the impact of road salt applications and thereby manage this significant drinking water threat.</p>
<p>SAL-7</p>	<p>The CTC SPC was advised that there can be substantial spillage at storage facilities during the loading and unloading of salt. This policy is not intended to apply to small quantities of salt stored by individuals for personal use on their properties which is addressed under policy SAL-8.</p>
<p>SAL-8</p>	<p>This policy is the only one directed to deal with the threat posed by the storage of the small quantities of salt by individuals for use on their personal property which is a significant drinking water threat only within an Issue Contributing Area for sodium or chloride. The CTC SPC is required to develop a policy to address this threat.</p> <p>Additional technical work was undertaken to estimate the relative use of salt applied for de-icing from the various activities within each ICA. Based on this technical work, it was concluded that the contribution from the single family residential use of road salt is a small percentage (~1%) of the total amount of salt applied annually within the ICAs. The CTC SPC was of the opinion that proposing policies which required management or prohibition approaches would be onerous to implement, difficult to enforce and not likely well received. Therefore, the SPC is of the opinion that this policy is an appropriate balance between protecting the municipal source of drinking water and avoiding the workload burden on the Risk Management Official and costs to landowners that would result from requiring a Risk Management Plan.</p> <p>The required education and outreach materials should clearly set out actions that property owners should take to reduce the threat in the vulnerable areas.</p> <p>Municipalities are also encouraged to distribute these materials to property owners in areas where the threat to municipal drinking water is low or moderate and to protect other sources of drinking water (see SAL-12). Voluntary actions undertaken by individuals and businesses who know what to do to protect a drinking water source can be very effective as part of the protection approach.</p>
<p>SAL-9</p>	<p>This policy requires that the municipality undertakes more specific monitoring than that set out in policy GEN-4 and report on the results. The reporting can be included as part of the annual report submitted to the Source Protection Authority.</p> <p>Should the contaminant levels continue to increase, it may be necessary to review this policy and others associated with the road salt Issue.</p>

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SAL-10	The CTC SPC has chosen to also include a land use planning policy using <i>Planning Act</i> tools where this threat is low or moderate in recognition that road salt application and storage are activities carried out throughout all source protection areas; chloride and sodium are very mobile chemicals that move easily and rapidly into and through aquifers; and that there are many other sources of drinking water that may be protected as well through implementation practices to reduce the threat.
SAL-11 SAL-12 SAL-13	The SPC felt it was important to also extend these policies to areas where there are low and moderate threats for the same reasons as set out for SAL-10.  All of these low and moderate threat policies are non-legally binding. Each specific implementer must have regard for the policy in making decisions but has the flexibility of determining what action(s) will be taken. While an implementer is not required to provide a report on their actions on implementing low or moderate threat policies, the CTC SPC encourages them to provide information that will help in future review and revision of policies.
SNO-1	Generally snow storage is a seasonal activity that takes place on roadsides, parking lots and vacant land without the construction of permanent facilities. The CTC SPC has chosen a risk management approach for existing activities and prohibition of new future storage in locations where this hasn't been occurring. However the CTC SPC encourages where possible that the existing storage of snow (which often contains road salts and other contaminants) be located outside of vulnerable areas where possible.
FUEL-1	Standby generators are required at municipal wells to provide power in the event of electrical power outages. These generators are often diesel-powered and thereby require storage of diesel on-site. The CTC SPC recognizes that a policy that prohibits diesel generators may pose a significant financial burden on the municipality and have therefore proposed a management policy. The CTC SPC is of the opinion that since the municipality is responsible implementing measures to protect their own source of drinking water in this situation and thus operators should be aware of the threat posed by the fuel and be vigilant in ensuring the measures to reduce the threat are always in effect.  However, the municipality is encouraged to consider replacing the diesel generators with propane fuelled ones which are not a threat to drinking water as part of their future equipment replacement program or when installing a new well as this would guarantee that fuel storage for stand-by generators is not a threat at the well head.
FUEL-2	At large aggregate sites, equipment is often re-fuelled within the extraction site. The CTC SPC is of the opinion that future handling and storage of fuel should be located outside of the vulnerable area where this would be a significant threat to the source of municipal drinking water. A fuel spill within the vulnerable area within an aggregate site has the potential to quickly reach the aquifer as aggregate sites are generally composed of sand and gravel or limestone which allow for rapid infiltration. It is very difficult to remediate an aquifer that has been contaminated with fuel.
FUEL-3	The provincial regulation of fuel storage and handling is highly regulated by the Ministry of Consumer and Commercial Services through the arms-length Technical Standards and Safety Authority (TSSA). Unfortunately there is no Prescribed Instrument that can be used to implement policies to protect sources of municipal drinking water. The TSSA develops educational materials; licenses and regulates the bulk suppliers/distributors of fuel, fuel oil and associated equipment; and requires that fuel oil distributors annually inspect the fuel tanks of their customers and refuse to provide service where a storage tank is at risk of leaking or not in compliance with current codes.  The CTC SPC is of the opinion that TSSA should have a role in helping Source Protection Authority and the Risk Management Official in reducing or avoiding the threat from fuel storage to sources of municipal drinking water and part 3) of this policy is intended to require TSSA support.  Anecdotally the CTC SPC has been advised that the information that the TSSA has on inspections, including those reports provided by fuel suppliers on tanks that were found to not meet the codes, may not be organized in a manner that makes it easy to search and spatially link with the vulnerable areas where this activity is a drinking water threat. The CTC SPC encourages the provincial ministries and the TSSA to ensure that this important information is managed in a manner to support the protection of municipal drinking water.  This policy is not intended to apply to fuel storage at single family dwellings which is covered by policy FUEL-4.

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<p>FUEL-4</p>	<p>The CTC SPC is of the opinion that an Education and Outreach policy is sufficient for manage the threat to sources of municipal drinking water from fuel storage at single family dwellings for the following reasons:</p> <ol style="list-style-type: none"> <li>1) Through regulation by the TSSA (see notes for policy FUEL-3), fuel suppliers are required to annually inspect to ensure that storage tanks at single family dwellings meet safety codes before filling;</li> <li>2) Home owner insurance companies have become increasingly aware of the financial risks posed by spills from residential fuel storage and are taking proactive measures to require inspections and implementation of spill prevention measures by insured parties to reduce financial liability;</li> <li>3) Choosing a policy which would require that the Risk Management Official negotiate Risk Management Plans at potentially hundreds of single family homes and small businesses would be a large administrative burden and divert resources away from developing Risk Management Plans for other threat activities which are subject to risk management policies.</li> </ol> <p>Therefore, the SPC is of the opinion that this policy is an appropriate balance between protecting the municipal source of drinking water and avoiding the workload burden on the Risk Management Official and costs to landowners that would result from requiring a Risk Management Plan.</p> <p>The required education and outreach materials should clearly set out actions that property owners should take to reduce the threat in the vulnerable areas.</p> <p>Education and outreach policies have been proposed as part of the suite of tools to deal with the other circumstances where this activity is a drinking water threat to ensure that the information from CTC Assessment Reports that delineates vulnerable areas and significant drinking water threat activities, along with actions that can be taken to reduce the threat, is made available to property and business owners in the vulnerable areas. Municipalities are also encouraged to distribute these materials to property owners in areas where the threat to municipal drinking water is low or moderate where action can also help to protect sources of other drinking water supplies (see GEN-6). Voluntary actions undertaken by individuals and businesses who know what to do to protect a drinking water source can be very effective as part of the protection approach.</p>
<p>DNAP-1</p>	<p>This policy is not intended to apply to handling and storage of small quantities at single family dwellings which is covered by policy DNAP-2.</p>
<p>DNAP-2</p>	<p>This policy is the only one directed to deal with the threat posed by the storage of the small quantities dense non-aqueous phase liquids by individuals for their personal use. This threat is compromises a short list of chemicals as set out in the provincial Table of Drinking Water Threats which are generally used in industrial or commercial applications. The CTC SPC is of the opinion that an Education and Outreach policy is sufficient for manage threat under these circumstances for the following reasons:</p> <ol style="list-style-type: none"> <li>1) There is no minimum threshold below which DNAPLs are not a significant threat;</li> <li>2) The vulnerable area where the handling and storage of DNAPLs is significant comprises the entire WHPA-A, -B and -C. This includes thousands of properties in the CTC;</li> <li>3) DNAPLs in their pure and bulk form are highly regulated and generally not available for public purchase; and</li> <li>4) It would be impractical and create large burden on Risk Management Officials and costs to individuals to require Risk Management Plans at residences for incidental use of DNAPLs especially given that most DNAPLs available to households comprise a minute quantity of the product within which they are contained.</li> </ol> <p>Therefore, the SPC is of the opinion that this policy is an appropriate balance between protecting the municipal source of drinking water and avoiding the workload burden on the Risk Management Official and costs to landowners that would result from requiring a Risk Management Plan.</p> <p>The required education and outreach materials should clearly set out actions that property owners should take to reduce the threat in the vulnerable areas.</p> <p>Education and outreach policies have also been proposed as part of the suite of tools to deal with the other circumstances where this activity is a drinking water threat to ensure that the information from CTC Assessment Reports that delineates vulnerable areas and significant drinking water threat activities, along with actions that can be taken to reduce the threat, is made available to property and business owners in the vulnerable areas. Municipalities are also encouraged to distribute these materials to property owners in areas where the threat to municipal drinking water is low or moderate where action can also help to protect sources of other drinking water supplies (see GEN-6). Voluntary actions undertaken by individuals and businesses who know what to do to protect a drinking water source can be very effective as part of the protection approach.</p>
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DNAP-3	The SPC felt it was important to extend this policy to low and moderate threats; it is non-legally binding. Each specific implementer must have regard for the policy in making decisions but has the flexibility of determining what action(s) will be taken. While an implementer is not required to provide a report on their actions on implementing low or moderate threat policies, the CTC SPC encourages them to provide information that will help in future review and revision of policies.
OS-1	Organic solvents that are a significant threat compromises a four specific chemicals that are stored in quantities greater than 25 litres as set out in the provincial Table of Drinking Water Threats. They are generally used in industrial or commercial applications. The CTC SPC is of the opinion that prohibiting future new storage and handling is a precautionary approach.
OS-2	<p>Education and outreach policies have also been proposed as part of the suite of tools to deal with this activity to ensure that the information from CTC Assessment Reports that delineates vulnerable areas and significant drinking water threat activities, along with actions that can be taken to reduce the threat, is made available to property and business owners in the vulnerable areas.</p> <p>The required education and outreach materials should clearly set out actions that property owners should take to reduce the threat in the vulnerable areas.</p> <p>Municipalities are also encouraged to distribute these materials to property owners in areas where the threat to municipal drinking water is low or moderate where action can also help to protect sources of other drinking water supplies (see GEN-6). Voluntary actions undertaken by individuals and businesses who know what to do to protect a drinking water source can be very effective as part of the protection approach.</p>
OS-3	The SPC felt it was important to extend this policy to low and moderate threats; it is non-legally binding. Each specific implementer must have regard for the policy in making decisions but has the flexibility of determining what action(s) will be taken. While an implementer is not required to provide a report on their actions on implementing low or moderate threat policies, the CTC SPC encourages them to provide information that will help in future review and revision of policies.
DI-1 DI-2	<p>The CTC SPC has chosen in this case to propose two policies to address this significant threat. This is intended to ensure that all responsible authorities are working in concert in making decisions. The CTC SPC recognizes that reducing or avoiding significant drinking water threats is facilitated when each decision-maker is working under the same policy direction.</p> <p>There have been no existing threats from de-icing aircraft identified within vulnerable areas in the CTC Source Protection Region, however the CTC SPC has included policy DI-1 should new municipal wells be located where an existing activity would be a threat or in the case an existing threat has not been identified.</p>

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**10.15.2 Lake Ontario Policy Rationale**

LO-G-1	<p>The intent of this policy is ensure that effective spill prevention/contingency/emergency plans are in place in order to protect drinking water sources from spill along highways, shipping lanes and rail ways. The requirements for effective spill prevention/contingency/emergency plans are also included for the policies dealing with Lake Ontario Modelled Significant Drinking Water Threats. The intent of LO-G-1 (b) is to ensure that there is appropriate, clear and consistent procedures in place on when municipal plant operators will be notified based on spill magnitude. Magnitude refers to matters such as size, duration and type of spill. The proposed 3 year time frame is needed to ensure that Risk Mitigation/Risk Reduction/Risk Contingency Plans are effective.</p>
LO-G-2	<p>The intent of this policy is to ensure that the information is available to properly respond to ensure that the threat to municipal drinking water is managed. It is acknowledged that due to weather conditions it may not be possible to guarantee 100% availability of data; however the goal is to establish year-round monitoring.</p> <p>Due to the complexity and dynamics of Lake Ontario flows and circulation, 3-D modelling is critical to properly understand and predict the extent and duration of threats. This better understanding will inform notification protocols and contingency planning. While there may be some existing capacity challenges to using the 3-D model during an actual spill event, the model can be used to proactively model different scenarios to provide guidance to first responders and to inform spill response strategies, notification protocols, and to develop and implement enhanced risk mitigation and spill prevention actions.</p> <p>The Lake Ontario Collaborative (LOC) used event-based modelling for the identification of significant threats to Lake Ontario drinking water intakes. A three dimensional hydrodynamic model (Danish Hydraulic Institute DHI Mike-3) was selected for a number of reasons. Two dimensional models historically used are unidirectional and it has been shown that they do not adequately simulate flows, currents, and horizontal and vertical dispersion properties that apply to a large inland body of water such as Lake Ontario. A 3-D model is critical in the representation of the vertical stratification, currents, thermodynamics, seasonal variations, upwelling and down welling characteristics and overall dynamic nature of the lake. It is also important to note that the intakes are located near to the bottom of the lake where the third dimension is essential to the simulation of potential impacts. Advanced monitoring technology exists and is already for the most part in place to provide the necessary inputs to these types of models. Given the size, nature and multi-jurisdictional concerns of Lake Ontario, it is appropriate for a Provincial level agency to maintain the appropriate monitoring stations and 3-D models to manage and protect Great Lakes water resources.</p>
LO-G-3	<p>Policies LO-G-3 (c) &amp; (d) are written with the objective of having Lake Ontario Significant Drinking Water Threats cease to be or not become a SDWT by being proactive by developing tools that will inform notification requirements and protocols in order that operators and other stakeholders can take appropriate action.</p>
LO-G-4	<p>The research outlined in LO-G-4(a) is fundamental to the objectives of the <i>Clean Water Act</i> as it will help inform actions needed to protect municipal drinking water.</p>
LO-G-5	<p>The intent of this policy is identify where the infrastructure is at higher risk of failing as it crosses streams (sanitary trunk sewer/petroleum pipeline spill) and to inform where actions are needed by facility owners to implement risk avoidance and mitigation strategies to ensure that the SDWT ceases to be or never becomes a SDWT.</p>
LO-G-6	<p>Lake Ontario is an international water body subject to federal regulation and international treaties. As part of the existing arrangements for international cooperation and research it is important to share the findings of the source water protection technical assessments with these other agencies to encourage further research and recognition of the need for action to protect the most important source of municipal drinking water in the province.</p>
LO-NGS-1	<p>The proposed three year time frame is needed to ensure that Risk Mitigation/Risk Reduction/Risk Contingency Plans are updated to protect municipal drinking water in a timely manner.</p> <p>Based on information provided by OPG there are some enhancements required to the current provincial response protocols for responding to events where the discharge of radioactivity from Ontario's nuclear power plants may result in radioactive concentrations at nearby water intakes that may exceed the MOE standards. Based on information from OPG, the following concerns with the existing response protocol have been noted:</p> <ul style="list-style-type: none"> <li>• Generally, the modelled tritium spill identified as a SDWT would not trigger the Provincial Nuclear Emergency Response Plan (PNEP) unless the PNEP has been or will be triggered by another co-occurring event.</li> <li>• A full-scale exercise is to be held annually, rotating between Bruce Power, Pickering and Darlington. The province has declined to participate at the last few drills OPG has conducted.</li> <li>• A Province/OPG/Bruce Power Committee is supposed to meet annually to review procedures. This has not happened in several years and OPG has tried to get the province to meet to discuss needed changes to the procedure.</li> </ul>

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LO-SEW-1	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage are subject to provincial Environmental Approvals. As a result, this policy requires the Province to review these Environmental Approvals to ensure that there are conditions/requirements for effective Spill Prevention and Contingency Plans directed towards protecting the source of municipal drinking water. Policy LO-SEW-1 (c) does not limit the ability of the MOE to apply other conditions as warranted. Under the CWA, the Source Protection Committee is limited to using these Prescribed Instruments and not Part IV tools for sewage and waste SDWTs.
LO-SEW-3	The intent of this policy is to address spills that indirectly enter storm sewers (spills occur on-site but drain off site via ditches and eventually enter storm sewers that outlet into Lake Ontario). Since such spills have the potential to cross municipal boundaries, provincial wide action is more effective than action by individual municipalities which may not respond (compliance with low and moderate threat policies requires only consideration but not mandatory action).
LO-SEW-4	In the Great Lakes, serious impacts on municipal water intakes have occurred from pathogens other than <i>E. coli</i> (e.g. in Milwaukee WI and Collingwood ON related to <i>Cryptosporidium</i> ). Limited assessment has been done of the extent, nature and type of pathogens present in source of municipal drinking water. These other pathogens are not as easily treated with standard filtration and disinfection treatment and therefore pose a higher risk if present in source water.
LO-FUEL-1	The intent of the policy is to have MOE “work with TSSA/MCS” as the wording specifies that MOE should carry out the recommended actions in consultation. The CWA does not prescribe any approvals under the legislation and regulations governing fuel storage and handling, so there is no Prescribed Instrument tool available. TSSA is an arms-length agency of the Ontario government and is not on the list of bodies required to comply with policies. Although it is acknowledged that TSSA/MCS do have regulatory powers, their regulatory powers appear to be weak on actions to protect municipal drinking water sources. As a result, it is recommended that MOE remain as the implementing body for this policy.
LO-FUEL-2	The intent of this policy is to address spills that indirectly enter storm sewers (spills occur on-site but drain off site via ditches and eventually enter storm sewers that outlet into Lake Ontario). Since such spills have the potential to cross municipal boundaries, provincial wide action is more effective than action by individual municipalities which may not take local actions which provide the same level of protection of municipal drinking water sources as a comprehensive provincial requirement.

### 10.15.3 Quantity Policy Rationale

DEM-1	The intent of this policy is to ensure MOE reviews <b>existing</b> Permits to Take Water within three years to ensure appropriate conditions are included to protect the sources of municipal drinking water considering the results of the Tier 3 Water Budget analysis for the area. Any <b>new</b> permits will be issued only after ensuring that the new taking will not become a threat to drinking water by using as part of the assessment the modelling approach and any updated information consistent with the Tier 3 Water Budget analysis. Additional conditions that may be included in such permits could be specific trigger levels when water taking would need to be reduced to protect the municipal supply; requiring installation and reporting of water levels in a comprehensive set of sentry wells to assess changes to the aquifer or impact to base flow in areas important for spawning in cold-water fisheries or for maintaining provincially significant wetlands.
DEM-2	The intent of the policy is to ensure that the Planning Approval Authority has the most updated information and tools available through the Tier 3 Water Budget analysis to ensure decisions at a local level do not result in the new development becoming a significant drinking water threat within a WHPA-Q1. The local source protection authority has the model files and information to support this analysis, but it is envisioned that an applicant will have to retain qualified expertise to do the analysis. By using the current version of the Tier 3 water budget model and updated information should ensure that the results are technically robust and comparable to the original analysis
DEM-3	The intent of the policy is to ensure the different provincial ministries and municipalities communicate, coordinate and consider the Tier 3 Water budget findings and most current information in regards to setting provincial targets and policies directing population growth so that these do not create new threats or increase the threats of existing activities.

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DEM-4	<p>The intent of this policy is for the municipalities who are responsible for the supply and distribution of municipal water sourced from wells within a WHPA-Q1 to implement effective water conservation plans as part of their risk management strategy to reduce the threat from existing or future water demand by all users who receive water from this source. Some municipalities may already have such plans in place and no further actions will be identified.</p> <p>In developing or updating water conservation plans, a municipality is encouraged to consider a wide range of approaches such as: incentives for retrofits; introducing local by-laws and requirements under building permissions to mandate installation of low water use plumbing fixtures; setting differential pricing rates to reward low consumption; requiring or encouraging reuse of gray water for irrigation; and lawn watering restrictions. Municipal staff are encouraged to collaborate and consult with others who may have already implemented such plans and thereby reduce the workload and benefit from their knowledge and expertise.</p>
DEM-5	<p>The intent of this policy is for the municipalities who are responsible for the supply and distribution of municipal water sourced from wells within a WHPA-Q1 to implement effective education and outreach as part of their risk management strategy to reduce the threat from existing or future water demand by all users who receive water from this source. Some municipalities may already have such plans in place.</p> <p>MOE is encouraged to provide a list of available education and outreach materials to municipalities to reduce the duplication of effort, especially by small municipalities with limited capacity. Municipalities have advised the CTC SPC that this support is needed.</p> <p>Municipalities are encouraged to deliver the program through methods and means that are most effective for their local situation. Municipalities are encouraged to: consider a wide range of delivery approaches, such as: using a variety of media to deliver content – print, web, social media, demonstrations or displays; radio and local television PSAs; collaborate with local businesses, community groups and schools or local events such as Children’s Water Festivals or local fair or farmer’s market to reach different audiences; partner with conservation authorities; sponsor contests; promote other municipal water conservation programs such as distributing rain barrels or low flow nozzles for faucets; promote low water use landscaping; install demonstration projects on public sites such as schools, boulevards, or parks.</p>
DEM-6	<p>As part of the risk management strategy to reduce existing and avoid future threats, the Dufferin municipalities located in the WHPA-Q1 for this area are required to work together to jointly develop a local collaborative approach to manage their shared sources of municipal drinking water.</p> <p>Through the assessment of the water quality and quantity threats in this area it has been demonstrated that the vulnerable areas for many of the wells owned and operated by these municipalities overlap each other in some cases and also extend across municipal boundaries. A Risk Management Measures Evaluation pilot project undertaken by consultants reporting jointly to the Ministries of Environment and Natural Resources has identified and assessed a number of possible risk management measures that could be implemented that would reduce the threat from existing activities. This work can be used as a starting point. To be successful, risk management measures must be implemented in a coordinated and complementary manner by all municipalities.</p> <p>The CTC SPC is of the opinion that the local municipalities should have the opportunity and responsibility to develop their local solutions.</p>
DEM-7	<p>The intent of this policy is for the MOE and other relevant organizations to support the creation and provide assistance in the development of a mutually beneficial solution to the Dufferin County municipalities that share a water source within the Tier 3 WHPA-Q1. While the primary responsibility for developing the local plan has been assigned to the municipalities, the CTC SPC recognizes that there is a need for the province to provide support to these small and rural municipalities to create local capacity to protect sustainable sources of municipal water required to meet provincial targets for population growth and economic development.</p>

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DEM-8	<p>The provincial funding of technical work to assess threats to the source of municipal drinking water has resulted in substantial advancement in the knowledge of the groundwater resources where Tier 3 water budget studies have been completed. These models can and should be used to support a number of future decisions such as Permits to Take Water and land use planning. However information in the models needs to be kept up to date as Permits are amended, cancelled or newly issued and as land use changes in order to be useful. The CTC SPC is of the opinion that the MOE is best placed to ensure that there is sustainable funding and oversight to maintain and ensure use of the Tier 3 Water Budget models. There is also the need to enhance the monitoring of ground and surface water flows in some areas, including installing flow gauges at key locations.</p> <p>MOE is encouraged to maintain partnerships with source protection authorities and others to undertake this maintenance and data collection and analysis. MOE is also encouraged to consider ways to finance this aspect through a variety of methods such as: conditions of approval for Permits to Take Water; require municipalities operating wells in these areas to be responsible for monitoring and data collection and transfer; direct provincial funding.</p>
DEM-9	<p>The intent of this policy is not to promote the introduction of lake-based supplies nor to conflict with the Greenbelt Plan policies. Rather the municipality is encouraged as part of their risk management strategy to locate new groundwater supplies outside of a WHPA-Q1 with a significant risk level or a WHPA-Q1 with a moderate risk level where the new or increased taking would create significant water quantity impacts.</p> <p>While the CTC SPC is aware of the MOE concern that policies should apply to activities within the WHPA-Q1, it is of the opinion that this policy is intended to ensure that future municipal water takings do not become a significant drinking water threat within the WHPA-Q1.</p>
DEM-10	<p>The intent of this policy is to require York Region to implement the risk management measures assessed as part of the Tier 3 water budget study so that the risk level of the WHPA-Q1 is maintained as moderate.</p> <p>In the Tier 3 Water Budget analysis, the risk level in the WHPA-Q1 was initially categorized as significant due to predicted impacts at some municipal wells pumping their allocated rates under drought scenarios. However York Region has already taken steps to install interconnections in their distribution system to permit optimizing pumping at wells to minimize impacts and to augment supplies with surface water (80% of the water for York Region is provided from Lake Ontario sources). When the scenarios were re-assessed considering the implementation of a drought management strategy including these operating measures, the risk level in the WHPA-Q1 was reduced to moderate.</p>



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<p>REC-1</p>	<p>The intent of the policy is to ensure that the Planning Approval Authority makes decisions that do not result in recharge reduction from new development becoming a significant drinking water threat within a WHPA-Q2. The Planning Approval Authority, through the Plan Review process (i.e. <i>Planning Act</i> applications) will determine what is required, and determine the acceptability of the proposed actions, in the water balance assessments.</p> <p>The CTC SPC wants the Planning Approval Authority to have the flexibility to require the appropriate level of detail in a specific water balance assessment commensurate with the scale and location of a proposed development. For example, within the WHPA-Q2 are areas that have been identified as Significant Groundwater Recharge Areas which are particularly important due to the nature of the soils and slope that permit higher than average infiltration of precipitation to replenish the groundwater. These areas should be given particular protection. Other areas may not be important for recharge and cannot provide the required infiltration due to the local soil and slope conditions. Site specific assessment and identification of the recharge characteristics of the site should be part of such water balance assessments. Where a detailed assessment is warranted, using the current version of the Tier 3 water budget model and updated information should ensure that the results are technically robust and comparable to the original analysis. The local source protection authority has the model files and information to support this analysis, but it is envisioned that an applicant will have to retain qualified expertise to do the analysis.</p> <p>The committee encourages the ‘complete application’ check list be updated to include the Water Balance Assessment.</p> <p>Part 5) of this policy applies ONLY to those parts of a WHPA-Q2 which is also within an Issue Contributing Area (ICA) for sodium, chloride or nitrate. These areas are shown on the maps in the appendices in the Source Protection Plan and also will be provided by the source protection authority in other formats upon request to municipalities or other planning approval authorities. This requirement is intended to ensure that any risk management measure that is implemented to maintain recharge does not create a threat to source water quality. For example, infiltration of stormwater containing road salt in an ICA for sodium or chloride is a significant drinking water threat and subject to policies SWG-11 and SWG-12. The CTC SPC has included Part 5) of this policy for clarity to ensure that an implementing body does not inadvertently approve an activity to protect water quantity that is a threat to water quality.</p>
<p>REC-2</p>	<p>The intent of this policy is to ensure that any municipal approval for an activity in a WHPA-Q2 which is classified as a significant drinking water threat but not captured through the plan review process have been assessed to ensure that the appropriate risk management measures are implemented. If the activity has been reviewed through a plan review process and proposed risk management measures have been required to protect the municipal drinking water supply, it is not necessary to also require a Risk Management Plan at the building permit stage.</p> <p>Planning and building permit staff are encouraged to work with their municipal Risk Management Official to develop internal businesses process so the review is efficient and effective.</p>
<p>REC-3</p>	<p>The intent of this policy is for the municipality to take action in providing Education and Outreach material and other approaches to inform property owners about water recharge concerns and actions they can take on their property to enhance recharge.</p> <p>MOE is encouraged to provide a list of available education and outreach materials to municipalities to reduce the duplication of effort, especially by small municipalities with limited capacity. Municipalities have advised the CTC SPC that this support is needed.</p> <p>Municipalities are encouraged to deliver the program through methods and means that are most effective for their local situation. Municipalities are encouraged to: consider a wide range of delivery approaches, such as: using a variety of media to deliver content – print, web, social media, demonstrations or displays; radio and local television PSAs; collaborate with local businesses, community groups and schools or local events such as Children’s Water Festivals or local fair or farmer’s market to reach different audiences; partner with conservation authorities; sponsor contests; promote actions such as downspout disconnection from storm or sanitary sewers or adding dry wells to smaller yards to allow for slow infiltration of clean precipitation on-site; discourage adding hard surface landscaping or channelling water off-property; encourage or build demonstration projects in public sites such as schools or parks.</p>

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### 10.15.4 Monitoring Policy Rationale

MON-1 MON-2 MON-3 MON-4	<p>Monitoring policies have been developed, as required, for every policy directed to the implementing body in order to provide information required in the annual report to be submitted to the Minister by the source protection authority under S. 46 of the Act.</p> <p>One report may be submitted capturing all the policies for which the implementing body is responsible. The ministry has advised that they will be providing specific guidance and templates for annual reporting to help both implementing bodies and the source protection authorities in meeting their obligations.</p> <p>Implementing bodies are directed to provide their assessment of the effectiveness of, as well as quantitative information on, the actions taken to implement policies. The CTC SPC has not prescribed details in order to provide the implementing body flexibility in determining the specific content appropriate for the policy. However, the CTC SPC has directed that all implementing bodies should include as part of their report information that is consistent with that required under Section 65 of O. Reg. 287/07 in the annual report from the Risk Management Official.</p> <p>The monitoring information will help the SPC determine the effectiveness of the policies and any barriers or problems with implementing the policies that will be useful in future reviews and updates of these policies.</p>
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## **11 LIST OF ACRONYMS**

<b>ASM</b>	Agricultural Source Material
<b>AVI</b>	Aquifer Vulnerability Index
<b>BMPs</b>	Best Management Practices
<b>Bq</b>	Bacquerel
<b>BTEX</b>	Benzene, Toluene, Ethylbenzene and Xylene
<b>CA</b>	Conservation Authority
<b>C of A</b>	Certificate of Approval (now called an Environmental Compliance Approval)
<b>CFU</b>	Colony Forming Units
<b>CLOSPA</b>	Central Lake Ontario Source Protection Area
<b>CTC</b>	Credit Valley-Toronto and Region-Central Lake Ontario
<b>CVSPA</b>	Credit Valley Source Protection Area
<b>CWA</b>	<i>Clean Water Act, 2006</i>
<b>DNAPL</b>	Dense Non-Aqueous Phase Liquid
<b>EPA</b>	<i>Environmental Protection Act, 1990</i>
<b>GUDI</b>	Groundwater Under the Direct Influence of Surface Water
<b>HVA</b>	Highly Vulnerable Aquifer
<b>ICA</b>	Issue Contributing Area
<b>IPZ</b>	Intake Protection Zone
<b>LID</b>	Low Impact Development
<b>LOC</b>	Lake Ontario Collaborative
<b>LUP</b>	Land Use Planning
<b>MCS</b>	Ministry of Consumer Services
<b>MMAH</b>	Ministry of Municipal Affairs and Housing
<b>MNR</b>	Ministry of Natural Resources
<b>MOE</b>	Ministry of the Environment
<b>MOI</b>	Ministry of Infrastructure
<b>MTO</b>	Ministry of Transportation
<b>NASM</b>	Non-Agricultural Source Material
<b>NEC</b>	Niagara Escarpment Commission
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<b>NGS</b>	Nuclear Generating Station
<b>NMA</b>	<i>Nutrient Management Act</i>
<b>NMP</b>	Nutrient Management Plan
<b>NMS</b>	Nutrient Management Strategy
<b>ODWO</b>	Ontario Drinking Water Objective
<b>ODWS</b>	Ontario Drinking Water Standard
<b>OMAFRA</b>	Ontario Ministry of Agriculture, Food and Rural Affairs
<b>OMB</b>	Ontario Municipal Board
<b>PCB</b>	Polychlorinated Biphenyl
<b>PHC</b>	Petroleum Hydrocarbons
<b>PTTW</b>	Permit To Take Water
<b>RMO</b>	Risk Management Official
<b>RMP</b>	Risk Management Plan
<b>SGBLS</b>	South Georgian Bay Lake Simcoe
<b>SGRA</b>	Significant Groundwater Recharge Area
<b>SPA</b>	Source Protection Area
<b>SPC</b>	Source Protection Committee
<b>SPR</b>	Source Protection Region
<b>STP</b>	Sewage Treatment Plant
<b>SWM</b>	Stormwater Management
<b>SWP</b>	Source Water Protection
<b>TCC</b>	Trent Conservation Coalition
<b>TRSPA</b>	Toronto and Region Source Protection Area
<b>TSSA</b>	Technical Standards and Safety Authority
<b>VS</b>	Vulnerability Score
<b>WHPA</b>	Wellhead Protection Area
<b>WTP</b>	Water Treatment Plant
<b>WWTP</b>	Waste Water Treatment Plant

## 12 GLOSSARY OF TERMS

### **Abandoned Well**

A well that is deserted because it is dry, contains unpotable water, discontinued before completion, not being properly maintained, constructed poorly, or determined that natural gas may pose a hazard.

### **Activity**

One or a series of related processes, natural or anthropogenic that occurs within a geographical area and may be related to a particular land use.

### **Aquifer**

An underground saturated permeable geological formation that is capable of transmitting water in sufficient quantities under ordinary hydraulic gradients to serve as a source of groundwater supply.

### **Aquifer Vulnerability Index (AVI)**

A numerical indicator of an aquifer's intrinsic or inherent vulnerability susceptibility, to contamination expressed as a function of the thickness and permeability of overlying layers.

### **Chemical**

A substance used in conjunction with, or associated with, a land use activity or a particular entity, and with the potential to adversely affect water quality.

### **Condition**

A drinking water condition refers to contamination that exists already and is associated with past activities.

### **Confined Aquifers**

An aquifer that is bounded above and perhaps below by layers of geological material that do not transmit water readily.

### **Consumptive Water Demand**

The net amount of water that is taken from a source and not returned locally to the same source in a reasonable time.

### **Contaminant of Concern**

A chemical or pathogen that is or may be discharged from a drinking water threat activity that could contaminate a drinking water source.

## AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region

### **Designated System**

A drinking water system that is included in a Terms of Reference for developing source protection plans, pursuant to resolution passed by a municipal council under subsection 8(3) of the *Clean Water Act, 2006* or added by the Minister.

### **Drinking Water Issue**

A substantiated (through scientific means) condition relating to the quality of water that interferes or is anticipated to soon interfere with the use of a drinking water source by a municipal residential system or designated system.

### **Drinking Water Threat**

An existing activity, possible future activity or existing condition that results from a past activity, (a) 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.

### **Ecological Integrity**

The condition of ecosystems in which, a) the structure, composition and function of the ecosystem are unimpaired by stresses from human activity, b) natural ecological processes are intact and self-sustaining, and c) the ecosystems evolve naturally.

### **Event**

Occurrence of an incident (isolated or frequent) with the potential to promote the introduction of a threat into the environment. An event can be intentional as in the case of licensed discharge or accidental as in the case of a spill.

### **Existing Drinking Water Source**

The aquifer or surface water body from which municipal residential systems or other designated systems currently obtain their drinking water. This includes the aquifer or surface water body from which back-up wells or intakes for municipal residential systems or other designated systems obtain their drinking water when their current source is unavailable or in the event of an emergency.

### **Groundwater**

Subsurface water that occurs beneath the water table in soils and geological formations that are fully saturated.

## **AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

### **Groundwater Recharge Area**

The area where an aquifer is replenished from (a) natural processes, such as the infiltration of rainfall and snowmelt and the seepage of surface water from lakes, streams and wetlands, (b) from human interventions, such as the use of storm water management systems, and (c) whose recharge rate exceeds a threshold specified in the regulations. The Director's rules will specify the acceptable methodologies to determine groundwater recharge rates i.e. what qualifies as significant.

### **Hazard**

In the context of this guidance, a hazard is equivalent to a contaminant and pathogen threat.

### **Hazard Rating**

The numeric value which represents the relative potential for a contaminant of concern to impact drinking water sources at concentrations significant enough to cause human illness. This numeric value is determined for each contaminant of concern in the Threats Inventory and Issues Evaluation of the Assessment Report.

### **Highly Vulnerable Aquifer (HVA)**

An aquifer that can be easily changed or affected by contamination from both human activities and natural processes as a result of (a) its intrinsic susceptibility, as a function of the thickness and permeability of overlaying layers, or (b) by preferential pathways to the aquifer. The Director's rules will permit the use of various methods, such as the Intrinsic Susceptibility Index (ISI), to determine those aquifers that are highly vulnerable. Ontario's ISI defines a highly vulnerable aquifer as having a value of less than 30. An ISI is a numerical indicator that helps to indicate where contamination of groundwater is more or less likely to occur as a result of surface contamination due to natural hydrogeological features. The ISI is the most commonly used method of index mapping and was the prescribed method set out in the provincial 2001/2002 Groundwater Studies.

### **Hydrogeology**

Hydrogeology is the study of the movement and interactions of groundwater in geological materials.

### **Hydrologic Integrity**

The condition of ecosystems in which hydrological features and hydrological functions are unimpaired by stresses from human activity.

### **Hydrological Features**

a) permanent and intermittent streams, b) wetlands, c) lakes and their surface catchment areas, d) seepage areas and springs, and e) aquifers and recharge areas.

**Hydrologic functions**

The functions of the hydrological cycle that include the occurrence, circulation, distribution, and chemical and physical properties of water on the surface of the land, in the soil and underlying rocks, and in the atmosphere, and water’s interaction with the environment including its relation to living things

**Imminent Threat to Health**

A contaminant of concern that can affect human health in a short period of time.

**Intake Protection Zone (IPZ)**

The contiguous area of land and water immediately surrounding a surface water intake, which includes:

- the distance from the intake;
- a minimum travel time of the water associated with the intake of a municipal residential system or other designated system, based on the minimum response time for the water treatment plant operator to respond to adverse conditions or an emergency;
- the remaining watershed area upstream of the minimum travel time area (also referred to as the Total Water Contributing Area) – applicable to inland water courses and inland lakes only.

**Intrinsic Vulnerability**

The potential for the movement of a contaminant(s) through the subsurface based on the properties of natural geological materials.

**Issues Contributing Area (ICA)**

The area of land where drinking water threats may contribute to a known drinking water issue. For example, if Trichloroethylene (TCE) is determined to be an Issue, the area from which the source of TCE is determined is called the Issues Contributing Area.

**Land Use**

A particular use of space at or near the earth’s surface with associated activities, substances and events related to a particular land use designation.

**Local Area**

Specific area around a wellhead or surface water intake as determined through analysis. This area must encompass a drinking water system and surrounding potential quantity threats.

**Model**

An assembly of concepts in the form of mathematical equations or statistical terms that portrays a behaviour of an object, process or natural phenomenon



## **AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

### **Municipal Residential System**

All municipal drinking-water systems that serve or are planned to serve a major residential development (i.e. six or more private residences).

### **Parcel Level**

A parcel is a conveyable property, in accordance with the provisions of the Land Titles Act. The parcel is the smallest geographic scale at which risk assessment and risk management are conducted.

### **Pathogen**

A disease causing organism.

### **Raw Water**

Water that is in a drinking-water system or in plumbing that has not been treated in accordance with, (a) the prescribed standards and requirements that apply to the system, or (b) such additional treatment requirements that are imposed by the license or approval for the system.

### **Recharge**

Recharge is the process by which water moves from the ground surface, through the unsaturated zone, to arrive at the water table.

### **Regulated Areas**

Those areas for which Conservation Authorities delineate and restrict land uses by making regulations under subsection 28(1) of the Conservation Authority Act. This subsection applies to water courses, streams, lakes, valleys, flood plains, and wetlands in Ontario.

### **Reserve Amounts**

Minimum flows in streams that are required for the maintenance of the ecology of the ecosystem.

### **Response Factor**

Typical factors affecting the response include dilution, rate of discharge, absorption, and degradation of the contaminant or pathogen in question. Because of the nature of the water resource, certain contaminants and pathogens may not have an impact great enough to warrant concern or responsive action. The level of impact may not effectively degrade the water resource and therefore would not require a mitigative action.

### **Risk**

The likelihood of a drinking water threat (a) rendering an existing or planned drinking water source impaired, unusable or unsustainable, or (b) compromising the effectiveness of a drinking water treatment process, resulting in the potential for adverse human health effects.

**Sensitivity Area**

That portion of a defined vulnerable area that has been assigned a vulnerability score.

**Severity**

The degree to which an impact is measured compared to an idealized value of some parameter of concern. In the case of water quality, the severity may relate to degree of measurable exceedance of some contaminant or pathogen. In the case of water quantity deviation from some measurable parameter (e.g. minimum annual flow, piezometric head or lake level) must also be established.

**Site-level**

The most refined scale at which technical assessment of hydrological and hydrogeological conditions can be conducted. These assessments may contribute to water budgets, vulnerability assessments, and issues evaluation.

**Sub-Watershed**

An area that is drained by an individual tributary into the main watercourse of a watershed.

**Surface Water**

Water that is present on the earth's surface and may occur as rivers, lakes, wetlands, ponds, etc.

**Tier 1, 2, and 3 Water Budgets**

Numerical analysis at the watershed/subwatershed (Tier1 and 2) or local area (Tier 3) level considering existing and anticipated amounts or water use within the watershed, as well as quantitative flow between the groundwater and surface water systems.

**Time of Travel (TOT)**

An estimate of the time required for a particle of water to move in the saturated zone from a specific point in an aquifer into the well intake.

**Tolerance of a Water Supply System**

A measure of the ability to sustain required pumping levels even during exposure events.

**Transport Pathway**

Transport pathways are features or activities occurring at the surface that disturb the surface above the aquifer, or which artificially enhances flow to an aquifer. The presence of a transport pathway can increase the vulnerability rate of an area.

**Unconfined Aquifer**

An aquifer whose upper boundary is the water table.

**Valuation of the Supply**

An evaluation of the importance of a particular municipal well or intake to the whole municipal drinking water supply. For example, where there are multiple supplies, value may be smaller, versus a single supply where value may be greater.

**Vulnerable Area**

An area referring to a groundwater recharge area, a highly vulnerable aquifer, and a surface water intake protection zone or wellhead protection area.

**Water Intake Reliability**

The probability that a wellhead or surface water intake can meet demand.

**Water Reserve**

A proportion of surface water flow that must be sustained to support anthropogenic or ecological requirements.

**Water Source**

An aquifer or surface water body being used to supply drinking water.

**Water Source Supply**

The total amount of water flowing through a surface water or groundwater system.

**Water Supply System**

The group of surface water intakes and/or groundwater wells that pump water to supply a municipal water distribution system.

**Watershed**

A watershed is the area of land where all of the water that is under it or drains off of it goes into the same place. Its boundaries are defined by ridges of high land.

**Wellhead Protection Area**

The surface and subsurface area surrounding a water well or well field that supplies a municipal residential system or other designated system through which contaminants are reasonably likely to move so as to eventually reach the water well or well.

**APPENDIX A: ASSESSMENT REPORT**

As per Section 22 (2) of the *Clean Water Act*, the Approved Assessment Report is available for review online at [www.ctcswp.ca](http://www.ctcswp.ca) or at the offices of Credit Valley Conservation Authority, Toronto and Region Conservation Authority and Central Lake Ontario Conservation Authority.

## AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region

### APPENDIX B: APPLICABLE LEGAL PROVISIONS OF POLICIES

LIST A				
<b>Title:</b>	Significant threat policies that affect decisions under the Planning Act and Condominium Act, 1998			
<b>Preamble:</b>	<ul style="list-style-type: none"> <li>By including a significant threat policy in this list, decisions under the Planning Act and Condominium Act, 1998 will be required to conform with the listed policy (Clause 39 (1) (a) of the CWA).</li> <li>Official plans and zoning by-laws will be required to be amended and brought into conformity with the listed significant threat policy by the dates specified in the source protection plan (Section 40 and 42 of the CWA).</li> <li>In cases of conflict between a listed significant threat policy and an official plan or zoning by-law, the significant threat policy prevails (subsection 39 (2) of the CWA).</li> <li>By including a significant threat policy in List A, if there is a conflict between this significant threat policy and a policy in another provincial plan (e.g. the Green belt Plan), the policy that provides the greatest protection to drinking water prevails (subsection 39 (4) of the CWA).</li> <li>A municipality or municipal planning authority must not undertake any public work, improvement of a structural nature or other undertaking or pass a by-law for any purpose that conflicts with a significant threat policy in List A (subsection 39 (6) of the CWA).</li> </ul>			
<b>Opening Statement:</b>	"Clause 39 (1)(a), subsections 39 (2), (4) and (6), and sections 40 and 42 of the Clean Water Act, 2006 apply to the following policies:"			
<b>Policy ID #:</b>	Transition Provision	T-8	T-9	GEN-1
	WST-2	WST-5	SWG-4	SWG-9
	SWG-12	SWG-14	SWG-16	SWG-18
	SAL-3	DEM-2	REC-1	

LIST B				
<b>Title:</b>	Moderate and low threat policies that affect decisions under the Planning Act and Condominium Act, 1998			
<b>Preamble:</b>	<ul style="list-style-type: none"> <li>By including a moderate or low threat policy in this list, decisions under the Planning Act and Condominium Act, 1998 will be required have regard to the policy (Clause 39 (1) (b) of the CWA).</li> </ul>			
<b>Opening Statement:</b>	"Subsection 39 (1)(b) of the Clean Water Act, 2006 applies to the following policies:"			
<b>Policy ID #:</b>	SAL-10			

## AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region

LIST C				
<b>Title:</b>	Significant threat policies that affect prescribed instrument decisions			
<b>Preamble:</b>	<ul style="list-style-type: none"> <li>By including a significant threat policy in this list, a decision to issue, otherwise create or amend a prescribed instrument must conform to the listed policy (clause 39 (7) (a) of the CWA).</li> <li>A person or body that has issued or otherwise created a prescribed instrument before the source protection plan took effect will be required to amend the instrument to conform with the listed significant threat policies before the date specified in the source protection plan (section 43 of the CWA).</li> <li>A municipality or municipal planning authority must not undertake any public work, improvement of a structural nature or other undertaking or pass a by-law for any purpose that conflicts with a significant threat policy in List C (subsection 39 (6) of the CWA).</li> </ul>			
<b>Opening Statement:</b>	"Subsection 39 (6), clause 39 (7) (a), section 43 and subsection 44 (1) of the Clean Water Act, 2006 apply to the following policies:"			
<b>Policy ID #:</b>	Transition Provision	T-1	T-2	T-3
	WST-1	WST-3	WST-4	WST-7
	SWG-8	SWG-11	SWG-13	SWG-15
	SWG-17	ASM-1	ASM-3	ASM-7
	NASM-1	NASM-2	NASM-3	NASM-4
	LIV-2	FER-1	FUEL-1	FUEL-2
	LO-SEW-1	LO-SEW-2	DEM-1	

LIST D	
<b>Title:</b>	Moderate and low threat policies that affect prescribed instrument decisions
<b>Preamble:</b>	<ul style="list-style-type: none"> <li>By including a moderate or low threat policy in List D, a decision to issue, otherwise create or amend a prescribed instrument must have regard to the listed policy (clause 39 (7) (b) of the CWA).</li> </ul>
<b>Opening Statement:</b>	"Clause 39 (7)(b) of the Clean Water Act, 2006 applies to the following policies:"
<b>Policy ID #:</b>	No applicable policies.

## AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region

LIST E				
<b>Title:</b>	Significant threat policies that impose obligations on municipalities, source protection authorities and local boards <sup>5</sup>			
<b>Preamble:</b>	<ul style="list-style-type: none"> <li>Requires a municipality, a source protection authority or a local board to comply with any obligation that is imposed on it by significant threat policy (section 38 of the CWA).</li> <li>If the policy relates to education, outreach and incentive programs, stewardship programs, the promotion of best management practices, pilot programs, research, and other specified actions to be taken to implement the source protection plan or achieve the plan’s objectives, section 30 of the regulation requires that the policy designate (identify) the person or body responsible for implementing the policy.</li> <li>By including a significant threat policy in List E, the person or body identified for implementing the policy will be required to comply with the obligations specified in the policy.</li> <li>A municipality or municipal planning authority must not undertake any public work, improvement of a structural nature or other undertaking or pass a by-law for any purpose that conflicts with a significant threat policy in List E (subsection 39 (6) of the CWA).</li> </ul>			
<b>Opening Statement:</b>	“Section 38 and subsection 39 (6) of the Clean Water Act, 2006 applies to the following policies:”			
<b>Policy ID #:</b>	Transition Provision	T-10	T-11	T-12
	T-13	T-14	T-15	T-16
	T-17	T-18	GEN-4	SWG-1
	SWG-2	SWG-3	SWG-6	SWG-7
	ASM-6	LIV-5	FER-5	FER-6
	PES-4	SAL-8	FUEL-3 (3)	FUEL-4
	DNAP-2	OS-2	DI-2	DEM-4
	DEM-5 (1) (2)	DEM-6	DEM-9	DEM-10
	REC-3			

<sup>5</sup> Under the CWA, “Local board” has the same meaning as in the Municipal Affairs Act. Local board means a school board, municipal service board, transportation commission, public library board, board of health, police services board, planning board, or any other board, commission, committee, body or local authority established or exercising any power or authority under any general or special Act with respect to any of the affairs or purposes, including school purposes, of a municipality or of two or more municipalities or parts thereof.

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LIST F				
<b>Title:</b>	Monitoring policies referred to in subsection 22 (2) of the Clean Water Act, 2006			
<b>Preamble:</b>	<ul style="list-style-type: none"> <li>By including monitoring policies in List F, the public body<sup>6</sup> that is designated in the monitoring policy will be required to implement a monitoring program in accordance with the policy.</li> </ul>			
<b>Opening Statement:</b>	"Subsection 45 of the Clean Water Act, 2006 applies to the following policies:"			
<b>Policy ID #:</b>	T-16	SAL-9	MON-1	MON-2
	MON-3	MON-4		

LIST G				
<b>Title:</b>	Policies related to section 57 of the Clean Water Act, 2006			
<b>Preamble:</b>	<ul style="list-style-type: none"> <li>By including a policy in List G, no one is permitted to engage in any of the specified activities within the vulnerable areas set out in the policy after the date by which existing activities must be phased out or new activities prohibited in accordance with the policy.</li> <li>The reader should refer to the actual policy text for information pertaining to the designated prohibited activity(ies), their respective designated areas, and other details related to the section 57 prohibition – for instance the date by which existing activities must be phased out in accordance with subsection 57(2) of the CWA.</li> </ul>			
<b>Opening Statement:</b>	"The following policies relate to section 57 (prohibition) of the Clean Water Act."			
<b>Policy ID #:</b>	T-4	T-5	WST-6 (1)	ASM-2 (1)
	ASM-4 (1)	NASM-1 (1)	NASM-2 (1)	LIV-1 (1)
	LIV-3 (1)	FER-2 (1)	FER-3 (1)	PES-2 (1)
	SAL-7 (1)	SNO-1 (1)	FUEL-3 (1)	DNAP-1 (1)
	OS-1 (1)			

<sup>6</sup> Under the CWA, "public body" means, (a) a municipality, local board or conservation authority, (b) a ministry, board, commission, agency or official of the Government of Ontario, or (c) a body prescribed by the regulations or an official of a body prescribed by the regulations.



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LIST H				
<b>Title:</b>	Policies related to section 58 of the Clean Water Act, 2006			
<b>Preamble:</b>	<ul style="list-style-type: none"> <li>By including a policy in List H, no one is permitted to engage in any of the specified activities within the vulnerable areas set out in the policy after the date specified without conforming to the Risk Management Plan developed in accordance with the policy, the Act and regulations and approved by the Risk Management Official.</li> <li>The reader should refer to the actual policy text for information pertaining to the designated regulated activity(ies), their respective designated areas, and any other details related to the regulation of the activity under section 58 – for instance – the policies governing the content of risk management plans.</li> </ul>			
<b>Opening Statement:</b>	“The following policies relate to section 58 (risk management plans) of the Clean Water Act.”			
<b>Policy ID #:</b>	T-6	T-7	WST-2	WST-6 (2)
	ASM-2 (2) (3)	ASM-4 (2)	NASM-1 (2)	NASM-2 (2)
	LIV-1 (2)	LIV-3 (2)	FER-2 (2)	FER-3 (2)
	PES-1	PES-2 (2)	SAL-1	SAL-2
	SAL-7 (2)	SNO-1 (2)	FUEL-3 (2)	DNAP-1 (2)
	OS-1 (2)	DI-1	REC-2	

LIST I				
<b>Title:</b>	Policies related to section 59 of the Clean Water Act, 2006			
<b>Preamble:</b>	<ul style="list-style-type: none"> <li>Purpose of which is to ensure that a development proposal complies with section 57 or 58 of the CWA before it is given other municipal approvals.</li> <li>The reader should refer to the actual policy text for details related to each policy, including the designated land uses and their respective designated areas.</li> </ul>			
<b>Opening Statement:</b>	“The following policies relate to section 59 (restricted land use) of the Clean Water Act.”			
<b>Policy ID #:</b>	GEN-1			

## AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region

LIST J				
<b>Title:</b>	Strategic Action policies			
<b>Opening Statement:</b>	For the purposes of section 33 of Ontario regulation 287/07, the following policies are identified as strategic action policies:			
<b>Policy ID #:</b>	T-15	GEN-6	SAL-11	SAL-12
	SAL-13	DNAP-3	OS-3	LO-G-1
	LO-G-6	LO-SEW-3	LO-SEW-4	LO-FUEL-3

LIST K				
<b>Title:</b>	Significant threat policies that identify a body other than a municipality, source protection authority or local board as responsible for implementing the policy, and which represent a non-legally binding commitment			
<b>Policy ID #:</b>	T-10	T-15	T-16	T-17
	T-18	GEN-2	GEN-3	GEN-5
	OTHER-1	SWG-2	SWG-5	SWG-10
	ASM-5	NASM-5	LIV-4	FER-4
	FER-6	PES-3	SAL-4	SAL-5
	SAL-6	SAL-8	FUEL-4	DNAP-2
	OS-2	<del>LO-G-1</del>	LO-G-2	LO-G-3
	LO-G-4	LO-G-5	<del>LO-G-6</del>	LO-NGS-1
	LO-SEW-4	LO-PIPE-1	LO-FUEL-1	LO-FUEL-2
	LO-FUEL-3	DEM-3	DEM-5 (3)	DEM-7
	DEM-8	REC-3		

**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

**APPENDIX C: PRESCRIBED INSTRUMENTS WHICH APPLY TO SOURCE PROTECTION PLAN POLICIES IN LISTS C AND D (SS. 34(4) OF O. REG. 287/07)**

Policy ID	Legal Effect	Aggregate Resources Act - Licenses, Wayside Pit Permits, Aggregate Permits, and Site Plans	Environmental Protection Act - Waste Sites and Systems	Nutrient Management Act – Nutrient Management Strategies	Nutrient Management Act – Nutrient Management Plans	Nutrient Management Act – NASM Plans	Ontario Water Resources Act – Permits to Take Water	Ontario Water Resources Act – Sewage Works	Safe Drinking Water Act – Permits, Licenses
WST-1	Must conform		X						
WST-3	Must conform		X						
WST-4	Must conform		X						
WST-7	Must conform		X						
SWG-8	Must conform							X	
SWG-11	Must conform							X	
SWG-13	Must conform							X	
SWG-15	Must conform							X	
SWG-17	Must conform							X	
ASM-1	Must conform				X				
ASM-3	Must conform			X					
ASM-7	Must conform							X	
NASM-1	Must conform					X			
NASM-2	Must conform					X			
NASM-3	Must conform					X			
NASM-4	Must conform					X			
LIV-2	Must conform			X					
FER-1	Must conform				X				
FUEL-1	Must conform								X
FUEL-2	Must conform	X							
LO-SEW-1	Must conform		X						
LO-SEW-2	Must conform		X						
DEM-1	Must conform						X		

**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

**APPENDIX D: POLICY SUMMARY MATRIX**

Policy ID	Legal Effect	Policy affects decisions under the <i>Planning Act and Condominium Act, 1998</i> (Lists A & B)	Policy affects Prescribed Instruments decisions (Lists C & D)	Significant threat policies that impose obligations on municipalities, source protection authorities and local boards (List E)	Monitoring Policies referred to in s.22(2) of the CWA (List F)	Part IV Policies - Significant threat policies that are designated in the plan as requiring a risk management plan, are prohibited under s.57, or to which s.59 of the CWA applies (Lists G, H & I)	Strategic Action Policies (Lists J)	(List K)
Transition Provision	Must Comply	X	X	X				
T-1	Must Comply		X					
T-2	Must Comply		X					
T-3	Must Comply		X					
T-4	Must Comply					X		
T-5	Must Comply					X		
T-6	Must Comply					X		
T-7	Must Comply					X		
T-8	Must Comply	X						
T-9	Must Comply	X						
T-10	Must Comply			X				X
T-11	Must Comply			X				
T-12	Must Comply			X				
T-13	Must Comply			X				
T-14	Must Comply			X				
T-15	Must Comply Strategic			X			X	X
T-16	Must Comply Strategic			X	X			X
T-17	Must Comply Strategic			X				X
T-18	Must Comply Strategic			X				X
GEN-1	Must Comply	X				X		

**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

Policy ID	Legal Effect	Policy affects decisions under the <i>Planning Act and Condominium Act, 1998</i> (Lists A & B)	Policy affects Prescribed Instruments decisions (Lists C & D)	Significant threat policies that impose obligations on municipalities, source protection authorities and local boards (List E)	Monitoring Policies referred to in s.22(2) of the CWA (List F)	Part IV Policies - Significant threat policies that are designated in the plan as requiring a risk management plan, are prohibited under s.57, or to which s.59 of the CWA applies (Lists G, H & I)	Strategic Action Policies (Lists J)	(List K)
GEN-2	Have Regard For							X
GEN-3	Have Regard For							X
GEN-4	Must Comply			X				
GEN-5	Have Regard For							X
GEN-6	Have Regard For						X	
OTHER-1	Have Regard For							X
WST-1	Must Comply		X					
WST-2	Must Comply	X				X		
WST-3	Must Comply		X					
WST-4	Must Comply		X					
WST-5	Must Comply	X						
WST-6	Must Comply					X		
WST-7	Have Regard For		X					
SWG-1	Have Regard For			X				
SWG-2	Must Comply Have Regard For			X				X
SWG-3	Must Comply			X				
SWG-4	Must Comply	X						
SWG-5	Have Regard For							X
SWG-6	Must Comply			X				
SWG-7	Must Comply			X				
SWG-8	Must Comply		X					
SWG-9	Must Comply	X						
SWG-10	Have Regard For							X
SWG-11	Must Comply		X					
SWG-12	Must Comply	X						
SWG-13	Must Comply		X					

**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

Policy ID	Legal Effect	Policy affects decisions under the <i>Planning Act and Condominium Act, 1998</i> (Lists A & B)	Policy affects Prescribed Instruments decisions (Lists C & D)	Significant threat policies that impose obligations on municipalities, source protection authorities and local boards (List E)	Monitoring Policies referred to in s.22(2) of the CWA (List F)	Part IV Policies - Significant threat policies that are designated in the plan as requiring a risk management plan, are prohibited under s.57, or to which s.59 of the CWA applies (Lists G, H & I)	Strategic Action Policies (Lists J)	(List K)
SWG-14	Must Comply	X						
SWG-15	Must Comply		X					
SWG-16	Must Comply	X						
SWG-17	Must Comply		X					
SWG-18	Must Comply	X						
ASM-1	Must Comply		X					
ASM-2	Must Comply					X		
ASM-3	Must Comply		X					
ASM-4	Must Comply					X		
ASM-5	Have Regard For							X
ASM-6	Must Comply			X				
ASM-7	Must Comply		X					
NASM-1	Must Comply		X			X		
NASM-2	Must Comply		X			X		
NASM-3	Must Comply		X					
NASM-4	Must Comply		X					
NASM-5	Have Regard For							X
LIV-1	Must Comply					X		
LIV-2	Must Comply		X					
LIV-3	Must Comply					X		
LIV-4	Have Regard For							X
LIV-5	Must Comply			X				
FER-1	Must Comply		X					
FER-2	Must Comply					X		
FER-3	Must Comply					X		
FER-4	Have Regard For							X
FER-5	Must Comply			X				

**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

Policy ID	Legal Effect	Policy affects decisions under the <i>Planning Act and Condominium Act, 1998</i> (Lists A & B)	Policy affects Prescribed Instruments decisions (Lists C & D)	Significant threat policies that impose obligations on municipalities, source protection authorities and local boards (List E)	Monitoring Policies referred to in s.22(2) of the CWA (List F)	Part IV Policies - Significant threat policies that are designated in the plan as requiring a risk management plan, are prohibited under s.57, or to which s.59 of the CWA applies (Lists G, H & I)	Strategic Action Policies (Lists J)	(List K)
FER-6	Must Comply Have Regard For			X				X
PES-1	Must Comply					X		
PES-2	Must Comply					X		
PES-3	Have Regard For							X
PES-4	Must Comply			X				
SAL-1	Must Comply					X		
SAL-2	Must Comply					X		
SAL-3	Must Comply	X						
SAL-4	Have Regard For							X
SAL-5	Have Regard For							X
SAL-6	Have Regard For							X
SAL-7	Must Comply					X		
SAL-8	Must Comply Have Regard For			X				X
SAL-9	Must Comply				X			
SAL-10	Have Regard For	X						
SAL-11	Have Regard For						X	
SAL-12	Have Regard For						X	
SAL-13	Have Regard For						X	
SNO-1	Must Comply					X		
FUEL-1	Must Comply		X					
FUEL-2	Must Comply		X					
FUEL-3	Must Comply			X		X		
FUEL-4	Must Comply Have Regard For			X				X
DNAP-1	Must Comply					X		

**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

Policy ID	Legal Effect	Policy affects decisions under the <i>Planning Act and Condominium Act, 1998</i> (Lists A & B)	Policy affects Prescribed Instruments decisions (Lists C & D)	Significant threat policies that impose obligations on municipalities, source protection authorities and local boards (List E)	Monitoring Policies referred to in s.22(2) of the CWA (List F)	Part IV Policies - Significant threat policies that are designated in the plan as requiring a risk management plan, are prohibited under s.57, or to which s.59 of the CWA applies (Lists G, H & I)	Strategic Action Policies (Lists J)	(List K)
DNAP-2	Must Comply Have Regard For			X				X
DNAP-3	Have Regard For						X	
OS-1	Must Comply					X		
OS-2	Must Comply Have Regard For			X				X
OS-3	Have Regard For						X	
DI-1	Must Comply					X		
DI-2	Must Comply			X				
LO-G-1	Have Regard For						X	X
LO-G-2	Have Regard For							X
LO-G-3	Have Regard For							X
LO-G-4	Have Regard For							X
LO-G-5	Have Regard For							X
LO-G-6	Have Regard For						X	X
LO-NGS-1	Have Regard For							X
LO-SEW-1	Must Comply		X					
LO-SEW-2	Must Comply		X					
LO-SEW-3	Have Regard For						X	
LO-SEW-4	Have Regard For						X	X
LO-PIPE-1	Have Regard For							X
LO-FUEL-1	Have Regard For							X
LO-FUEL-2	Have Regard For							X
LO-FUEL-3	Have Regard For						X	X
DEM-1	Must Comply		X					
DEM-2	Must Comply	X						
DEM-3	Have Regard For							X



**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

Policy ID	Legal Effect	Policy affects decisions under the <i>Planning Act and Condominium Act, 1998</i> (Lists A & B)	Policy affects Prescribed Instruments decisions (Lists C & D)	Significant threat policies that impose obligations on municipalities, source protection authorities and local boards (List E)	Monitoring Policies referred to in s.22(2) of the CWA (List F)	Part IV Policies - Significant threat policies that are designated in the plan as requiring a risk management plan, are prohibited under s.57, or to which s.59 of the CWA applies (Lists G, H & I)	Strategic Action Policies (Lists J)	(List K)
DEM-4	Must Comply			X				
DEM-5	Must Comply Have Regard For			X				X
DEM-6	Must Comply			X				
DEM-7	Have Regard For							X
DEM-8	Have Regard For							X
DEM-9	Must Comply			X				
DEM-10	Must Comply			X				
REC-1	Must Comply	X						
REC-2	Must Comply					X		
REC-3	Must Comply Have Regard For			X				X
MON-1	Must Comply				X			
MON-2	Must Comply				X			
MON-3	Must Comply				X			
MON-4	Must Comply				X			

## AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region

### APPENDIX E: POLICIES BY IMPLEMENTER

The following table lists the policies in the CTC Source Protection Plan by implementing body.

Implementer	Policies	
Health Canada	Lake Ontario - Sewage	LO-SEW-4
MCS	Fuel	FUEL-4
MMAH	Sewage Systems	SWG-5
	Quantity - Demand	DEM-3
MNR	General	GEN-5
	Fuel	FUEL-2
MOE	General	GEN-2; GEN-3; GEN-5
	Waste Disposal Sites	WST-1; WST-3; WST-4; <b>WST-7</b>
	Sewage Systems	SWG-2; SWG-8; SWG-10; SWG-11; SWG-13; SWG-15; SWG-17
	Agricultural Source Material	ASM-5; <b>ASM-7</b>
	Non-Agricultural Source Material	<del>NASM-1; NASM-2</del> ; NASM-3; NASM-4; NASM-5
	Livestock	LIV-4
	Fertilizer	FER-4; FER-6
	Pesticide	PES-3
	Road Salt	SAL-4; SAL-5; SAL-8; SAL-11
	Fuel	FUEL-1; FUEL-4
	Dense Non-Aqueous Phase Liquids	DNAP-2
	Organic Solvents	OS-2
	Lake Ontario - All Threats	LO-G-1; LO-G-2; LO-G-3; LO-G-4; LO-G-5; LO-G-6
	Lake Ontario - NGS	LO-NGS-1
	Lake Ontario - Sewage	LO-SEW-1; LO-SEW-2; LO-SEW-3; LO-SEW-4
	Lake Ontario - Pipe	LO-PIPE-1
	Lake Ontario - Fuel	LO-FUEL-1; LO-FUEL-2; LO-FUEL-3
	Quantity - Demand	DEM-1; DEM-3; <b>DEM-5</b> ; DEM-7; DEM-8
	<b>Quantity - Recharge</b>	<b>REC-3</b>
	MOI	Quantity - Demand
MTO	Road Salt	SAL-6

**AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region**

Implementer	Policies	
Municipality	General	GEN-1; GEN-4; GEN-6
	Sewage Systems	SWG-1; <b>SWG-2</b> ; SWG-3; SWG-6; SWG-7
	Agricultural Source Material	ASM-6
	Livestock	LIV-5
	Fertilizer	FER-5; FER-6
	Pesticide	PES-4
	Road Salt	SAL-8; SAL-9; SAL-12; SAL-13
	Fuel	FUEL-4
	Dense Non-Aqueous Phase Liquids	DNAP-2; DNAP-3
	Organic Solvents	OS-2; OS-3
	Aircraft De-icing	DI-2
	Quantity - Demand	DEM-4; DEM-5; DEM-6; DEM-9; <b>DEM-10</b>
	Quantity - Recharge	<b>REC-3</b>
Niagara Escarpment Commission	General	OTHER-1
	<b>Waste Disposal Sites</b>	<b>WST-5</b>
	<b>Sewage Systems</b>	<b>SWG-4; SWG-9; SWG-12; SWG-14; SWG-16; SWG-18</b>
	<b>Road Salt</b>	<b>SAL-3; SAL-10</b>
	<b>Quantity - Demand</b>	<b>DEM-2</b>
	<b>Quantity - Recharge</b>	<b>REC-1</b>
OMAFRA	General	GEN-5
	Agricultural Source Material	ASM-1; ASM-3
	Non-Agricultural Source Material	<del>NASM-1; NASM-2</del> ; NASM-3; NASM-4; NASM-5
	Livestock	LIV-2
	Fertilizer	FER-1
Planning Approval Authority	<del>WST-2</del> ; WST-5	<del>WST-2</del> ; WST-5
	Sewage Systems	SWG-4; SWG-9; SWG-12; SWG-14; SWG-16; SWG-18
	Road Salt	SAL-3; SAL-10
	Quantity - Demand	DEM-2
	Quantity - Recharge	REC-1

## AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region

Risk Management Official	Waste Disposal Sites	WST-2; WST-6
	Agricultural Source Material	ASM-2; ASM-4
	Non-Agricultural Source Material	NASM-1; NASM-2
	Livestock	LIV-1; LIV-3
	Fertilizer	FER-2; FER-3
	Pesticide	PES-1; PES-2
	Road Salt	SAL-1; SAL-2; SAL-7
	Snow	SNO-1
	Fuel	FUEL-3
	Dense Non-Aqueous Phase Liquids	DNAP-1
	Organic Solvents	OS-1
	Aircraft De-icing	DI-1
	Quantity - Recharge	REC-2
Source Protection Authority	Sewage Systems	SWG-7
	Road Salt	SAL-9; SAL-13
	Fuel	FUEL-3
TSSA	Fuel	FUEL-4

## AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region

### APPENDIX F: MAPS OF THREAT AREAS WHERE POLICIES APPLY (see CTC website for maps)

Map 1.1: Mono – Significant Groundwater Quality Threats

Map 2.1: Mono – Significant Groundwater Quality Threats DNAPLS

Map 1.2: Amaranth-Orangeville 1 of 2 – Significant Groundwater Quality Threats

Map 2.2: Amaranth-Orangeville 1 of 2 – Significant Groundwater Quality Threats DNAPLS

Map 1.3: Orangeville 2 of 2 – Significant Groundwater Quality Threats

Map 2.3: Orangeville 2 of 2 – Significant Groundwater Quality Threats DNAPLS

Map 3.1: Amaranth-Mono-Orangeville – Significant Groundwater Quantity Threats

Map 1.4: Alton – Significant Groundwater Quality Threats

Map 2.4: Alton – Significant Groundwater Quality Threats DNAPLS

Map 1.5: Caledon Village – Significant Groundwater Quality Threats

Map 2.5: Caledon Village – Significant Groundwater Quality Threats DNAPLS

Map 1.6: Hillsburgh – Significant Groundwater Quality Threats

Map 2.6: Hillsburgh – Significant Groundwater Quality Threats DNAPLS

Map 1.7: Erin – Significant Groundwater Quality Threats

Map 2.7: Erin – Significant Groundwater Quality Threats DNAPLS

Map 1.8: Bel-Erin – Significant Groundwater Quality Threats

Map 2.8: Bel-Erin – Significant Groundwater Quality Threats DNAPLS

Map 1.9: Inglewood – Significant Groundwater Quality Threats

Map 2.9: Inglewood – Significant Groundwater Quality Threats DNAPLS

Map 1.10: Cheltenham – Significant Groundwater Quality Threats

Map 2.10: Cheltenham – Significant Groundwater Quality Threats DNAPLS

Map 1.11: Acton (Prospect Park) – Significant Groundwater Quality Threats

Map 2.11: Acton (Prospect Park) – Significant Groundwater Quality Threats DNAPLS

## AMENDED PROPOSED SOURCE PROTECTION PLAN: CTC Source Protection Region

Map 1.12: Acton (4th Line) – Significant Groundwater Quality Threats

Map 2.12: Acton (4th Line) – Significant Groundwater Quality Threats DNAPLS

Map 1.13: Acton (Davidson) – Significant Groundwater Quality Threats

Map 2.13: Acton (Davidson) – Significant Groundwater Quality Threats DNAPLS

Map 3.2: Acton – Significant Groundwater Quantity Threats

Map 1.14: Georgetown – Significant Groundwater Quality Threats

Map 2.14: Georgetown – Significant Groundwater Quality Threats DNAPLS

Map 3.3: Georgetown – Significant Groundwater Quantity Threats

Map 1.15: Palgrave – Significant Groundwater Quality Threats

Map 2.15: Palgrave – Significant Groundwater Quality Threats DNAPLS

Map 1.16: Caledon East – Significant Groundwater Quality Threats

Map 2.16: Caledon East – Significant Groundwater Quality Threats DNAPLS

Map 1.17: Nobleton – Significant Groundwater Quality Threats

Map 2.17: Nobleton – Significant Groundwater Quality Threats DNAPLS

Map 1.18: Kleinburg – Significant Groundwater Quality Threats

Map 2.18: Kleinburg – Significant Groundwater Quality Threats DNAPLS

Map 1.19: King City – Significant Groundwater Quality Threats

Map 2.19: King City – Significant Groundwater Quality Threats DNAPLS

Map 1.20: Whitchurch-Stouffville – Significant Groundwater Quality Threats

Map 2.20: Whitchurch-Stouffville – Significant Groundwater Quality Threats DNAPLS

Map 1.21: Uxville – Significant Groundwater Quality Threats

Map 2.21: Uxville – Significant Groundwater Quality Threats DNAPLS

Map 3.4: York-Durham – Significant Groundwater Quantity Threats

Map 4.1: Lake Ontario – Intake Protection Zone