1. What is the Threat to Drinking Water?

This drinking water threat includes systems that store and/or treat human waste on-site, but does not include sewage treatment plants. These systems come in a variety of forms including earth pit privies, privy vaults, greywater systems, cesspools, leaching bed systems and associated treatment units, and holding tanks. Leaching bed systems with septic tanks or holding tanks are the systems most commonly used in the Thames-Sydenham Source Protection Area.

There are two categories of systems: small and large. Small systems (those with a design flow less than or equal to 10,000 L/day) are subject to approval under the *Ontario Building Code Act* which may be administered by municipalities, conservation authorities or local health units. Small systems most frequently service individual residences in rural areas including hamlets and small villages that do not have municipal or communal sewage services.

Large systems (those with a design flow greater than 10,000 L/day) are subject to approval by the Ministry of the Environment (MOE) under the *Ontario Water Resources Act.* Also, any system, no matter its size, which cannot be located within the confines of a single property are subject to approval by the Ministry of the Environment (MOE) under the *Ontario Water Resources Act*. Schools, campgrounds, larger businesses and communal systems are examples of facilities that may require a large system. The requirements are described in more detail below.

2. What causes this activity to be a drinking water threat?

The MOE Tables of Drinking Water Threats (2008, as amended in 2009) identify a number of chemicals and pathogens that could make their way from on-site sewage storage and treatment systems into the groundwater and/or surface water under certain conditions (circumstances 831 to 854 and 1955, 1956). The following chemicals and pathogens could threaten the safety of these sources of drinking water in certain situations.

- Pathogens
- Acetone
- Chloride
- Dichlorobenzene-1,4 (para)
- Nitrogen
- Total phosphorus

NOTE TO THE READER

This document is one of a series of threat policy discussion papers for the Thames- Sydenham and Region in support of Source Protection Plan development. Each discussion paper looks at the nature of one or more types of drinking water threat , describes the local occurrence of those threats, assesses existing policies/programs, and introduces related 'policy concepts' for source protection planning. ***While every effort has been made to ensure the accuracy of the information in this document, it should not be construed as legal advice or relied on as a substitute for the legislation.***

This version is considered to be a ***working draft*** *because it will be revised as the policy development process progresses. This discussion paper represents the best information available to the SPC upon which they will base their policy decisions.*

Contents

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- sodium

The chemicals listed above are a concern for both surface and groundwater, with the exception of total phosphorous which is only considered a threat to surface water because excessive inputs results in eutrophication and can cause toxic algae blooms.

Acetone: Acetone is the active ingredient in common household products like nail polish remover, paint thinner and household cleaner. It is also used in industrial products and applications such as pesticides, cleaning (e.g. printing), solvents (e.g. rubber manufacturing), and dilution and extraction (e.g. laboratories).

Chloride, Sodium and Total Phosphorus: Water softeners (water used and backwash), laundry detergents, bar soaps, foods and cleaning products may contain chloride, sodium and phosphorus.

Dichlorobenzene, 1,4 (para): 1,4 Dichlorobenzene (para) is used as a disinfectant, pesticide (e.g. mothballs, general agricultural insecticide), a deodorant (e.g. urinal cakes), for resin manufacturing and in the pharmaceutical industry.

Nitrogen and Pathogens: the primary source of nitrogen and pathogens in on-site systems and holding tanks is from human waste. Bacteria, viruses and protozoans are the main categories of pathogens.

3. *What is the local scale of the drinking water threat?*

Depending on the location and size of the systems, and the type of contaminant, discharge from a septic system or a spill from a holding tank can be classified as a significant, moderate or low drinking water threat. The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage, for sub-threats *sewage systems or sewage works –septic systems and septic system holding tanks* are considered a significant threat for the above mentioned chemicals for a large system subject to the OWRA in a WHPA with a vulnerability score of 10, and for holding tanks subject to the Ontario Building Code. The large OWRA systems, holding tanks and small septic system subject to the *Ontario Building Code* are significant for pathogen contamination in areas with a vulnerability score of 10.

Onsite sewage systems, particularly leaching bed systems, are prevalent throughout the Thames-Sydenham Source Protection Area in areas that are not serviced by municipal or communal wastewater treatment systems. They can be found now and in the future in all or part of the intake protection zones (IPZ), wellhead protection areas (WHPA), highly vulnerable aquifers (HVA), and significant groundwater recharge areas (SGRA). Appendix A summarizes the areas in the Thames-Sydenham Region where significant drinking water threats have been enumerated which may be the result of septic systems. As discussed in the Assessment Reports for the region, this enumeration is based on best available information which is included to characterize the distribution of this type of drinking water threat, but is not expected to be completely accurate. It should be noted that in sensitive areas holding tanks are sometimes used to protect the area since a properly functioning holding tank does not leach, thereby eliminating sewage from impacting the area. Irrespective of whether threats have been enumerated, the Source Protection Plan will need to have policies which deal with both existing and future drinking water threats of this type.

4. *Applicable Legislation, Policies and Programs*

The following section provides a summary of the applicable legislation, policies and programs (provincial or municipal) that addresses the drinking water threat of on-site sewage storage and treatment systems.

Table1: Outline of Applicable Legislation, Policies and Programs

Level of Government	Legislation/Policies/Programs
Provincial	Ontario Building Code Act 1992 (Government of Ontario, 2006) • O. Reg. 315/10 Ontario Building Code • Septic System Re-inspection Program
	Ministry of Environment Procedure D-5-4 Technical Guideline for Individual On-Site Sewage Systems

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<#>Acetone¶
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<#>dichlorobenzene-1,4 (para) ... [1]

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Deleted: Table 1 attached to this discussion paper indicates in which parts of the vulnerable

Deleted: areas septic systems can be significant moderate or low drinking water threats. Table 2 summarizes the

Deleted: Depending on the location and size of the systems, and the type of contaminant, discharge from a septic system or a spill from a holding tank can be classified as a significant, moderate or low drinking water threat. This is described in more detail in the previous section.¶
It should be noted that in sensitive areas holding tanks are sometimes used to protect the area since a properly functioning holding tank does not leach, thereby eliminating sewage from impacting the area. Depending on the location and size of the systems, and the type of contaminant, discharge from a septic system or a spill from a holding tank can be classified as a significant, moderate or low drinking water threat. Section 8.8.1.2 of the OBC lists acceptable criteria for a class 5 sewage system.

Deleted: Table 2 displaying where septic threat activities are or would be drinking water threats in the Thames-Sydenham SPR according to the MOE Tables of Drinking Water Threats (2008, as amended in 2009) are located in Appendix A. ¶

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Level of Government	Legislation/Policies/Programs
	Water Quality Impact Risk Assessments (MOE, 1996)
	Ontario Water Resources Act 1990 (Government of Ontario, 1990) • MOE Guide for Applying for Approval of municipal and Private Water and Sewage Works (Government of Ontario, 2000) • Guideline B-7: Incorporation of the Reasonable Use Concept into MOE Groundwater Management Activities
	Provincial Policy Statement, 2005 (Government of Ontario, 2005)
	Conservation Authorities Act 1990 (Government of Ontario, 1990)
	Ontario Clean Water Act 2006 • Ontario Drinking Water Stewardship Program
Municipal	Land Use Planning
Other	Canada-Ontario Environmental Farm Plan (Ontario Soil and Crop Improvement Association, 1993)
	Clean Water Program
	Report of the Great Lakes Science Advisory Board to the International Joint Commission: Groundwater in the Great Lakes Basin (February 2010)
	Programs in United States

a) **Provincial**

Ontario Building Code Act 1992, O. Reg. 350/06 (Government of Ontario, 2006)

As previously mentioned, **Small systems** (those with a design flow less than or equal to 10,000 L/day) are regulated under the Building Code Act, 1992, O.Reg. 350/06. Part 8 of the Building Code refers specifically to sewage systems. Under S.8.1.2.1 of the Building Code, there are five classes of sewage systems identified:

• Class 1 -Outhouse: chemical or composting toilet, incinerating toilet or vault privy (s.8.3)

• Class 2 - Leaching pit for grey water disposal only (s.8.4)

• Class 3 -Cesspool for disposal of outhouse waste (s.8.5)

• Class 4 – Septic tank and leaching bed includes a filter bed, conventional leaching bed and chamber systems, tertiary systems (new technologies) (s.8.6)

• Class 5 – Holding tanks (minimum 9,000 liters) (s.8.8)

Class 4 systems are the most common in the Thames-Sydenham Region and include the following components: a septic tank with filter (required as of January 1, 2007), a leaching bed or filter bed, and a mantle. These systems are generally installed on a **property by property basis** conforming to minimum separation distances in the *Ontario Building Code* as displayed on Figure 1.

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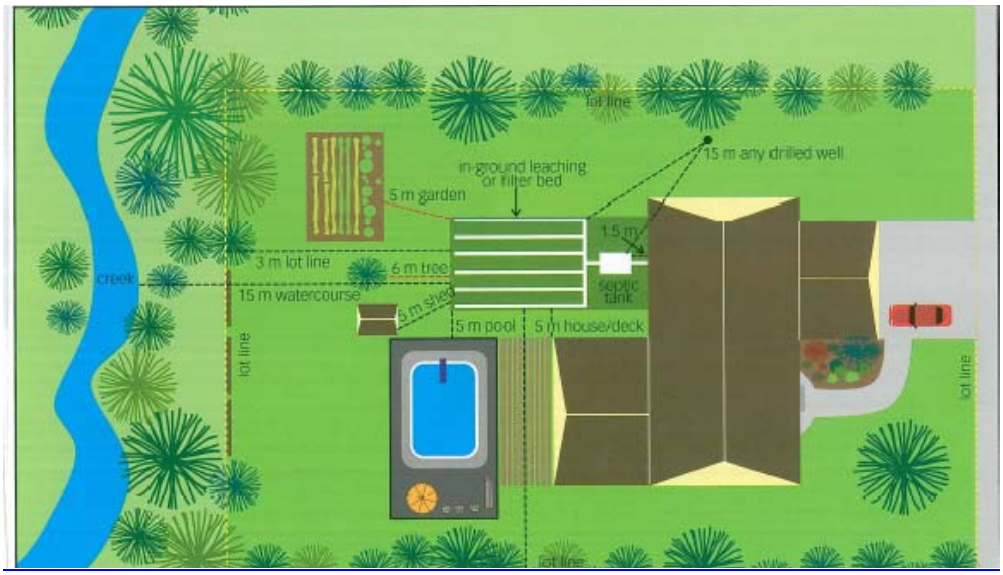
Figure 1: Minimum Separation Distances for Leaching or Filter Beds



Notes: If a leaching or filter bed is raised the separation distances are increased by twice the difference between the finished and existing grade. For instance, if the finished grade is 1.5 m higher than the existing, then 1.5 m is multiplied by 2 to equal 3 m. Three metres is then added to all the distances noted above. Municipalities can impose greater setbacks from waterbodies through their official plans and zoning by-laws.

Advanced treatment units (ATU) (also referred to as tertiary treatment systems) are generally implemented in situations where the size of the lot or site conditions do not permit the installation of a conventional septic tank and associated leaching bed or when enhanced effluent quality is sought. The main difference between these systems and conventional ones are that more treatment occurs in the tank as a result of introduction of aeration and/or filter media. Common brands include EcoFlow and Waterloo Biofilter. ATUs must be approved through the Building Materials Evaluation Committee which is under the Ministry of Municipal Affairs and Housing before they can be permitted under the Ontario Building Code. Biological Oxygen Demand (BOD) is a measure of the organic material in water or wastewater. Effluent targets for tertiary units are Biological Oxygen Demand (5 day) (BOD5) 15 mg/L, Carbonaceous Biological Oxygen Demand (5 day) (CBOD5) 10 mg/L, and suspended solids 10 mg/L (Code and Guide for Sewage Systems – 1997 Ontario Building Code).

Septic Re-inspection

Septic system re-inspection programs can be used to locate faulty and failed septic systems, and to require their repair or replacement in order to improve effluent quality. The *Ontario Building Code Act* O. Reg. 350/06 has been amended (O. Reg. 315/10), effective January 2011, to require municipalities to develop and implement mandatory septic system re-inspection programs for significant threats (i.e. areas with a vulnerability score of 10) and voluntary programs elsewhere.

Mandatory onsite sewage maintenance inspections

- Mandatory maintenance inspection program will be required where on-site sewage systems subject to the Building Code Act have been identified as a significant drinking water threat in vulnerable areas identified in the most recent Assessment Report under the Clean Water Act.
- Inspections of on-site sewage systems are to be conducted no later than:

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Deleted: Ontario Building Code¶
Small systems (those with a design flow less than or equal to 10,000 L/day) are subject to approval by the municipality under the *Ontario Building Code Act*. Small systems most frequently service rural residences.¶
There are five classes of sewage systems under the *Ontario Building Code*:¶
• Class 1 -Outhouse: chemical or composting toilet, incinerating toilet or vault privy.¶
• Class 2 - Leaching pit for grey water disposal only¶
• Class 3 -Cesspool for disposal of outhouse waste¶
• **Class 4 – Septic tank and leaching bed includes a filter bed, conventional leaching bed and chamber systems, tertiary systems (new technologies)**¶
• Class 5 – Holding tanks (minimum 9,000 liters)¶
Class 4 systems are the most common in the Thames-Sydenham Area and include the following components: a septic tank with filter (required as of January 1, 2007), a leaching bed or filter bed, and a mantle. These systems are generally installed on a **property by property basis** conforming to minimum separation distances in the *Ontario Building Code* as displayed on the following figure.¶ ... [2]

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- 5 years after the date on which the notice of approval of the assessment report is published on the Environmental Bill of Rights Registry
- Every 5 years after the most recent inspection of the sewage system.

- If an inspection indicates that a septic system is not functioning as designed, the Building Code provides the authority for inspectors to issue an order for maintenance, replacement or upgrading where necessary, to ensure they continue to protect drinking water sources.
- The regulation also authorizes principal authorities (municipalities, health units, or conservation authorities) to accept certificates from property owners as an alternative to conducting inspections under mandatory or discretionary on-site sewage system maintenance inspection programs. These certificates must be in a form approved by the Minister of Municipal Affairs and Housing and be signed by a qualified person as set out in the regulation.
- Both the mandatory and discretionary programs would be enforced by principal authorities under the Building Code. The enforcement of the maintenance inspections programs will be fully funded by the principle authority responsible for the designated areas. Under the Building Code, enforcement bodies may charge fees to recover costs of the inspection programs.

Discretionary inspection program

- "Discretionary" – pertains to the discretion of the principal authority to include additional areas under their maintenance inspection program. It does not mean that the landowner can choose whether to complete the re-inspection.
- MMAH has made the "discretionary" program flexible – it is up to the principal authority to decide where it applies and to establish timeframes for re-inspection.

  - Principal authorities have the discretion to include additional areas (beyond what is included in the mandatory requirements) within an inspection program.
  - Timeframes for re-inspection of on-site sewage system that fall under the discretionary program are flexible and do not have to follow the same timelines as the mandatory program. It is at the discretion of the principal authority to set these timeframes.

Ministry of Environment Procedure D-5-4: Technical Guideline for Individual On-Site Sewage Systems: Water Quality Impact Risk Assessments (MOE, 1996)

The MOE "Procedure D-5-4: Technical Guideline for Individual On-Site Sewage Systems: Water Quality Impact Risk Assessments" provides technical guidance for hydrogeologists to locate septic systems in rural subdivisions with five or more units. Approval under the Ontario Building Code is required for each system that would be installed in the subdivision. This guideline includes a groundwater impact assessment to address the ability of the development lands to treat septic effluent to acceptable limits. Such an assessment should be considered in conjunction with the Technical Guideline for Private Wells: Water Supply Assessment.

Ontario Water Resources Act 1990 (Government of Ontario, 1990)

The review and approval of applications for **large systems** (those with a design flow greater than 10,000 L/day) as well as small systems that cross property boundaries, rests with the MOE under the *Ontario Water Resources Act* (OWRA).

The MOE "Guide for Applying for Approval of Municipal and Private Water and Sewage Works" (August 2000) is used for a number of sewage-related facilities including large on-site sewage systems that require approval under the OWRA. The most important environmental aspect to consider as part of the approval process is the impact of the sewage works on the receiving waterbody or aquifer (groundwater). The following information is generally needed in support of an application for a large on-site sewage system:

- Expected rate of contaminants discharge to the groundwater;
- Background levels of contaminants in the groundwater;

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Deleted: Approval under the Ontario Building Code is required for each system that would be installed in the subdivision. ¶

Deleted: Review of Advanced Treatment Units or New Technologies ¶
Advanced treatment units (ATU) (also referred to as tertiary treatment systems) are generally implemented in situations where the size of the lot or site conditions do not permit the installation of a conventional septic tank and associated leaching bed or when enhanced effluent quality is sought. The main difference between these systems and conventional ones are that more treatment occurs in the tank as a result of introduction of aeration and/or filter media. Common brands include EcoFlow and Waterloo Biofilter. ATUs must be approved through the Building Materials Evaluation Committee which is under the Ministry of Municipal Affairs and Housing before they can be permitted under the Ontario Building Code. Effluent targets for these systems to be classed are tertiary units BOD5 15 mg/L, CBOD5 are 10 mg/L, and the target for suspended solids is 10 mg/L. (Code and Guide for Sewage Systems – 1997 Ontario Building Code). BOD5 is Biochemical Oxygen Demand (5-day), and CBOD is carbonaceous BOD (5 day). BOD is a measure of the organic material in water or wastewater.¶
¶

Deleted: Also, small systems that cross property boundaries are required to get an approval under the OWRA.¶

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- Estimated allowable amount of degradation based on the current and potential future uses of the groundwater in accordance with "Guideline B-7: Incorporation of the Reasonable Use Concept into MOE Groundwater Management Activities";
- Proposed measures to be taken to reduce or prevent groundwater contamination; and,
- Proposed monitoring program to assess the effectiveness of the proposed groundwater aquifer contamination control measures.

Guideline B-7 states that there are four situations where a sewage disposal system would be unsuitable:

- Where no appreciable attenuation can be provided (e.g. very short time of travel to surface water),
- Natural attenuation capacity is weak (e.g. fractured rocks),
- The subsurface is suited for better use (e.g. an esker that could be used as a water supply), and
- The consequences of failure are unacceptable (e.g. affect the only water supply for a community).

Provincial Policy Statement, 2005

The Provincial Policy Statement (PPS) is issued under Section 3 of the Planning Act, and provides direction on matters of provincial interest related to land use planning and development. Decisions affecting planning matters must be consistent with the PPS.

The PPS indicates that municipal sewage services are the preferred form of servicing for new development. Where private communal or individual on-site sewage services (e.g. septic systems) are to be used for new development, lot creation is only to be permitted if there is confirmation of sufficient reserve sewage system capacity within municipal sewage services or private communal sewage services. This capacity relates to the ability to store and treat hauled sewage.

Reserve capacity for private communal and individual on-site sewage services is considered sufficient if the hauled sewage from the development can be treated or disposed of at sites approved under the Environmental Protection Act or the Ontario Water Resources Act. Septage treatment capacity can be confirmed in a number of ways including the implementation of a municipal septage plan, and determining that there is an MOE approved facility with capacity to receive and treat septage that is accessible within the area of new development. The capacity could be provided by a municipal sewage treatment plant in the municipality, or through written agreement with another municipality or an approved private sector facility.

Conservation Authorities Act 1990

Conservation Authorities have the ability to restrict and regulate areas in and under their jurisdiction under Section 28 of the Conservation Authorities Act. Restriction or regulation of activities could include the installation of septic systems within setbacks of existing rivers, creeks, streams, watercourses and wetlands.

Ontario Clean Water Act 2006 Ontario Drinking Water Stewardship

Landowners with property near municipal wells and surface water intakes can help protect those sources of drinking water supplies. Under S.97 of the Clean Water Act, 2006 the provincial government has created the Ontario Drinking Water Stewardship Program in order to help landowners take action. It provides grants to help pay for a variety of projects that protect municipal water supplies from contamination. Grants have been available to help maintain or upgrade septic systems in the Thames-Sydenham Region through the Early Actions Program. This program was focused on eligible activities (including septic system upgrades) in eligible areas (WHPA-A, IPZ-1 and 2 year time of travel areas or preliminary WHPA-B as endorsed by councils). Although this program is nearing its completion the Conservation Authorities in the region have applied for funding through the Early Response Program. This program, if applications are successful, would target significant threats as identified in the Assessment Reports.

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Ontario Drinking Water Stewardship¶

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b) **Municipal**

Land Use Planning

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Municipalities have the ability to develop Official Plan policies related to certain aspects of septic systems and implementation of policies through provisions of Zoning By-Laws. Through these planning documents, municipalities can also impose greater setbacks from water bodies than what is required in the Ontario Building Code.

A majority of the municipalities require a minimum 30 m setback from waterbodies for development (including septic systems). The intent of this setback is to provide a buffer of undisturbed soil and vegetation along the shoreline, which will help to filter runoff, prevent soil erosion, and provide wildlife habitat.

Oxford County has existing Official Plan policies relating to the protection of groundwater and specifically, policies pertaining to septic systems. The policies of the Oxford County Official Plan state that policies related to source protection will remain in place until such time as the Official Plan is amended to incorporate approved Source Protection Plans. These policies include the prohibition of certain activities within certain vulnerable areas identified in the Official Plan. An example of this type of policy is found in S.3.2.7.2.3.1 Municipal Wellhead Protection Area Policies where "New development utilizing a private septic system and or private well within the 100-metre (328 feet) radius or the 0 – 2 year time-of –travel zone, excluding farm severances in accordance with Section 3.1.4.4 provided that the zoning by-law or other development controls prohibit the establishment of buildings or structures within this area" (County of Oxford, 2009).

c) **Other**

Canada-Ontario Environmental Farm Plan

The Environmental Farm Plan (EFP) is a program that is delivered locally through the Ontario Soil and Crop Improvement Association with expertise provided by the Ontario Ministry of Agriculture and Food. It is a voluntary educational program for farmers delivered through local workshops. Participants are provided instruction on how to progress through the risk assessment and action plan development contained in the EFP workbook. Limited funds (either a 50/50 or 30/70 cost share depending on project) are available to help address areas identified in the plan as needing improvement.

The risk assessment gives the farmer the opportunity to rate the current level of environmental concern in up to 23 different worksheets/ topic areas on the farm. The worksheet relevant to this drinking water source protection initiative is the *treatment of household waste.*

Clean Water Program

The Clean Water Program (CWP) is a rural water quality initiative that provides technical assistance and financial incentives to improve and protect water quality on private property. Local municipalities offer cost-sharing grants to qualified landowners for best management practices that improve ground and surface water quality. The grant rate for all projects is 50% and range from a maximum of $500 - $5,000, depending on the project type. Septic systems are covered at a cost-share rate of 50% to a maximum of $4,000. Within the Thames-Sydenham Region participants include Oxford, Middlesex and Perth Counties. Perth County contributes to the funding of erosion control, well upgrades and well decommissioning but not septic related upgrades with the exception of the Upper Avon watershed. Septic funding is available under this program in Oxford, Middlesex, City of London and upstream of Stratford (Upper Avon watershed). St. Mary's has participated in this program in the past, however, in 2010 did not contribute.

Report of the Great Lakes Science Advisory Board to the International Joint Commission: Groundwater in the Great Lakes Basin (February 2010)

The following recommendations were made in this IJC report that may be applicable to onsite sewage systems:

- Tracking of and communication with homeowners: Increase homeowner awareness through dissemination of information regarding the effects of septic failure (e.g., groundwater contamination) and regulatory expectations. Ideally, septic systems should be inspected as a condition for the transfer of a deed.
- Permitting alternative technologies to be better integrated into the process.

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Deleted: Ontario Drinking Water Stewardship Program¶
Landowners with property near municipal wells and surface water intakes can help protect those sources of drinking water supplies. In order to help landowners take action, the provincial government has created the Ontario Drinking Water Stewardship Program. It provides grants to help pay for a variety of projects that protect municipal water supplies from contamination. Grants have been available to help maintain or upgrade septic systems in the Thames-Sydenham Region through the Early Actions Program. This program was focused on eligible activities (including septic system upgrades) in eligible areas (WHPA-A, IPZ-1 and 2 year time of travel areas or preliminary WHPA-B as endorsed by councils). Although this program is nearing its completion the Conservation Authorities in the region have applied for funding through the Early Response Program. This program, if applications are successful, would target significant threats as identified in the Assessment Reports.¶
¶

Deleted: Currently the following municipalities participate in this program: Oxford County, Middlesex County and Perth County. Septics are eligible in Oxford, Middlesex, City of London, and upstream of Stratford (Upper Avon watershed) but not in St. Marys or Perth County with the exception of the Upper Avon watershed. Though Perth County contributes to Erosion Control, Well Upgrades and Well ... [3]

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- Requirement for and tracking of maintenance contracts:
- Funding and support from local governments and homeowners: Regulatory codes should be backed by appropriate department budgets

Programs in the United States

In Pinellas County, Florida a portion of the County's potable water supply comes from groundwater sources. In 1985 Growth Management legislation required all counties and municipalities in the State of Florida to protect well fields (Pinellas County, 1990). Pinellas County, in 1990, adopted a wellhead protection ordinance to protect and safeguard the health, safety and welfare of residents in the county by regulating certain substances that may impair the present and future water supply (Pinellas County, 1990). As part of this ordinance, all new non-residential discharges, new non-residential activities, and installations are prohibited subject to conditions in the zone of protection (the total area contributing water to a well under a given set of circumstances). New single-family residential septic tanks are exempt from this article, provided they meet the minimum criteria of one unit per two acres. Prohibited Uses include land divisions resulting in high density (>1 unit/acre) septic systems within Zone 1, the 6- month time-of-travel zone. (NOTE: this is typically within about 1000 feet of the public water supply well unless granted a special exception).

In Lane County Oregon, the Eugene Water and Electric Board established a Source Water Protection program to evaluate and mitigate water quality uses. The concept of the program was to balance watershed health and human use over time and implement actions that maintain water quality. Surface water drinking protection zones (DWP) were identified prohibiting storage, use or production of hazardous materials (County Planning, 2009). Existing businesses and new developments within the DWP are required to prepare and submit a Safe Drinking Water Plan (SDWP) (County Planning, 2009). Owners of septic systems within the SDWP area are required to have their septic system inspected within one year of the ordinances effective date and every five years thereafter. Water protection strategies were also identified for restricting development in the floodplain. One strategy was to prohibit the construction of new conventional septic systems in the regulated floodplain. As a result, aerobic septic systems, which pose a lesser threat to water quality, are required for new developments in the floodplain as part of public heath protection standards.

5. *Gaps in Existing Legislation, Policies and Programs*

The following table provides the gaps that exist in the legislation, policies and programs that are currently associated with on-site sewage storage and treatment systems.

Table 2: Existing Gaps in the Legislation, Policies and Programs

Level of Government	Legislation/Policies/Programs	Gaps
Provincial	Ontario Building Code Act 1992: O. Reg. 315/10 Ontario Building Code	• Ontario Building Code does not have requirements for bacteria, nitrate and phosphorus control (other parameters are used as indicators). It is focused on oxygen demand and suspended solids. Nitrate and phosphorus both have implications for enriching our surface water bodies, causing eutrophication. Eutrophied waters have more algae blooms which could produce toxins, interfere with drinking water treatment processes, and cause taste and odour issues. Nitrate is a direct drinking water concern in both surface water and groundwater as well.

Deleted: Local municipalities are offering cost-sharing grants to qualified landowners for best management practices that improve ground and surface water quality. The grant rate for all projects is 50% and range from a maximum of $500 - $5,000, depending on the project type. Septic systems are covered at a cost-share rate of 50% to a maximum of $4,000. ¶

Deleted: Land Use Planning¶
Municipalities can impose greater setbacks from water bodies through their official plans and zoning by-laws than what is required in the Ontario Building Code and have the ability to develop Official Plan policies related to certain aspects of septic systems and implementation of policies through provisions of the Zoning By-Law.¶
A majority of the municipalities require a minimum 30 m setback from waterbodies for development (including septic systems). The intent of the water setback is to provide a buffer of undisturbed soil and vegetation along the shoreline, which will help to filter runoff, prevent soil erosion, and provide wildlife habitat. In some cases a there are also situations where even greater water setbacks are required to protect sensitive lake trout populations in what are called at-capacity lake trout lakes. ¶
Oxford County has existing Official Plan policies relating to the protection of groundwater and specifically, policies pertaining to septic systems. The policies of the Oxford County Official Plan state that policies related to source protection will remain in place until such time as the Plan is amended to incorporate approved Source Protection Plans. These policies include the prohibition of certain activities within certain vulnerable areas identified in the Official Plan. Listed within the prohibited uses and activities is "New development utilizing a private septic system and, or private well within the 100-metre (328 feet) radius or the 0 – 2 year time-of –travel zone, excluding farm severances in accordance with Section 3.1.4.4 provided that the zoning by-law or other development controls prohibit the establishment of buildings or structures within this area".¶ ... [4]

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Deleted: including but not limited to the following: commercial or industrial septic tank disposal systems are prohibited

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Level of Government	Legislation/Policies/Programs	Gaps
		• The Ontario Building Code re-inspection program is mandatory for septics identified as significant threats only.
	MOE Procedure D-5-4: Technical Guidance for Individual On-Site Sewage System: Water Quality Impact Risk Assessments (MOE, 1996)	• This procedure does not account for pathogens • Nitrogen is used as an indicator for the transportation of pathogens
	Ontario Water Resources Act 1990 (Government of Ontario, 1990)	• Although large systems require a Certificate of Approval, in most cases monitoring results are not required to be reported to the MOE on a regular basis • Data collected from monitoring remains onsite until inspections occur.
Municipal	Land Use Planning	• Few programs in Ontario are in place to ensure ongoing maintenance and proper function of septic systems
Other		• There is no technical solution to manage or remove pathogens as a drinking water threat • This has been identified by MOE and they are working to address this through their programs • The other chemicals of concern related to septic systems are not treated by the systems in any way and if remain suspended or dissolved in the water would be discharged into the septic bed.

6. Policy Considerations

- *Clean Water Act* Part IV tools which include interim risk management plans, risk management plans, prohibition, and restricted land uses cannot be used for sewage systems, which include onsite sewage treatment and storage systems. The *Ontario Water Resources Act* or the *Building Code Act* provides the authority for source protection plan policies to address both existing and future threats. In addition, a policy could rely on land use planning for future occurrences.
- It is the "discharge from the system" that poses a risk to drinking water (as set out in the tables of Drinking Water Threats, which are part of the Director's Technical Rules: Assessment Report.) The septic system itself is a risk management measure, because when it is functioning properly, it reduces or eliminates pathogens in the discharge from septic systems. Therefore, an inspection to find out if a septic system is functioning may be all that is needed to determine whether it "ceases to be" a significant drinking water threat. The standards for the design, installation and proper maintenance of a septic system are set out in Ontario's Building Code. (MOE bulletin, Jan. 2011)
- The density of septic systems is not a factor as prescribed by MOE in source water protection drinking water threats. In an identified drinking water issue, density could be a consideration in source

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<#>The Ontario Building Code re-inspection program is mandatory for septics identified as significant threats only. ¶
<#>The *Ontario Building Code* does not have requirements for bacteria, nitrate and phosphorus control (other parameters are used as indicators). It is focused on oxygen demand and suspended solids. Nitrate and phosphorus both have implications for enriching our surface water bodies, causing eutrophication. Eutrophied waters have more algae blooms which could produce toxins, interfere with drinking water treatment processes, and cause taste and odour issues. Nitrate is a direct drinking water concern in both surface water and groundwater as well.¶
<#>The other chemicals of concern related to septic systems are not treated by the systems in any way and if remain suspended or dissolved in the water would be discharged into the septic bed.¶

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protection policies. However, the Thames-Sydenham Region has not identified any issues contributing areas in the Assessment Report for the first round of policy development. Evolving and changing environmental planning standards take density into account to varying degrees.

- The Planning Act has evolved and new standards are in place. With new development a holding tank is generally the last option.
- The Oxford Public Health Department feels that generally 'new' properly functioning systems are not of concern; it is the old septic systems that are of concern. It sees the septic system maintenance program as being instrumental in implementation of the SPPs and wishes to see emphasis placed on this.
- From Oxford County's experience, there are concerns associated with tertiary systems as they tend to fail more frequently. The advantage of the tertiary system is that they require less space, however, where possible, traditional systems are the preferred option, as tertiary systems are high maintenance. They require a service agreement which means there is an annual cost associated with the system. Also the peat in these systems must be changed regularly which is an additional cost. Some people are inclined to avoid proper maintenance because of the cost.
- For large septic systems, the OWRA, considers impact on receiving water body or groundwater assessed as part of approval process. Certificate of Approvals are issued with conditions under Section 53 of OWRA. If prohibited in Source Protection Plan, applications are not processed by MOE.
- If the SPC drafts a policy relating to a septic system covered under OWRA (large system), the policy can only address matters which would be within the legal limitation of that Certificate of Approval (C of A)/prescribed instrument. As C of A's do not set out inspection timelines, or have the legal ability to do so, the SPC can not require that the C of A include provisions surrounding inspection frequency. However, the ministry has an internal program policy to enforce compliance. MOE field staff (i.e., "Environmental Officers") from the Ministry's local District Offices typically undertake annual inspections at a subset of sewage facilities located within their geographic area of responsibility. These inspections would cover a range of sewage facilities; including smaller holding tanks and septic systems with a capacity greater than 10,000 L/day (less than 10,000 L/day are covered by the Building Code). MOE field staff may also carry out site visits/inspections of sewage facilities in response to complaints or reports of non-compliance, spills or other environmental concerns. Where issues of non-compliance with regulatory requirements (OWRA and associated regulations and any requirements associated with the terms and conditions of the site's C of A) are identified, Environmental Officers have the authority to require the facility owner/operator to take action to bring the facility into compliance. (personal communication, MOE liaison, Jan, 2011)

7. *Proposed policy ideas*

For discussion purposes, this section of the report provides examples of policy ideas that could be applicable to on-site sewage treatment and storage systems. It is not an exhaustive list. The examples are categorized by the size of septic systems and types of policy tools that can be used to meet the source protection plan objectives.

Threat:	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.
Sub- Threat	Sewage System or sewage works- septic system
Circumstance	• Septic system is subject to the OWRA (enforced by MOE) for new or existing sewage works over 10,000 L/day. • Septic systems with less than 10,000 L/day where the components of the system are not all located on the same parcel of land are also subject to the OWRA. • Septic system with holding tank subject to OWRA. • In a WHPA with a vulnerability score of 10, where the release of Acetone, Chloride, Dichlorobenzene, Nitrogen and Sodium, or Pathogens from the

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septic systems represent a significant threat.

Policy Tool	Policy ideas
Education and Outreach	• Education programs for large systems users on the Best Management Practices for on-site sewage maintenance, and impacts of system on drinking water. • 2 target audiences to include both system owners and system users • Focus on significant threats and look into possibilities of distributing as part of Certificate of Approvals package (may not get to all users this way). • Include other information within package not identified as significant threats (i.e. keeping pharmaceutical inputs out of septic) • Co-ordinate drinking water message with existing septic information as distributed by health units, municipalities and MOE. Address moderate and low threats with area-wide messaging.
Incentive Programs	• Should cost-share programs cover large septic systems?
Land Use Planning	• Land use restrictions for future occurrences • Review minimum lot size requirements in vulnerable areas through zoning. Direct municipalities to require a larger minimum lot size for all new development on private servicing. • OP policies addressing new severances in vulnerable areas. • Direct municipality(ies) to require that all new development must be on municipal services.
Prescribed Instruments	• Prohibit new large systems in areas with a vulnerability score of 10, and applications for Certificate of Approval will not be processed by MOE under the OWRA. • Require an amendment to an existing Certificate of Approval with either policy details about how the activity should be managed or outcomes to be achieved such as: • Separation distances • Operation and Maintenance standards • Reduction in effluent concentrations • Information management (local municipal data base) • Monitoring and Sampling • Advancing technologies • Development of System Management Plan • Groundwater investigation • Reed bed, Constructed or engineered wetlands • Proper waste disposal following leak or spill • Restrict to certain site conditions: lot size, soil depth and type, proximity to surface • (Consult MOE prior to using this tool)

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	• More general statement that measures must be taken to ensure activity ceases to be a significant drinking water threat. • Require approval agency to compare records with vulnerable area mapping. • Require spills protocol for holding tanks.
S. 26 p.1 Other-Specify Action (Municipal Operations/ Infrastructure)	• Municipalities should consider extension of sewers in areas with a vulnerability score of 10 as first priority. • Support the implement an area-wide septic re-inspection program that targets specific locations, with the option of expansion to the entire area, to ensure on-going maintenance and proper function of systems. • Include an on-site wastewater treatment system inspection in annual municipal infrastructure inspections • Direct the municipality(ies) to establish a by-law to require hooking up to municipal services, where feasible.

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

Sub- Threat Sewage System or sewage works- septic system

Circumstance

- Septic system is regulated under the Ontario Building Code for new or existing sewage works less than 10,000 L/day.
- Septic system with holding tank regulated under the Ontario Building Code
- In a WHPA with a vulnerability score of 10 where the release of pathogens from the septic systems represents a significant threat.

Policy Tool	Policy ideas
Education and Outreach	• Education programs for septic landowners on the Best Management Practices for on-site sewage maintenance, and impacts of systems on drinking water. • Focus on significant threats and tie in with septic re-inspection program as one-on-one education. • Can include other information within package not identified as significant threats (i.e. keeping chemical and pharmaceutical inputs out of septic) • Co-ordinate drinking water message with existing septic information as distributed by health units, and/or municipalities. Address moderate and low threats with broader vulnerable area-wide messaging.
Incentive Programs	• Existing cost-share program for landowners to upgrade or replace failing septic systems are supported and encouraged to continue. • Encourage all municipalities where significant threats may occur to support Clean Water Program or other incentive programs. • Encourage province to continue with Ontario Drinking Water Stewardship Program septic funding for problems indentified under re-inspection program. Limitations may be set for time frames (e.g. five years) or for first inspections. • Suggest cost-share programs also fund connecting into existing sewer infrastructure and decommissioning septics.

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Land Use Planning	• Where septic systems exist in an area with a vulnerability score of 10 and where there is municipal sewage service available to the property, the municipality should pass a bylaw requiring the decommissioning of the septic system and require hookup to the municipal service. (Perhaps better included under other tools?) • Recommend OP policies addressing severances in vulnerable areas. Review minimum lot size requirements and update in accordance with provincial guidance. Or consider a more specific requirement that in WHPAs and IPZ with a vulnerability score of 10, the municipality shall not allow the creation of new unserviced lots under the size of 1 acre. • In areas with a vulnerability score of 10 and an existing lot of record exists the approval agency for septic systems should consider options including advanced treatment systems. A geo-technical study could be asked for to ensure that the proposed design option, lot size etc. is appropriate.
Prescribed Instruments	• Require mandatory re-inspection program for significant threats similar to that which is required through Ontario Building Code. Encourage re-inspection programs in moderate and low threat areas. • Suggest a targeting of areas where septic failures within vulnerable areas where septic systems are a significant threat and where there are known septic failures. Further emphasis on re-inspection should be placed on areas where older systems are more prevalent. • Inspection programs should be aware that while a septic system may have been in compliance with separation distances when built, encroachment may result in the system being out of compliance when inspected. These situations will need to be rectified so that systems which may be significant threats are in compliance with applicable standards.
S. 26 p.1 Other-Specify Action (Municipal Operations/ Infrastructure)	• Municipalities should consider extension of sewers in areas with a vulnerability score of 10 as first priority. This would be best included as a strategic action policy. It is intended that these areas should be identified as priorities and that this additional priority should be considered by senior levels of government in providing infrastructure grants.

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Appendix A –Significant Threat Tables

System	Threat	Type	# of Significant Threat Locations	WHPA	Vulnera Sco
Birr	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage	Pathogen	11	A	10
Dorchester	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage	Pathogen	1	A	10
Dorchester	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage	Pathogen	54	B	10
City of London-Fanshawe	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage	Pathogen	2	A	10
City of London-Hyde Park	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage	Pathogen	1	A	10
City of London-Hyde Park	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage	Pathogen	1	B	10
Melrose	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage	Pathogen	13	A	10
Melrose	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage	Pathogen	8	B	10
Thorndale	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage	Pathogen	5	A	10
Beachville	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage	Pathogen	6	A	10
Embro	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage	Pathogen	19	A	10
Hickson	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage	Pathogen	9	A	10
Ingersoll	The establishment, operation or	Pathogen	11	A,B	10

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Appendix A-significant threat tables

System	Threat	Type	# of Significant Threat Locations	WHPA	Vulnera Sco
	maintenance of a system that collects, stores, transmits, treats or disposes of sewage				
Ingersoll	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage	Pathogen	3	A	
Lakeside	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage	Pathogen	5	A	10
Mt. Elgin	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage	Pathogen	12	A	10
Tavistock	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage	Pathogen	1	A	10
Thamesford	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage	Pathogen	3	A,B	10
Woodstock-urban	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage	Pathogen	2	A	
Woodstock-rural	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage	Pathogen	186	A,B	10
St. Mary's	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage	Pathogen	5		
Highgate	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage		25	A	10
Ridgetown	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage		5	A	10
	Totals		388		

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Appendix B-Policy Examples

The policy examples presented in appendix B are placeholder policies based on the policy ideas noted above. They are presented in this document to facilitate policy discussion at the upcoming SPC meeting and subsequent review and comment by the Municipal Source Protection Policy Advisory Committee. Note: All policies related to monitoring and reporting shall occur in such a manner that it can be summarized on a municipality and vulnerable area basis.

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Policy Number	2-1 (2-11 in previous version)
Sub- Threat(s)	sewage system or sewage works – septic system sewage system or sewage works – septic system with holding tank
Circumstance	septic system under 10,000 L/day and holding tanks regulated by *Ontario Building Code* and systems over 10, 000 L/day and holding tanks subject to the OWRA
Vulnerable Area	WHPA-A and B with a vulnerability score of 10
Risk	Significant, moderate and low
Body Responsible for Implementing	Municipal Watershed partnership with Conservation Authorities to lead. The implementation of this policy in this manner builds on the strengths and efficiencies of the Conservation Authorities as a partnership of the municipalities in the watershed.
Threat Status	Existing, Expanding and Future
Land Use	All
Legal Effect	Conform (Significant) Strategic (Moderate/Low)
Policy Tool	Education and Outreach
Policy Idea	Enhance existing education and outreach programs, or if they do not exist, develop new programs to promote Best Management Practices to protect drinking water sources from the risks of on-site sewage storage and treatment systems including: • An education package shall be produced providing best management practices for septic system and holding tank maintenance that considers threats to drinking water sources. This information shall be distributed to all septic systems identified as being a significant threat through the re-inspection program for small septic systems and through the Certificate of Approvals process for septic systems subject to the OWRA. • Co-ordination with existing area-wide septic awareness outreach programs to include source water protection messaging. • Consideration of extending education to include information regarding drinking water threats not prescribed under the CWA (e.g. pharmaceuticals). Efforts to be coordinated with other agencies with existing education programs related to septic systems. • The implementation of this policy through the existing municipal partnership of the Conservation Authority will allow these programs to be built on existing watershed education and outreach in an efficient manner. The municipalities will be encouraged to be involved in the program development and delivery depending on their individual needs; however the program (s) should be developed in a consistent manner across the region.
Implementation schedule	Initiate upon approval of SPP for the significant threats and initiate for moderate and low threats within 2 years of SPP approval date. (Within 2 years of the approval of the Source Protection Plan)

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Appendix B – policy examples

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Policy Number	2-1 (2-11 in previous version)
Monitoring Policy	The implementing body shall report to the SPA the number of educational programs offered, the number of educational packages distributed through the re-inspection of small systems and Certificate of Approval process for large systems as well as a description of the actions/measures they have taken to implement education/outreach in the previous year. Measures of tracking the uptake of the target audience will also be included in this report.

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Policy Number	2-2 (2-9 and 2-10 in previous version)
Sub- Threat(s)	sewage system or sewage works – septic system
Circumstance	Septic system under 10,000 L/day and holding tanks regulated by *Ontario Building Code* and systems over 10, 000 L/day and holding tanks subject to the OWRA
Vulnerable Area	WHPA-A and B with a vulnerability score of 10
Risk	Significant
Body Responsible for Implementing	Municipality, Conservation Authority, MOE
Threat Status	Existing and Future
Land Use	All
Legal Effect	Conform (Municipality, CA); Strategic (MOE)
Policy Tool	Incentives
Policy Idea	Municipalities, where septic systems present significant threats to drinking water sources, shall be required to support the Clean Water Program or similar incentive programs to subsidize the cost to septic owners where upgrades have been identified as mandatory to reduce significant threats. Existing cost-share programs for septic owners (i.e. Clean Water Program, Ontario Drinking Water Stewardship Program, and Environmental Farm Plan), shall be supported and encouraged to continue. Funding shall be encouraged to be available for faulty septic systems identified through Phase 1 of re-inspection programs. Programs shall be encouraged to give priority to actions proposed in vulnerable areas and which will manage significant drinking water threats The Ontario Drinking Water Stewardship program shall be encouraged to share the funding of the incentive programs equally with the municipalities. Incentive funding shall be required until the time when all significant threat septic system Phase 1 inspections have occurred.
Implementation schedule	Upon the effective date of the Source Protection Plan and for a period of 5 years following or until all significant threats identified in the Assessment Report have undergone a septic re-inspection. To be included in municipal budgets in the first calendar following the approval of the Source Protection Plan.
Monitoring Policy	Completed annual reports sent to either the CA (by municipalities and MOE) or SPA (Conservation Authorities) will include reporting on the number of septic grant applications within vulnerable areas, the number of eligible grant applications and the number of grants distributed.

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Policy Number	2-3a (2-5 in previous version)
Sub- Threat(s)	sewage system or sewage works – septic system sewage system or sewage works – septic system with holding tank
Circumstance	septic system under 10,000 L/day and holding tanks regulated by *Ontario Building Code*
Vulnerable Area	WHPA-A and B with a vulnerability score of 10
Risk	Significant
Body Responsible for Implementing	Municipality
Threat Status	Future
Land Use	All
Legal Effect	Conform
Policy Tool	Land Use Planning
Policy Idea	Official Plan policies and bylaws shall address new severances in vulnerable areas to ensure septic systems and holding tanks do not become a significant threat. Minimum lot size requirements shall be updated in accordance with accepted standards.
Implementation schedule	From the effective date of the Source Protection Plan, all planning decisions shall be in conformity. Updates shall be initiated in all Official Plans within 6 months of Source Protection Plan approval with the goal to be completed within 2 years of the Source Protection Plan approval date. Zoning bylaws shall be updated with the goal to be completed within 3 years of the Source Protection Plan approval date.
Monitoring Policy	Municipalities shall report to CA on new policies incorporated in Official Plans and any new by-laws relevant to source water protection. All municipalities must report even if it is to indicate that no changes were required. Where no changes were required, the report is to describe how the existing OP and bylaws meet the requirements of this policy.

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Policy Number	2-3b (2-6 in previous version)
Sub- Threat(s)	sewage system or sewage works – septic system sewage system or sewage works – septic system with holding tank
Circumstance	Septic system under 10,000 L/day regulated by *Ontario Building Code* and septic system over 10,000 L/day subject to OWRA; including holding tanks.
Vulnerable Area	WHPA-A and B with a vulnerability score of 10
Risk	Significant
Body Responsible for Implementing	Municipality
Threat Status	Future
Land Use	All
Legal Effect	Conform
Policy Tool	Land Use Planning
Policy Idea	OP policies shall discourage the installation of new septic systems and holding tanks within areas with a vulnerability score of 10. They shall do this through minimum lot sizes, and permitted land uses.
Implementation schedule	From the effective date of the Source Protection Plan, all planning decisions shall be in conformity. Updates shall be initiated in all Official Plans within 6 months of Source Protection Plan approval with the goal to be completed within 2 years of the Source Protection Plan approval date. Zoning bylaws shall be updated with the goal to be completed within 3 years of the Source Protection Plan approval date.
Monitoring Policy	Municipality shall report to the CA on the changes in OP implemented or planned regarding septic systems and holding tanks. Municipalities shall also report annually on the number of permits issued for new septic systems within vulnerable areas.

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Policy Number	2-4 (2-2 within previous version)
Sub- Threat(s)	sewage system or sewage works – septic system sewage system or sewage works – septic system with holding tank
Circumstance	septic system over 10,000 L/day subject to OWRA and septic system with holding tank subject to OWRA
Vulnerable Area	WHPA-A and B with a vulnerability score of 10
Risk	Significant
Body Responsible for Implementing	MOE – through OWRA
Threat Status	Existing, Expanding and Future
Land Use	All
Legal Effect	Conform
Policy Tool	Prescribed instrument – Ontario Water Resources Act
Policy Idea	All Certificate of Approvals issued shall include management details to ensure the activity never becomes a significant threat. Certificate of Approvals for septic systems shall be discouraged for proposed septic systems within WHPA–A or B with a vulnerability score of 10.
Implementation schedule	Immediately upon approval of the SPP
Monitoring Policy	MOE to report to CA in a manner acceptable to the SPA. The report shall include: • The number of existing septic C of As within vulnerable areas which are significant drinking water threats; • Amendments that were made to existing C of As to reduce risk presented by these significant threats • The number of existing C of As that have been identified through re-inspection as being properly functioning and those required to make upgrades • The number inspected and those followed up on an annual basis • The frequency of inspections This report shall be submitted in 2 years from the approval of the Source Protection Plan and annually from then on.

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Policy Number	2-5 (2-3 in previous version)
Sub- Threat(s)	sewage system or sewage works – septic system sewage system or sewage works – septic system with holding tank
Circumstance	septic system under 10,000 L/day and holding tanks regulated by *Ontario Building Code*
Vulnerable Area	WHPA-A and B with a vulnerability score of 10
Risk	Significant
Body Responsible for Implementing	Issuer of approval of septic systems under the building code (generally Municipality or Health Unit)
Threat Status	Existing
Land Use	All
Legal Effect	Conform
Policy Tool	S. 26 p.1 Other-Specify Action
Policy Idea	The *Ontario Building Code* requires onsite septic inspections every five years for existing systems that are identified as significant threats. The first round of inspections will be phased in over a 5 year period. Priority shall be given to inspect the oldest systems and those closest to the well head first with a priority on areas where failures are most suspected. Where the re-inspection program locates faulty and failed septic systems, the inspector shall require the maintenance, repair or replacement of the system to ensure that it functions as designed and meets applicable design standards thus ensure that the threat ceases to be significant.
Implementation schedule	As per OBC (within 5 years)
Monitoring Policy	Municipalities shall provide an annual report to the CA on the results of the septic system inspection program. This report will include: • The number of inspections • The number of failures and remediation notices • The number of system pump-outs and compliance orders issued The report shall be in a format acceptable to the SPA. The first report to be submitted within 2 years of approval of the Source Protection Plan and annually thereafter.

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Policy Number	2-6 (2-4 in previous version)
Sub- Threat(s)	sewage system or sewage works – septic system sewage system or sewage works – septic system with holding tank
Circumstance	septic system under 10,000 L/day and holding tanks regulated by *Ontario Building Code*
Vulnerable Area	WHPAs with a vulnerability score of 6-8, IPZs with a vulnerability score of 5.6 - 9.0
Risk	Moderate and Low
Body Responsible for Implementing	Municipality, Health Unit
Threat Status	Existing
Land Use	All land uses
Legal Effect	Strategic
Policy Tool	S.26 p.1 Other-Specify Action
Policy Idea	Discretionary septic re-inspection programs as outlined in the *Ontario Building Code* are encouraged to include moderate and low threat septic systems. However, inspection of significant threats should remain the first priority. Discretionary re-inspection programs shall be encouraged to give priority to low and moderate threats within WHPA and IPZ and then HVA. Priority shall also be encouraged in those areas where septic failures are known to occur and where older septic systems are more predominant.
Implementation schedule	As soon as possible following the implementation of the mandatory re-inspection program (as determined by the local approval agency). Where mandatory re-inspection is not required the municipality encouraged to initiate the program within 5 years of the approval of the Source Protection Plan. It is anticipated that this policy would be given more weight in subsequent Source Protection Plan with legal affect increased to having regard for.
Monitoring Policy	Where discretionary inspection programs are implemented, an annual report is to be submitted to the CA identifying the results of the septic system inspection program, including the number of inspections, the number of failures and remediation notices, the number of system pump-outs and compliance orders issued. The report could be combined with that which is required for mandatory inspection programs. Municipalities not initiating a discretionary inspection program shall report to the CA on their intent and considerations related to the program.

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Policy Number	2-7 (2-7 in previous version)
Sub- Threat(s)	sewage system or sewage works – septic system sewage system or sewage works – septic system with holding tank
Circumstance	Septic system under 10,000 L/ and septic system holding tanks day regulated by *Ontario Building Code*
Vulnerable Area	WHPA-A and B with a vulnerability score of 10
Risk	Significant
Body Responsible for Implementing	Municipality
Threat Status	Existing and Future
Land Use	All
Legal Effect	Conform
Policy Tool	S.26 p.1 Other-Specify Action
Policy Idea	Where municipal sewage services exist in areas with a vulnerability score of 10, the development of municipal by-laws shall be considered to decommission existing septic systems or holding tanks and require mandatory hook-up to the municipal service.
Implementation schedule	N/A
Monitoring Policy	The municipality shall report to the CA annually on the number of septic systems which could be hooked up and the number which have been hooked up.

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Policy Number	2-8 (2-8 in previous version)
Sub- Threat(s)	sewage system or sewage works – septic system sewage system or sewage works – septic system with holding tank
Circumstance	Septic system under 10,000 L/day and holding tanks regulated by *Ontario Building Code* and systems over 10, 000 L/day and holding tanks subject to the OWRA
Vulnerable Area	WHPA-A and B with a vulnerability score of 10
Risk	Significant
Body Responsible for Implementing	Municipality
Threat Status	Existing and Future
Land Use	All
Legal Effect	Conform
Policy Tool	S.26 p.1 Other-Specify Action
Policy Idea	When planning extension of sewer services, municipalities shall consider areas with a vulnerability score of 10 as first priority. Where the costs are beyond the capabilities of the municipality and landowner the senior levels of government should be encouraged to provide funding to offset the cost to the rate payer through an infrastructure funding programs.
Implementation schedule	Immediately upon effective date of SPP
Monitoring Policy	Municipalities to report annually to the CA any new sewer lines installed or planned within the vulnerable areas.

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Policy Number	2-9 (2-1 in previous version)
Sub- Threat(s)	Sewage system or sewage works – septic system sewage system or sewage works – septic system with holding tank
Circumstance	septic system over 10,000 L/day and septic system with holding tank subject to OWRA
Vulnerable Area	WHPA-A and B with a vulnerability score of 10
Risk	Significant
Body Responsible for Implementing	MOE – through OWRA
Threat Status	Existing, Expanding, Future
Land Use	All
Legal Effect	Strategic
Policy Tool	S.26 p.1 Other – specify action
Policy Idea	In order to ensure that large systems are adequately managed the MOE shall consider implementing a review of the Certificate of Approval within the areas where these systems may be significant drinking water threats. The development of a re-inspection program for the inspection of these systems shall also be considered. The re-inspection program should determine that the systems function as designed, they meet applicable design standards and that the systems are being properly maintained. MOE shall consider as a first priority the re-inspection of septic systems within areas with a vulnerability score of 10 and areas where known septic failures have been identified. Areas where older systems which have not recently been inspected shall also be considered as priorities within the re-inspection program. Systems found to be deficient shall be encouraged to undertake improvements to be in compliance. New or expanding systems shall be considered the subject of re-inspection every 5 years from the issuance of the C of A.
Implementation schedule	The re-inspection program shall be established within a 2 year period from the approval of the source protection plan with a completion of the inspection of systems in these areas within 5 years of the initiation of the re-inspection program.
Monitoring Policy	MOE to report to CA in a manner acceptable to the SPA. The report shall include: • The number of existing septic C of As within vulnerable areas which are significant drinking water threats • Amendments made to existing C of A to reduce risk presented by significant threat • Number of existing C of As that have been identified through re-inspection as being properly functioning and those required to make upgrades • The number inspected and those followed up on an annual basis • The frequency of inspections

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Policy Number	2-9 (2-1 in previous version)
	This report shall be submitted in 2 years from the approval of the Source Protection Plan and annually from then on.

Deleted: the number of existing septic C of As within vulnerable areas which are significant drinking water threats, amendments that were made to existing C of As to reduce risk presented by these significant threat. The report shall also include the number of existing C of As that have been identified through re-inspection as being properly functioning and those required to make upgrades; the number inspected and those followed-up on an annual basis. The MOE shall report on the frequency of inspections in accordance with the specify action policy of the SPP.

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Appendix C-Definitions

Drinking Water Threat: An activity or condition that adversely affects or has the potential to adversely affect the quality or quantity of any water that is or may be used as a source of drinking water and includes an activity or condition that is prescribed by the regulation as a drinking water threat (Clean Water Act, 2006[1]).

Intake Protection Zone (IPZ): Refers to a surface water intake protection zone, which is an area related to a surface water intake and within which it is desirable to regulate or monitor drinking water threats (General Regulation 287/07[2]). Intake Protection Zones are further delineated as:

- Intake Protection Zone 1 (IPZ-1), which is the immediate zone of 1 kilometer radius for a Great Lakes intake, drawn around the intake, until it touches the shore where it extends to a certain setback into the land;
- Intake Protection Zone 2 (IPZ-2) is delineated based on a 2 hour travel time to the intake under tributaries and creeks that drain into the lake within a 2 hour time of travel to the intake.

Large Systems: Systems with a design flow greater than 10 000 L/day. These systems are subject to approval by the Ministry of Environment.

Moderate and Low Drinking Water Threats: Generally refer to prescribed activities deemed moderate or low drinking water threats based on the risk score.

Small Systems: Systems with a design flow of less than or equal to 10 000 L/day. These systems are subject to approval under the Ontario Building Code.

Significant Threat: A significant drinking water threat means a drinking water threat that according to a risk assessment poses or has the potential to pose a significant risk (Clean Water Act, 2006[1])

Threat: Refers to an activity (land use) that poses a threat to drinking water quality or quantity.

Vulnerability Score: A score assigned to a vulnerable area with a higher score indicating a higher vulnerability.

Wellhead Protection Area (WHPA): Refers to an area that is related to a wellhead and within which it is desirable to regulate or monitor drinking water threats (General Regulation 297/07[2]). Wellhead Protection Zones can be further delineated into:

- WHPA-A: 100 m fixed radius around each well;
- WHPA-B: 2 year time of travel to the well, excluding the area of WHPA-A
- WHPA-C: 2 to 5 year time of travel to the well;
- WHPA-D: 5 to 25 year time of travel to the well;
- WHPA-E: delineated if it is shown that a surface water system influence effectively bypass the aquifer's protection; and,
- WHPA-F: delineated if the well is subject to issues, which originate from outside the other parts of the Wellhead Protection Area.

[1] Clean Water Act, 2006 (http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_06c22_e.htm)

[2] Clean Water Act Ontario Regulation 287/07-General (http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_070287_e.htm)

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Pathogens Acetone Chloride dichlorobenzene-1,4 (para)	Nitrogen Total phosphorus Sodium

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Ontario Building Code

Small systems (those with a design flow less than or equal to 10,000 L/day) are subject to approval by the municipality under the *Ontario Building Code Act*. Small systems most frequently service rural residences.

There are five classes of sewage systems under the *Ontario Building Code*:

• Class 1 -Outhouse: chemical or composting toilet, incinerating toilet or vault privy.

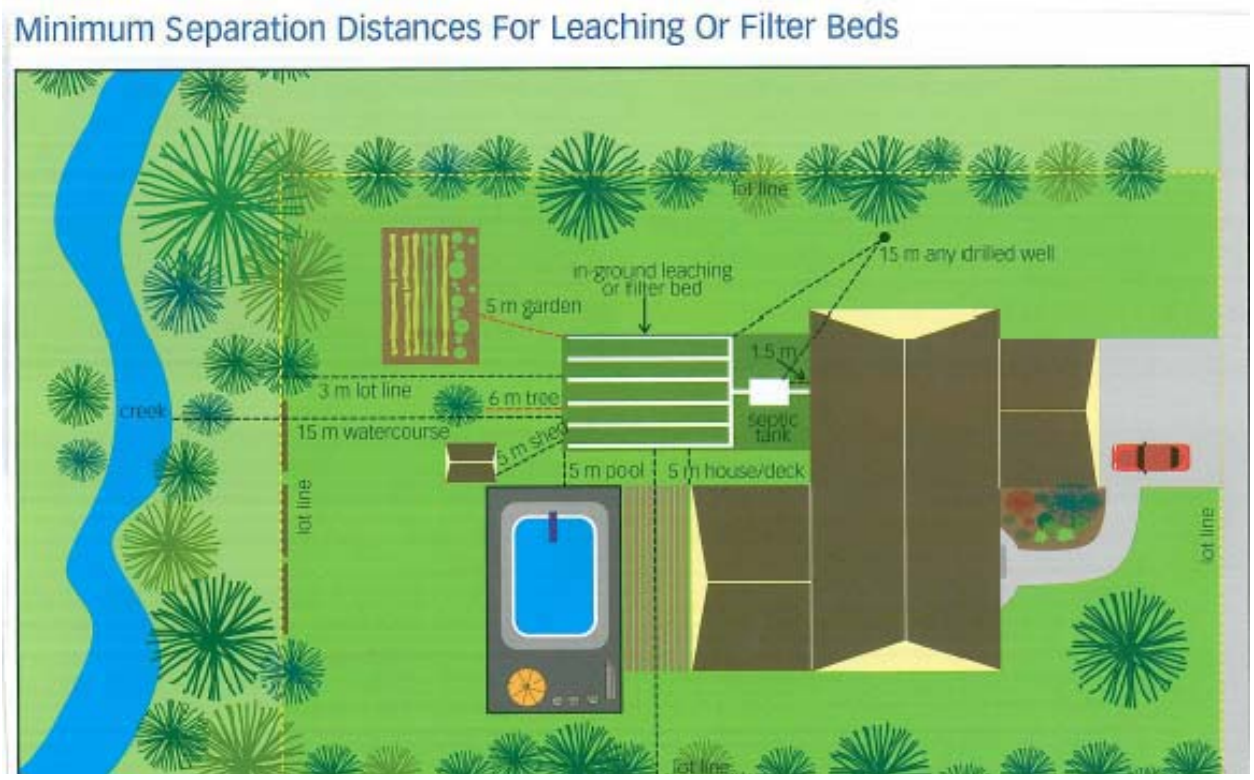
• Class 2 - Leaching pit for grey water disposal only

• Class 3 -Cesspool for disposal of outhouse waste

• **Class 4 – Septic tank and leaching bed includes a filter bed, conventional leaching bed and chamber systems, tertiary systems (new technologies)**

• Class 5 – Holding tanks (minimum 9,000 liters)

Class 4 systems are the most common in the Thames-Sydenham Area and include the following components: a septic tank with filter (required as of January 1, 2007), a leaching bed or filter bed, and a mantle. These systems are generally installed on a **property by property basis** conforming to minimum separation distances in the *Ontario Building Code* as displayed on the following figure.



Notes: If a leaching or filter bed is raised the separation distances are increased by twice the difference between the finished and existing grade. For instance, if the finished grade is 1.5 m higher than the existing,

then 1.5 m is multiplied by 2 to equal 3 m. Three metres is then added to all the distances noted above. Municipalities can impose greater setbacks from waterbodies through their official plans and zoning by-laws.

O. Reg 315/10 Building Code

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Currently the following municipalities participate in this program: Oxford County, Middlesex County and Perth County. Septics are eligible in Oxford, Middlesex, City of London, and upstream of Stratford (Upper Avon watershed) but not in St. Marys or Perth County with the exception of the Upper Avon watershed. Though Perth County contributes to Erosion Control, Well Upgrades and Well Decommissioning, septic related upgrades are not eligible within the County.

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Land Use Planning

Municipalities can impose greater setbacks from water bodies through their official plans and zoning by□laws than what is required in the Ontario Building Code and have the ability to develop Official Plan policies related to certain aspects of septic systems and implementation of policies through provisions of the Zoning By-Law.

A majority of the municipalities require a minimum 30 m setback from waterbodies for development (including septic systems). The intent of the water setback is to provide a buffer of undisturbed soil and vegetation along the shoreline, which will help to filter runoff, prevent soil erosion, and provide wildlife habitat. In some cases a there are also situations where even greater water setbacks are required to protect sensitive lake trout populations in what are called at-capacity lake trout lakes.

Oxford County has existing Official Plan policies relating to the protection of groundwater and specifically, policies pertaining to septic systems. The policies of the Oxford County Official Plan state that policies related to source protection will remain in place until such time as the Plan is amended to incorporate approved Source Protection Plans. These policies include the prohibition of certain activities within certain vulnerable areas identified in the Official Plan. Listed within the prohibited uses and activities is “New development utilizing a private septic system and. or private well within the 100-metre (328 feet) radius or the 0 – 2 year time-of –travel zone, excluding farm severances in accordance with Section 3.1.4.4 provided that the zoning by-law or other development controls prohibit the establishment of buildings or structures within this area”.

Septic System Re-inspection Programs

Septic system re□inspection programs can be used to locate faulty and failed septic systems, and to require their repair or replacement in order to improve effluent quality.

The Ontario Building Code Act has been amended, effective January 2011, to require municipalities to develop and implement mandatory septic system re□inspection programs for significant threats (i.e areas with a vulnerability score of 10) and voluntary programs elsewhere.

Mandatory onsite sewage maintenance inspections

Mandatory maintenance inspection program will be required where on-site sewage systems subject to the Building Code Act have been identified as a significant drinking water threat in vulnerable areas identified in the most recent Assessment Report under the Clean Water Act.

Inspections of on-site sewage systems are to be conducted no later than:

5 years after the date on which the notice of approval of the assessment report is published on the Environmental Bill of Rights Registry

Every 5 years after the most recent inspection of the sewage system.

If an inspection indicates that a septic system is not functioning as designed, the Building Code provides the authority for inspectors to issue an order for maintenance, replacement or upgrading where necessary, to ensure they continue to protect drinking water sources.

The regulation also authorizes principal authorities (municipalities, health units, or conservation authorities) to accept certificates from property owners as an alternative to conducting inspections under mandatory or discretionary on-site sewage system maintenance inspection programs. These certificates must be in a form approved by the Minister of Municipal Affairs and Housing and be signed by a qualified person as set out in the regulation.

Both the mandatory and discretionary programs would be enforced by principal authorities under the Building Code. The enforcement of the maintenance inspections programs will be fully funded by the principle authority responsible for the designated areas. Under the Building Code, enforcement bodies may charge fees to recover costs of the inspection programs.

Discretionary inspection program

“Discretionary” – pertains to the discretion of the principal authority to include additional areas under their maintenance inspection program. It does not mean that the landowner can choose whether to complete the re-inspection.

MMAH has made the “discretionary” program flexible – it is up to the principal authority to decide where it applies and to establish timeframes for re-inspection.

Principal authorities have the discretion to include additional areas (beyond what is included in the mandatory requirements) within an inspection program.

Timeframes for re-inspection of on-site sewage system that fall under the discretionary program are flexible and do not have to follow the same timelines as the mandatory program. It is at the discretion of the principal authority to set these timeframes.

Other Regional Examples (United States)