Thames – Sydenham and Region
Source Protection Authority
Meeting Agenda

Source Protection Authority	Upper Thames River
Meeting Date:	Tuesday, November 27, 2018
Meeting Time:	**9:30 a.m.** - Prior to the Start of the UTRCA Board of Directors
Meeting Location:	Watershed Conservation Centre Boardroom

Agenda

1. Adoption of the Agenda

2. Approval of Minutes from the previous meeting

   a) April 24, 2018

3. Business for Approval

   a) Striking Committee Composition
   (J.Allain)(Report attached)

   b) Section 36 Workplan
   (J.Allain)(Report attached)

4. Business for Information

   a) Source Protection Governance
   (J.Allain)(Report attached)

5. Adjournment

Ian Wilcox
General Manager

Upper Thames River Source Protection Authority Meeting
Watershed Conservation Centre Boardroom
London, Ontario
Tuesday, November 27, 2018

Members Present:	M.Blackie	N.Manning
	M.Blosh	S.McCall-Hanlon
	R.Chowen	A.Murray
	A.Hopkins	B.Petrie
	T.Jackson	M.Ryan
	S.Levin	J.Salter
		G.Way
Regrets:	H.McDermid	T.Birtch
Solicitor:	G.Inglis	
Staff:	J.Allain	A.Shivas
	T.Annett	M.Snowsell
	C.Harrington	C.Tasker
	T.Hollingsworth	M.Viglianti
	M.Knox	I.Wilcox
	C.Saracino	K.Winfield

1. Adoption of Agenda

The Chair requested a motion to approve the agenda.

B.Petrie moved – seconded by G.Way:-

"RESOLVED that the members approve the Agenda as presented."

CARRIED.

2. Approval of Previous Minutes

The Chair requested approval of the April 24, 2018 minutes.

T.Jackson moved – A.Hopkins seconded:-

"RESOLVED that the minutes of the Upper Thames River Source Protection Authority dated April 24, 2018 be approved as presented."

CARRIED.

3. Business for Approval

(a) Striking Committee Composition
(Report attached)

J.Allain presented her report.

S.Levin moved – seconded by M.Ryan:-

"RESOLVED that the Source Protection Authority approve the recommendations as presented in the report."

CARRIED.

(b) Section 36 Workplan
(Report attached)

J.Allain presented her report and highlighted sections of the workplan. In regards to the Wind Turbine discussion from the previous meeting, St. Claire Township Council passed a resolution that some private wells be elevated. The project has since been cancelled, but no updates have been received about the Township rescinding the resolution. Wind turbine construction on private wells has been identified as an item the Source Protection Committee would like to consider looking at as a local threat.

S.Levin moved – seconded by T.Jackson:-

"RESOLVED that the Source Protection Authority approve the recommendations as presented in the report."

CARRIED.

4. Business for Information

(a) Source Protection Governance
(Report attached)

S.McCall-Hanlon moved – seconded by M.Ryan:-

"RESOLVED that the Source Protection Authority accept the report as presented."

CARRIED.

5. Adjournment

There being no further business to discuss the meeting was adjourned at 9:47 a.m. on a motion by M.Ryan.

I.Wilcox
General Manager
/mv

Report to	Upper Thames River Source Protection Authority		
Cc	SP Management Committee	**Date**	November, 2018
From	Jenna Allain, Source Protection Coordinator		
Re:	Striking Committee Composition		

Purpose

To review proposed changes to the composition of the Drinking Water Source Protection Striking Committee.

Background

The *Clean Water Act, 2006* requires that the Source Protection Authority for each Source Protection Region, form, and maintain, a Source Protection Committee. In the Thames-Sydenham and Region, the Upper Thames River, Lower Thames Valley and St. Clair Region Source Protection Authorities share this role. A Striking Committee was established with two Board representatives from each Source Protection Authority to carry out the responsibilities related to the formation and maintenance of the Source Protection Committee. The Source Protection Authorities' General Managers and the Program Coordinator provide support to the Striking Committee.

Discussion

In June 2018, the membership terms for seven Source Protection Committee members expired. This prompted the Striking Committee to initiate a selection and appointment process in the spring of 2018 to fill these positions. It had been two years since the last Source Protection Committee members had been appointed, and the Striking Committee had met. Through the selection process, some challenges were realized. These challenges are outlined below:

- Coordinating Striking Committee meetings with 6 board members on 3 different boards, and 3 General Managers, all with busy schedules, is challenging.
- Striking Committee members are distributed over a large geographic region, making in-person meetings impractical.
- The infrequency of Striking Committee meetings means members are not regularly engaged in Source Protection Committee business, and are not familiar with Source Protection Committee members.

Given the challenges outlined above, consideration has been given to reducing the size of the Striking Committee to ease the process of selecting, appointing, and maintaining the membership of the Source Protection Committee. Staff recommend that the Striking Committee be comprised of one Board representative from each Source Protection Authority. The Source Protection Authorities' General Managers and Program Coordinator would continue to provide support. A reduced membership of the Striking Committee will make coordinating meetings easier while maintaining representation from each Source Protection Authority. Despite the geographic

challenges, a smaller membership may also make in-person meetings more practical, and may allow for Striking Committee members to be more engaged.

Recommendation

That the Upper Thames River Source Protection Authority approve the proposed changes to the composition of the Drinking Water Source Protection Striking Committee.

Report to	Upper Thames River Source Protection Authority		
Cc	SP Management Committee	**Date**	November, 2018
From	Jenna Allain, Source Protection Coordinator		
Re:	Section 36 Workplan		

Purpose

To review and approved the proposed Thames-Sydenham and Region Section 36 Workplan for submission to the Ministry of the Environment, Conservation and Parks.

Background

Section 36 (S. 36) of the *Clean Water Act* is intended to ensure that assessment reports (ARs) and source protection plans (SPPs) undergo a comprehensive review and update on a periodic basis.

An order was issued under Section 36 of the Clean Water Act by the Minister of the Environment, Conservation and Parks (MECP) on September 17th, 2015. The Section 36 order issued by the Minister specified that the lead Source Protection Authority (SPA) prepare and submit a workplan to the MECP by November 30th, 2018. The order required that the workplan include detailed steps for the comprehensive review and update of the Assessment Reports and Source Protection Plan. The order also required the workplan to be developed in consultation with non-lead SPA's, the Thames-Sydenham and Region Source Protection Committee (SPC), participating municipalities of the Source Protection Authorities, and the MECP.

Discussion

The proposed S. 36 Workplan is attached to this report. Section 3 of the report which begins on page 31 provides a helpful summary table of all of the proposed updates to the Source Protection Plan and Assessment Reports included in the workplan.

Recommendation

That the Upper Thames River Source Protection Authority endorse the draft Section 36 Workplan for submission to the Ministry of the Environment, Conservation and Parks by November 30th, 2018.

Thames-Sydenham and Region Source Protection Region

Workplan
for Comprehensive Review and Update of the Thames-Sydenham and Region Source Protection Plan

Per Clean Water Act (2006) - Section 36

November 30, 2018

Prepared By

Jenna Allain, Source Protection Coordinator

Upper Thames River Conservation Authority

1424 Clarke Rd., London, Ontario, N5V 5B9

Executive Summary

The Section 36 (S. 36) of the Clean Water Act, 2006 is intended to ensure that assessment reports (ARs) and source protection plans (SPPs) undergo a comprehensive review and update on a periodic basis.

An order was issued under S. 36 of the Clean Water Act to the Upper Thames River Source Protection Authority (SPA) by the Minister of the Environment and Climate Change on September 17th, 2015. The Upper Thames River SPA is the lead SPA for the Thames-Sydenham and Region Source Protection Region (SPR), which also includes the St. Clair Region SPA and Lower Thames Valley SPA.

The S. 36 order issued by the Minister specified that the lead SPA prepare and submit a workplan to the Ministry of the Environment, Conservation and Parks (MECP) by November 30, 2018. The order required that the workplan include detailed steps for the comprehensive review and update of the AR and SPP, and be developed in consultation with the Thames-Sydenham and Region Source Protection Committee (SPC), participating municipalities of the source protection authorities, and the MECP.

The Thames-Sydenham and Region SPR includes 31 municipal drinking water systems, 6 of which are surface water based including Great Lakes sources, and 25 are groundwater based. The Region also includes eight First Nations, seven of which have reserves. First Nations communities in the Thames-Sydenham and Region rely on both groundwater and surface water sources of drinking water. The Chippewas of Kettle and Stony Point First Nation is the only First Nation with an intake included in the assessment report.

The Thames-Sydenham and Region SPP was approved by the Minister on September 17, 2015, with an effective date of December 31, 2015. SPP policy implementation is well underway, with 173 policies being implemented by different implementing bodies. The first annual progress report was prepared and submitted to MECP on May 1, 2018. SPPs are developed under Ontario's Clean Water Act. This legislation was passed in response to Justice O'Conner's inquiry and recommendations stemming out of the water contamination tragedy that occurred in Walkerton, Ontario, in May 2000.

This document provides a workplan proposal for a comprehensive review of, and update to, the Thames-Sydenham and Region SPP and the related AR, in accordance with the S. 36 Order. A preliminary analysis was conducted based on the factors specified in the December 2016 MECP bulletin, also utilizing guidance provided in the MECP support information bulletins of October 2017, March 2018, and July 2018 (updated August 2018).

The required consultation on the workplan was undertaken per the S. 36 order. This included meetings with member municipalities, MECP, the SPC, the SPAs, the SPA boards, and the SPR management committee, to discuss the proposed workplan and receive feedback.

The proposed review and any necessary updates to the ARs and SPP will represent current and future status of the local scientific information and policy implementation, as it relates to ensuring the protection of municipal drinking water sources per the *Clean Water Act, 2006*. The proposed reviews and updates contained in this workplan are summarized in the **Table** below:

Update No.	Description of Proposed Review and Update	Applicable Document	Implementer of Relevant SPP Policy
1	Update references to the nitrate issue for the Wallaceburg intake to indicate that it is no longer an issue and remove Policy 4.13 of the SPP.	AR and SPP	Conservation Authority, MECP, Municipality of Chatham-Kent
2	Determine if a nitrate Issue Contributing Area (ICA) should be delineated for the Thornton well field within the Woodstock Drinking Water System. This will include assessing if current policies in the plan will be appropriate or if modifications to the policies will be necessary.	AR for mapping and threats assessment; SPP for policy changes	Oxford County, Provincial Ministries, Risk Management Officials.
3	Updating drinking water system information in the Assessment Reports to reflect changes to operating authorities for several systems in the Thames-Sydenham and Region.	AR tables	N/A – No applicable policy
4	Updating the WHPA delineations and vulnerability scores for the Beachville, Ingersoll, Mount Elgin, and Woodstock (Tabor wellfield) Drinking Water Systems using the Tier 3 Water Budget Models. This will include assessing if current policies in the plan will be appropriate in the revised WHPAs or if modifications to the policies will be necessary.	AR for mapping and threats assessment; SPP for policy changes	Oxford County, Provincial Ministries, Risk Management Officials.
5	Review managed land and livestock density calculations for the Thornton wellfield within the Woodstock Drinking Water System for accuracy. This will include assessing if current policies in the plan will be appropriate or if modifications to the policies will be necessary.	AR for mapping and threats assessment; SPP for policy changes	Oxford County, Provincial Ministries, Risk Management Officials.
6	Updating the wellhead protection area (WHPA) mapping and vulnerability scores for a new groundwater well at the existing Shakespeare	AR for mapping; SPP for policy	Municipality of Perth East, Provincial Ministries, Risk

Update No.	Description of Proposed Review and Update	Applicable Document	Implementer of Relevant SPP Policy
	Drinking Water System, including assessing if current policies in the plan will be appropriate in the new WHPA or if modifications to the policies will be necessary.	changes	Management Official
7	Updating the WHPA delineation for the Ridgetown Drinking Water System to include 4 new wells and remove 3. Determine if current policies in the plan will be appropriate for the adjusted WHPA, or if modifications to the policies will be necessary.	AR for mapping and threats assessment; SPP for policy changes	Municipality of Chatham-Kent, Provincial Ministries, Risk Management Official
8	New wellhead protection area mapping, vulnerability scores, and threats assessment for private well water systems in St. Clair Township as requested through council resolution. This will include assessing whether the wells meet the criteria for inclusion in the AR/SPP as set out in O. Reg. 287/07, a threats assessment, and if current policies in the plan will be appropriate in the new WHPAs or if modifications to the policies will be necessary.	AR for mapping and threats assessment; SPP for policy changes	St. Clair Township, Provincial Ministries, Risk Management Official
9	Review agricultural application policies to consider the intent of using the Risk Management Tool to align with Nutrient Management Act prohibitions.	SPP	Risk Management Officials
10	Review the impacts of the specific approaches taken to implement agricultural policies in the Town of St. Marys WHPA, and, if necessary, review agricultural policies to consider whether separate policies should be written for the Town of St. Marys to reflect local RMO decisions based on the sensitivity of the vulnerable area.	SPP	Town of St. Marys, Risk Management Officials
11	Consider change in timeline of Part IV, S. 58 Risk Management Plan Policies	SPP	Risk Management Officials
12	Assess the new prescribed threat per Clean Water Act O. Reg. 287/07 - liquid hydrocarbon pipelines and update the AR and SPP to identify areas where pipelines would be a significant, moderate and low threat. Policies will need to be included to address this threat in these new areas. Where “local threat” is used to describe pipelines it needs to be replaced with	AR for assessment of pipeline risk; SPP for any policies	Municipalities, Provincial Ministries, Risk Management Officials

Update No.	Description of Proposed Review and Update	Applicable Document	Implementer of Relevant SPP Policy
	"prescribed threat," in both the assessment report and source protection plan		
13	Assess and make appropriate updates to align with the March 2017 Technical Rule changes including the Tables of Drinking Water Threats that are mandatory to apply: • Reflect that above grade fuel storage poses a significant risk in IPZs and WHPA-E scoring 9 or higher; • Update the significant groundwater recharge area vulnerability scoring. • Remove any reference to "dairy producer" with respect to the threat circumstances for the application and storage of NASM.	AR for wording, mapping and threats assessment; SPP for any policies	Municipalities, Provincial Ministries, Risk Management Officials
14	Further assess and make appropriate updates to align with the March 2017 Technical Rule changes including the Tables of Drinking Water Threats that are enabling provisions. • Great Lakes/connecting channel surface water intake vulnerability assessment of surface water drinking water systems that are shallow, near-shore, or more vulnerable to contamination in the Thames-Sydenham and Region. • Reducing setbacks from watercourses based on local conditions. • Aligning policy wording with updated 'short names' in the Tables of Contents of the Tables of Drinking Water threats.	AR for wording, mapping and threats assessment; SPP for any policies	Municipalities, Provincial Ministries, Risk Management Officials
15	Evaluation of climate change impacts for all drinking water systems within the TSR region based on the pending guidance document and assessment tool.	AR and SPP	Potentially all implementers
16	Removal, addition and/or adjustment of transport pathways identified within vulnerable areas as a result of new information. A reassessment of drinking water threats for these areas is included in this update.	AR for wording, mapping and threats assessment;	All implementers
17	Review of information relevant to the local impacts of wind turbine and wind turbine	AR for any threats	Municipalities, Provincial Ministries,

Update No.	Description of Proposed Review and Update	Applicable Document	Implementer of Relevant SPP Policy
	construction on private well water quality for possible inclusion of a new local threat.	updates; SPP for any policies	Risk Management Officials

The timeline for completion of all proposed reviews, updates and submission of Section 36 updates to MECP is October 2020. The Thames-Sydenham and Region Source Protection Committee with support from Upper Thames River SPA, St. Clair Region SPA, and Lower Thames Valley SPA staff, and in consultation with MECP, applicable implementing bodies and municipalities, will complete the proposed updates. Consultation may also take place with persons engaged in significant drinking water threat activities, if the policy changes affect persons engaged in existing significant threat activities.

Acknowledgments

The Upper Thames River SPA acknowledges the efforts and support of the St. Clair Region SPA, Lower Thames Valley SPA, Thames-Sydenham and Region SPC, MECP, and municipalities in the preparation of this workplan. The MECP is also thanked for their continued support through capacity funding under the Ontario Drinking Water Source Protection program.

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1. Introduction

Ontario's *Clean Water Act, 2006* helps protect sources of municipal drinking water systems in order to protect human health and the environment. The Act was created in response to the "Report of the Walkerton Inquiry - by Justice Dennis R. O'Connor", which was released in 2002. The inquiry was called in response to E. coli bacteria contamination of the municipal drinking water system in Walkerton, Ontario in May of 2000. This contamination was the cause of seven deaths and thousands of residents becoming ill.

Justice O'Connor emphasized that protecting drinking water at the source is the first step in a multi-barrier approach and an important part of ensuring the health of people, ecosystems, and economies. "We should never be complacent about drinking water safety" - Justice Dennis R. O'Connor. Under the *Clean Water Act*, local source protection plans (SPPs) were developed containing policies to protect the quality and quantity of our municipal drinking water sources.

Assessment reports (ARs) and SPPs must be comprehensively reviewed and updated per section 36 (S. 36) of the *Clean Water Act* in order to ensure sustained protection of the municipal drinking water sources and for the SPPs to stay current. At the time of SPP approval, a S. 36 order was issued to the Upper Thames River Source Protection Authority (SPA) from the Minister of the Ministry of the Environment and Climate Change (now known as the Ministry of Conservation and Parks (MECP)). The Upper Thames River SPA is the lead SPA for the Thames-Sydenham and Region Source Protection Region (SPR), which also includes the St. Clair Region SPA and Lower Thames Valley SPA.

The S. 36 order issued by the Minister specified that the lead SPA prepare and submit a workplan to the MECP by November 30, 2018. The order required that the workplan include detailed steps for the review and update of the Source Protection Plan (SPP) and be developed in consultation with the Thames-Sydenham and Region Source Protection Committee (SPC), participating municipalities of the source protection authorities, and the MECP. The order also required that the information gained from implementing the SPP, and from the first annual progress report (2017), be taken into consideration in preparation of the workplan.

In addition to the above, the S. 36 order required that the following be considered in the workplan:

- Opportunities to achieve Great Lakes Targets
- Results of monitoring policies, programs, and nutrient loading data
- Effectiveness of education and outreach policies at reducing nutrient loading to Lake Erie.

1.1 Thames-Sydenham and Region Source Protection Region

The Thames-Sydenham and Region is made up of the watersheds of Lower Thames Valley, the St. Clair Region, and the Upper Thames River. Map 1-1 depicts the watersheds of the Thames-Sydenham and Region.

The Lower Thames Valley Source Protection Area includes those lands draining into the Thames River from the community of Delaware to Lake St. Clair. It also includes the lands that drain into Lake Erie lying south of the lower Thames River watershed and a small triangle of land north of the mouth of the Thames draining directly into Lake St. Clair. This area includes most of the municipality of Chatham-Kent, the western portion of Elgin County, part of southwestern Middlesex County (including some of the City of London) and a portion of eastern Essex County. The Lower Thames Valley Source Protection Area also includes four First Nation reserves; the Chippewas of the Thames First Nation, Delaware Nation, Munsee-Delaware Nation and Oneida Nation of the Thames. Caldwell First Nation is also established in the area between Leamington and Rondeau Bay; however they currently do not have a reserve.

The residents of the Lower Thames Valley Source Protection Area receive most of their municipal drinking water from Lake Erie through 3 intakes. The communities of Ridgetown and Highgate receive their drinking water from municipal wells. Some parts of the watershed within Essex County receive their municipal drinking water from intakes in Lake St. Clair. Although the drinking water for much of the population of the Lower Thames is supplied from municipal drinking water sources, some residents rely on water from private wells.

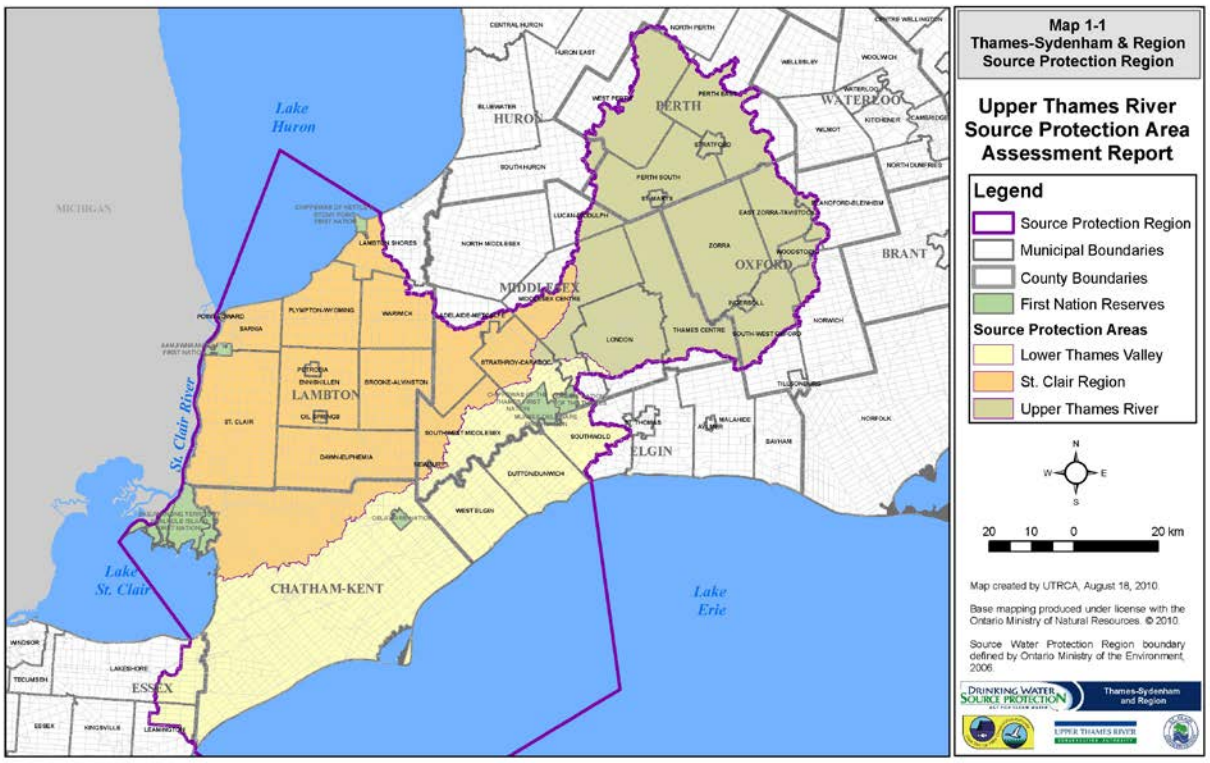
The St. Clair Region Source Protection Area includes the Sydenham River drainage basin and several smaller watersheds that drain to Lake Huron, the St. Clair River or Lake St. Clair. The Source Protection Area covers over 4,100 square kilometres and includes most of the County of Lambton, part of the Municipality of Chatham-Kent and part of the County of Middlesex with a total watershed population of 167,000. The area also includes three First Nation reserves; Chippewas of Kettle and Stoney Point, Aamjiwnaang, and Walpole Island First Nations.

The residents of the St. Clair Region Source Protection Area receive most of their municipal drinking water from Lake Huron and the St. Clair River through 3 intakes. Parts of Middlesex County receive their municipally supplied drinking water from an intake in Lake Huron outside the Source Protection Region. There are no longer any communities in the St. Clair Region that receive drinking water from municipal wells. Although the drinking water for much of the population of the St. Clair Region is supplied from municipal drinking water sources, some residents rely on water from private wells.

The Upper Thames River Source Protection Area includes all areas draining into the Thames River above the community of Delaware. This covers large parts of Oxford, Perth and Middlesex Counties including most of the City of London. Very small portions of Huron and Elgin Counties

also drain into the upper Thames River. The area covers approximately 3,423 square kilometres with a total watershed population (2001) of about 472,000. There are no First Nations in the Upper Thames River Source Protection Area.

The residents of the Upper Thames River Source Protection Area receive their municipal drinking water from Lake Huron or Erie through 2 intakes in other Source Protection Areas. Many of the communities in Perth and Oxford Counties rely on groundwater for municipally supplied drinking water. Although the drinking water for much of the population of the Upper Thames is supplied from municipal drinking water sources, many rural residents rely on water from private wells.



1.2 Source Protection Plan Implementation - Highlights

The Thames-Sydenham and Region SPP was approved by the Minister on September 17, 2015, with an effective date of December 31, 2015. SPP policy implementation is well underway, with 173 policies being implemented by different implementing bodies. The experience gained from implementing the SPP to date is considered in this workplan.

1.3 Annual Progress Report - Highlights

The first annual progress report was prepared and submitted to Ministry of the Environment, Conservation and Parks (MECP) on May 1, 2018. Overall, significant progress in the Thames-Sydenham and Region has been made since the Source Protection Plan came into effect. During the first two years of plan implementation, 84% of the policies that address significant drinking water threats have been implemented or are in progress. Of the 1,054 existing threats that were enumerated at the time of Plan approval, over half are considered addressed because the Plan policies have been implemented, or have been confirmed to no longer exist.

All 27 municipalities with source protection implementation responsibilities have incorporated source protection considerations into municipal business processes. Municipalities have also made considerable progress in the implementation of mandatory septic inspections, with 85% of the first mandatory inspections now complete. Local Risk Management Officials have made substantial efforts to get out and confirm the presence or absence of significant drinking water threats, and negotiate Risk Management Plans where required. Information from the first annual progress report on SPP implementation is considered in this workplan.

2. Workplan Development

The Upper Thames River SPA has followed the guidance in the MECP provided bulletins to develop the S. 36 workplan. In December 2016, the MECP produced a bulletin, "Overview of Requirements for Assessment Report and Source Protection Plan Amendments under S. 36 of the Clean Water Act". The bulletin indicates that the S. 36 updates are intended to "build in new information that advances the understanding of risks to sources of drinking water and incorporates local growth". The three supplemental information bulletins listed below were also used to develop this S. 36 workplan.

- Municipal Engagement (October 2017)
- Prohibition of Agricultural Policies Outside of WHPA-A or IPZ-1 (March 2018)
- Updates to Director Technical Rules and Tables of Drinking Water Threats (July 2018, updated August 2018).

The three main components of the S. 36 process that lead to workplan submission by source protection authorities are:

- Preliminary analysis including review factors and considerations
- Consultation for stakeholder engagement
- Workplan.

The workplan development process undertaken by the Upper Thames River SPA is described in detail below.

2.1 Preliminary Analysis

A preliminary analysis of the AR and SPP was conducted considering the nine factors specified in the December 2016 MECP bulletin:

- Results of environmental monitoring programs
- Growth and infrastructure changes
- Council resolutions
- Policy effectiveness
- Implementation challenges
- Technical rule changes
- Impacts of prohibition policies on the agricultural community
- Specific directions in some source protection plan approval letters
- Other local considerations.

The evaluation of each of these factors is considered below.

2.1.1 A: Results of Environmental Monitoring Programs

Through consultation on this workplan, municipalities were asked to provide information on water quality changes that could necessitate including new drinking water issues in the workplan. Based on the information provided by municipalities, no new drinking water issues were identified.

Drinking water issues previously identified in the Thames-Sydenham Region are summarized below, along with a discussion about the monitoring results for these issues, and the need for changes (if any) to these issues.

Microcystin-LR – Wheatley and Chatham/South Kent

Algal blooms of blue-green algae (cyanobacteria) have been increasing in size and severity in recent years in the western basin of Lake Erie. Annual blooms have resulted in the closure of many Lake Erie beaches, as well as the shut-down of drinking water facilities on Pelee Island, and in Ohio. Microcystin-LR, a neurotoxin, is released when blue-green algae cells break down. If left intact the algae is able to be removed, with the microcystin remaining contained in the cells. Water treatment processes have been adjusted to reduce the likelihood that cells would be ruptured before being removed from the water during a bloom event. All water treatment plants for Lake Erie systems in the Thames-Sydenham and Region have the treatment processes in place to make these necessary adjustments during a bloom event to provide safe drinking water. Additionally, monitoring data shows that total microcystin levels are rarely above the detection limit (0.1 µg/L) and well below the maximum allowable concentration (MAC) for drinking water of 1.5 µg/L. However, there continue to be frequent bloom events that cause raw water concentrations to be much higher than this, and require water operators to adjust their treatment processes.

At the time that the Assessment Reports were completed, microcystin monitoring data did not satisfy the issues evaluation process required to declare microcystin an issue, and delineate an issue contributing area, under the *Clean Water Act* Technical Rule 114. However, Microcystin-LR was identified as an issue for the **Wheatley** and **Chatham/South Kent** intakes under Technical Rule 115.1, and recommendations were made to continue monitoring efforts.

Considerable progress has been made in the last few years with respect to the microcystin issue. The Great Lakes Water Quality Agreement (GLWQA) recognized that phosphorous is the limiting nutrient for cyanobacteria growth and, as such, contributes to the microcystin issue. Similarly, the Province of Ontario signed the Western Basin of Lake Erie Collaborative Agreement which also recognizes phosphorous as the most important factor in controlling cyanobacteria blooms. Both of these Agreements have set phosphorous reduction targets of 40%. Eight watersheds in the Lake Erie basin have been identified as priority watersheds for phosphorus reduction, including the Thames River watershed. In February 2018, the Canadian

and Ontario governments released a joint Lake Erie Action Plan (LEAP) that contains 120 actions that need to be taken to achieve this target reduction.

The Conservation Authorities of the Thames-Sydenham and Region (TSR) are committed to working with senior levels of government and other partners to implement relevant actions to reduce phosphorous in our region. The primary mechanism through which the TSR has been working on the microcystin issue is through the Thames River Clear Water Revival (TRCWR). This collaborative includes federal, provincial, Conservation Authority, First Nation and City of London representation, with an overall goal of improving the health of the Thames River and a short term goal of creating a Water Management Plan for the river. The TSR will also continue to consider all available data for the Wheatley and Chatham/South Kent intakes to determine whether microcystin-LR continues to be an issue for these water treatment plants.

Nitrates - Wallaceburg

At the time that the Assessment Reports were completed, there were two recorded exceedances of the half maximum allowable concentration (MAC) of nitrates for the Wallaceburg intake located in the Municipality of Chatham-Kent. Additionally, nitrates had been identified by the water treatment plant manager as being a significant concern, due to increasing occurrences of events producing elevated nitrate levels in raw drinking water at the intake. The treatment system is not able to remove nitrates from the source water. As a result, nitrates were identified as an issue in the Assessment Reports.

Work proceeded to identify the Issue Contributing Area (ICA). Modelling was undertaken to assess nitrate contributions from the subwatersheds of the Sydenham River. The Sydenham River flows by the intake when flow reverses north up the Chenal Ecarte past the intake. It was determined that all subwatersheds contribute relatively equally to the issue. However, there was considerable uncertainty as to the relative contribution of areas connected to the watercourses by transport pathways. Further, through analysis of additional data, it was found that nitrates in the Sydenham River may be levelling off and possibly decreasing. A longer period of record was recommended to determine if nitrates should continue to be considered an issue for Wallaceburg. No ICA was therefore delineated, and Policy 4.13 was included in the Thames-Sydenham and Region Source Protection Plan recommending continued and improved monitoring to allow future assessment of the nitrate issue and delineation of the ICA (if warranted).

In October 2017, the Thames-Sydenham and Region Source Protection Committee (SPC) reviewed nitrate monitoring data collected between 2013 and 2017 for the Wallaceburg issue. The results of the monitoring were inconclusive and did not yield enough information to confirm the issue and delineate an ICA. The SPC therefore directed staff to continue monitoring the issue and expand the monitoring locations. TSR staff reached out to water treatment plant

staff and managers for the Wallaceburg intake regarding increasing the monitoring locations and frequency of sampling. Water treatment plant staff indicated to the TSR that they no longer had any significant concerns regarding nitrate concentrations at the intake. TSR staff have therefore identified the nitrate issue for Wallaceburg and the corresponding Source Protection Plan policy for removal from the Assessment Report and Source Protection Plan (Update 1).

Nitrates – Woodstock

Nitrate occurs in the Thornton wellfield and Tabor wellfield of the Woodstock Drinking Water System. Nitrate levels are routinely above half of the treated water maximum allowable concentration (MAC) of 10 mg/L. Anthropogenic activities associated with agriculture (fertilizer and agricultural source material), residential development (septic effluent) and wetlands (decaying organic material) are known sources of nitrate in groundwater. Nitrates were therefore identified as an issue for both the Thornton and Tabor wellfields. An analysis of the nitrate levels in some of the wells for the Thornton wellfield revealed that nitrate levels may be leveling off or decreasing. Additional monitoring was recommended to determine whether an Issue Contributing Area (ICA) was required and whether nitrate remains an issue at the Thornton wellfield. Levels at the Tabor wellfield were significantly lower than those seen in the Thornton wellfield, but appeared to be trending upwards. The wellfield contains two highly productive wells that are a main supply of water to the system. An ICA was therefore delineated for the Tabor wellfield.

In their 2017 annual monitoring report, Oxford County indicated that there currently was not enough information available to determine changes to the concentration or trend of nitrates in either the Thornton or Tabor wellfields. The County proposes to complete a detailed review of the Thornton nitrate levels, and the effectiveness of current management strategies to determine whether the delineation of an Issue Contributing Area (ICA) is warranted (Update 2).

2.1.2 B: Growth and Infrastructure Changes

The vulnerable areas in which the Source Protection Plan policies apply are unique for each drinking water system. In order to ensure that our sources of drinking water are protected, Assessment Reports and Source Protection Plans must be updated to reflect changes in growth that affects drinking water system infrastructure. In June 2018, drinking water system owners were surveyed to ensure we had the most up to date information available about each drinking water system in the Thames-Sydenham and Region (TSR). Table 2-1 below lists all of the drinking water systems included in the current Assessment Report and Source Protection Plan. The table indicates whether any changes have been made, or are planned to be made for each system.

Table 2-1 Municipal Drinking Water Systems in the Thames-Sydenham Source Protection Region

Drinking Water System	Operating Authority	No. of Wells/ Surface Water Source for Intakes	Changes or Planned Changes to Drinking Water System
Dorchester	Municipality of Thames Centre	9	No Changes
Thorndale	Municipality of Thames Centre	2	No Changes
London	City of London	7 (Standby wells)	The City of London has taken all seven standby wells out of service. The wells are planned for decommissioning in late 2018 and early 2019. Once completed, these wells will be removed from the AR and SPP through a Section 51 minor amendment.
Birr	American Water Systems	1	The Birr drinking water system is now operated by the Municipality of Middlesex Centre. This change will be updated in the UTR SPA Assessment Report as part of the Section 36 amendment (Update 3).
Melrose	American Water Systems	2	The Melrose well in the Municipality of Middlesex-Centre is planned for decommissioning once the community switches to surface water from the Lake Huron Primary Water Supply System. The timing of the decommissioning is funding dependent and unknown at this time. Once completed, the system will be removed from the AR and SPP through a Section 51 minor amendment. Additionally the Melrose drinking water system is now operated by the Municipality of Middlesex Centre. This change will be updated in the UTR SPA Assessment Report as part of the Section 36 amendment (Update 3).
Beachville	County of Oxford	1	Since the WHPA delineation was completed for Beachville, a Tier 3 Water Budget study was undertaken for this system. Oxford County would like to update the Beachville WHPA delineation using the modelling data obtained through the Tier 3 Water Budget exercise. This

			will include assessing if current policies in the plan will be appropriate in the revised WHPA, or if modifications to the policies will be necessary (Update 4).
Embro	County of Oxford	2	No changes
Hickson	County of Oxford	1	No changes
Ingersoll	County of Oxford	7	Since the WHPA delineation was completed for Ingersoll, a Tier 3 Water Budget study was undertaken for this system. Oxford County would like to update the Ingersoll WHPA delineation using the modelling data obtained through the Tier 3 Water Budget exercise. This will include assessing if current policies in the plan will be appropriate in the revised WHPA, or if modifications to the policies will be necessary (Update 4).
Innerkip	County of Oxford	2	No changes
Lakeside	County of Oxford	1	No changes
Mount Elgin	County of Oxford	2	Since the WHPA delineation was completed for Mount Elgin, a Tier 3 Water Budget study was undertaken for this system. Oxford County would like to update the Mount Elgin WHPA delineation using the modelling data obtained through the Tier 3 Water Budget exercise. This will include assessing if current policies in the plan will be appropriate in the revised WHPA, or if modifications to the policies will be necessary (Update 4).
Tavistock	County of Oxford	3	No changes
Thamesford	County of Oxford	3	A new relief well is planned for the River Well site (Wells 1 and 2). The well will be completed in the same aquifer and will not result in an increased taking. No additional technical work or significant changes to the WHPA delineation are anticipated. No updates for inclusion in this Section 36 Workplan are therefore identified at this time.
Woodstock	County of Oxford	11	Since the WHPA delineation was completed for Woodstock, a Tier 3 Water Budget study was undertaken for this system. Oxford County would like to update the Woodstock WHPA delineation for the Tabor wellfield using the modelling data obtained through the Tier 3 Water Budget exercise. This will include assessing if current policies in the plan will be appropriate in the revised WHPA, or if modifications to the policies will be necessary (Update 4). Additionally, Oxford County would like to review the managed land and livestock density calculations within the Woodstock WHPA for the Thornton wellfield. Assessment report mapping will be updated to reflect any resulting changes to these calculations. This review will include assessing if current policies in the plan will be appropriate or if modifications to the policies will be necessary (Update 5)
Mitchell	West Perth Power Inc.	4	The Mitchell drinking water system is now operated by the Municipality of West Perth. West Perth Power was

			absorbed by ERTH Power and no longer conducts water operations. This change will be updated in the UTR SPA Assessment Report as part of the Section 36 amendment (Update 3).
Sebringville	Township of Perth South	1	The Sebringville drinking water system is now operated by the Ontario Clean Water Agency (O.C.W.A.). This change will be updated in the UTR SPA Assessment Report as part of the Section 36 amendment (Update 3).
St. Pauls	Township of Perth South	1	The St. Pauls drinking water system is now operated by the Ontario Clean Water Agency (O.C.W.A.). This change will be updated in the UTR SPA Assessment Report as part of the Section 36 amendment (Update 3).
Shakespeare	Township of Perth East	1	A new well (Well 2) has been drilled as a back-up supply for the Shakespeare well system in the Township of Perth East. Well 2 is in close proximity to Well 1, the capacity of the system is not changing, and the wells are not planned to be operated at the same time. Modelling work is therefore not required to re-delineate the Wellhead Protection Area (WHPA) for the system. Instead the WHPA-A (the 100 metre zone) will be adjusted to include the new Well 2. Additional properties that will fall into the adjusted WHPA-A are all residential, or planned residential, which are fully serviced. It is therefore anticipated that no new significant drinking water threats will be identified as a result of the WHPA adjustment. The amendments to the Thames-Sydenham and Region Source Protection Plan to include the WHPA adjustment for the Shakespeare Well 2 are included in this workplan for the next update to the AR and Source Protection Plan (Update 6). The updates to the AR will also note the change in operating authority for the Shakespeare drinking water system from the Township of Perth East to the Municipality of North Perth (Update 3).
St. Marys	Town of St. Marys	3	The St. Marys drinking water system is now operated by the Ontario Clean Water Agency (O.C.W.A.). This change will be updated in the UTR SPA Assessment Report as part of the Section 36 amendment (Update 3).
Stratford	City of Stratford	11	No changes
Lambton Area Water Supply System	Lambton Area Water Supply System (LAWSS)	St. Clair River	No changes
Petrolia Water Treatment Plan	Town of Petrolia and Waterworks Environmental Services Inc.	Lake Huron	No changes
Wallaceburg Water Treatment Plan	Municipality of Chatham-Kent PUC	Chenal Ecarte	No changes

Chatham *	Municipality of Chatham-Kent PUC	Lake Erie	No changes
South Chatham-Kent *	Muncipality of Chatham-Kent PUC	Lake Erie	No changes
Wheatley	Muncipality of Chatham-Kent PUC	Lake Erie	No changes
Highgate	Muncipality of Chatham-Kent PUC	2	The Highgate wells in the Municipality of Chatham-Kent have been taken out of service and the community has been connected to the groundwater system in the neighbouring community of Ridgetown. Once the Highgate wells have been appropriately decommissioned, the system will be removed from the AR and SPP through a Section 51 minor amendment.
Ridgetown	Muncipality of Chatham-Kent PUC	7	Since the approval of the Source Protection Plan, there have been some changes made to the Ridgetown Drinking Water System. Three of the 7 production wells have been taken out of service and 4 new wells have been installed. Technical work to adjust the WHPA delineation for this system has not yet been completed. However, outside of the WHPA-A, vulnerability scores for this system are low. The new wells have been installed in close proximity to the existing wells, so it is anticipated that the WHPA-A's for this system will only change slightly and will not impact any new properties. The technical work required to adjust the WHPA for Ridgetown is therefore included in this Section 36 workplan (Update 7).
West Elgin	Ontario Clean Water Agency	Lake Erie	No changes
Wheatley	Municipality of Chatham-Kent PUC	Lake Erie	No changes
• These systems share one intake			

2.1.3 C: Council resolutions

Municipalities may identify any well, or cluster of wells, other than a municipal drinking water system, that they want to include within the local Assessment Report and Source Protection Plan by passing a council resolution to bring the desired additional systems in. To be eligible for inclusion in the assessment report/plan, the well (or wells) must meet at least one of the three requirements for the inclusion as set out in Section 4.1(1) of Ontario Regulation 287/07: a) the well is part of a cluster of six or more wells; *or*, b) is located in an "area of settlement" as defined under the *Planning Act*; *or*, c) is a designated facility or public facility as defined in O.Reg. 170/03, under the *Safe Drinking Water Act*.

A letter dated April 19th, 2018 was received from St. Clair Township indicating that the Township recognized the proposed Otter Creek Wind Farm as a threat to the private wells that border the proposed wind farm project area. They requested that the private wells in the 4

most southerly concessions of the Township be included in the next update to the Assessment Report. It is unclear whether the recent cancellation of the Otter Creek Wind Project will change the Township's decision to include these systems in the Assessment Report and Source Protection Plan. For now, an assessment to determine whether the wells are eligible to be included in assessment report and source protection plan under O.Reg. 287/07 is included in this Section 36 workplan (Update 8). If eligible, the technical work necessary to delineate the vulnerable areas around the new systems, identify potential drinking water threats to those systems, and write applicable policy will also be undertaken.

No other council resolutions regarding the addition of other systems were received other than the St. Clair Township resolution.

2.1.4 D: Policy Effectiveness

The experience gained from implementing the SPP to date, as well as findings from the annual progress reports, did not result in any SPP policies being identified as ineffective.

2.1.5 E: Implementation Challenges

Implementation challenges have arisen with some of the agricultural policies in the Thames-Sydenham Source Protection Plan. The details surrounding these challenges are outlined below.

Consistency with the Nutrient Management Act

The *Nutrient Management Act* (NMA) prohibits the application and storage of Agricultural Source Materials (ASMs), Non-Agricultural Source Materials (NASMs), and the application of commercial fertilizers within the 100 m zone of municipal wells for specific "phased-in" farms. The Source Protection Plan policies for the Thames-Sydenham Region outside of Oxford (Policy 2.21, 2.22, 2.24, 2.26, 2.27, and 2.51) refer to managing rather than prohibiting these activities within 100 m of municipal wells (WHPA-A) and the two-year time-of-travel (WHPA-B). However, these management policies require that NMA principals, *including any NMA prohibitions*, form the basis of the RMP, regardless of whether a farm is "phased-in" under the *Nutrient Management Act* or not. The intent of this was to allow for consistency with the NMA in prohibiting the activities within the WHPA-A while managing in WHPA-B with a vulnerability score of 10. Policy 2.26 is provided below for reference:

Policy 2.26 Application of Commercial Fertilizer – Management
To reduce the risk to municipal drinking water sources from the application of commercial fertilizer, this activity shall be managed where it is or would be a significant drinking water threat.

This activity shall be designated for the purposes of Section 58 of the Clean Water Act and a Risk Management Plan shall be required. Nutrient Management Act principles (including NMA prohibitions) shall form the basis of the risk Management Plan, provided the Risk Management Official is satisfied these principles adequately manage the activity so that it ceases to be or never becomes a significant drinking water threat.
Any Prescribed Instrument related to the Application of Commercial fertilizer that is created, amended, or used as part of a notice for the purpose of a Section 61 exemption, shall manage the activity so that it ceases to be or never becomes a significant drinking water threat.
OMAFRA is expected to review all Prescribed Instruments issued under the Nutrient Management Act in areas where the activities they regulate are, or would be, significant drinking water threats to ensure the Prescribed Instruments contain such terms and conditions. This review is expected to include Prescribed Instruments that are not directly created or issued by OMAFRA, such as Nutrient Management Plans.
Further, OMAFRA and other Prescribed Instrument creators/issuers are expected to consult with the Risk Management Official with respect to any modifications or requirements that may need to be incorporated into the Prescribed Instruments under the Nutrient Management Act to ensure the activities they regulate cease to be or never become significant drinking water threats. However, nothing in this policy grants the Risk Management Official authority to specify requirements for a prescribed instrument issued under the Nutrient Management Act, or where a person is seeking an exemption from a risk management plan under section 61 or O. Reg. 287/07.

The policy rationale contained in the explanatory document does not stipulate that the *Nutrient Management Act* principals should only apply where the *Nutrient Management Act* already applies (i.e. phased-in farms). Instead, the explanatory document appears to imply that the principals of the *Nutrient Management Act* should be applied to all farms with significant drinking water threats, regardless of whether they are currently subject to the *Nutrient Management Act* or not.

The use of a management tool (Risk Management Plan policies 2.21, 2.22, 2.24, 2.26, 2.27 and 2.51) to prohibit activities (as prohibited by the NMA) has been very challenging for Risk Management Officials to implement. In several WHPAs within the TSR, the only portion of the WHPA that has a vulnerability score of 10 is the WHPA-A. In those cases, RMO's are approaching farmers to negotiate a risk management plan for the portion of their property that falls into a WHPA-A, only to find that all of the threat activities for the property would be prohibited according to the policy, thereby negating the need for a management plan. Communicating to farmers that the policies say to risk manage, but there is a caveat in the policies which dictates prohibitions, has been extremely challenging. It also creates some

challenges for monitoring and enforcement. In light of these challenges, the Source Protection Committee will review the wording of these risk management plan polices as indicated above as part of this Section 36 workplan (Update 9).

Agriculture Policies in the Town of St. Marys

Section 58(15) of the *Clean Water Act* sets out the following criteria for agreeing to or establishing a risk management plan:

(15) Subject to subsection (16), a risk management official shall agree to or establish a risk management plan for an activity at a location under this section if, and only if, all applicable fees have been paid and,

(a) the risk management official,

(i) is satisfied that the risk management plan complies with the requirements, if any, of the regulations, rules and source protection plan, and

(ii) ***is satisfied that the activity will not be a significant drinking water threat if it is engaged in at that location in accordance with the risk management plan****;*

The highlighted provision above allows Risk Management Officials to use their judgement to determine whether a threat activity can be successfully managed to reduce risk.

Based on a number of factors affecting the vulnerability of the St. Marys wellhead protection area, including: the presence of fractured bedrock; the presence of exposed bedrock in, and adjacent to Trout Creek; and the historical documented evidence of microbial contamination for the municipal groundwater supply wells within this WHPA, it was concluded by the local Risk Management Officials that the threat of livestock grazing and pasturing cannot be reasonably managed through a risk management plan in the St. Marys WHPA. Farmers have been asked to fence cattle out of the most vulnerable parts of the WHPA (WHPA-A and B with a vulnerability score of 10) as part of the risk management plan developed for their property. This decision affects several farms in St. Marys and neighbouring farms in the Township of Perth South which fall within the St. Marys WHPA. Given this decision by local Risk Management Officials, the Source Protection Committee would like to review the impacts of this policy approach on the farms in the St. Marys WHPA, and, if necessary, to review the agricultural policies in the source protection plan and discuss whether separate policies for the St. Marys WHPA should be considered as part of this Section 36 workplan (Update 10).

Risk Management Plan Policy Timeline for Existing Threats

The Section 58 Risk Management Plan (RMP) policies of the Thames-Sydenham SPP do not have specific timelines associated with their implementation for existing threats. When writing the

SPP policies, the Source Protection Committee (SPC) felt that it was important that RMPs be established in a timely manner; but also felt it was important that the RMO have adequate time to establish RMPs for existing activities while negotiating any plans required for new development approvals within accepted approval timeframes. Therefore, the SPC did not specify implementation timing for the establishment of RMPs for existing activities, to provide the RMO with the flexibility to determine local priorities and implementation timing for the establishment of such plans.

Now that over two years of implementation of the Risk Management Plan policies have passed, annual reporting has shown that the implementation of these policies across the Region has been going well. However, there are some areas within the Region where very limited progress towards establishing Risk Management Plans has been made. The Source Protection Committee would like to consider adding a timeframe into the Section 58 RMP policies to encourage progress in areas where limited progress has been made, and ensure that all the RMPs for existing threats are completed and established in a timely fashion. An adjustment to these policies to include an implementation timeline is included in this Section 36 workplan (Update 11).

2.1.6 F: Technical Rule Changes

In 2017 the province made changes to the Director Technical Rules to:

- Provide clarity with respect to terminology,
- Remove redundancies,
- Incorporate flexibility and new scientific approaches,
- Correct and update the Tables of Drinking Water Threats

A number of these changes are mandatory, and the Assessment Report and Source Protection Plan must be updated to reflect them, while other changes are discretionary and allow for source protection authorities to consider their local needs and interests.

Mandatory Updates:

The changes made by the MECP to the Tables of Drinking Water Threats (TDWT) are **mandatory** for the source protection authorities to incorporate into SPPs and ARs, and are included in this Section 36 workplan. Mandatory updates include:

- An assessment of the new prescribed drinking water threat 'the establishment and operation of liquid hydrocarbon pipelines'. Liquid hydrocarbon pipelines are already included in the Thames-Sydenham and Region as a local threat in event-modelled areas. This change expands the area within which liquid hydrocarbon pipelines are a significant threat in the Thames-Sydenham and Region. The Assessment Report and Source

Protection Plan should be updated to identify areas where pipelines would be a significant, moderate and low threat, and policies will need to be included to address this threat in these new areas. Where "local threat" is used to describe pipelines it needs to be replaced with "prescribed threat," in both the assessment report and source protection plan (Update 12).

- The threat circumstances for above grade handling and storage of fuel has been changed so that it is now a significant threat in intake protection zones and WHPA-Es where the vulnerability score is 9 or higher. The only IPZ within the Thames-Sydenham and Region with a score of 9 or higher is the Wallaceburg Intake Protection Zone where the IPZ-1 has a score of 9. There are no WHPA-E's within the TSR with a score of 9 or high, so Wallaceburg IPZ-1 is the only area where above grade fuel storage is now a significant drinking water threat. However, an updated risk assessment of where fuel would be a low, moderate or significant threat in IPZs and WHPA-E will be undertaken for the entire Thames-Sydenham and Region. Maps and tables within the assessment reports will be updated accordingly (Update 13).
- The technical rule changes have removed the vulnerability scores associated with Significant Groundwater Recharge Areas (SGRA) as well as the requirement to delineate SGRAs for Great Lakes, Connecting Channels and Lake St. Clair. The AR and SPP need to be updated to remove all references to SGRA vulnerability scores and remove SGRA delineations where they are not required. All delineated SGRAs (vulnerability scores of 2, 4 and 6) need to be grouped into a single SGRA (Update 13).
- The threat circumstances for the application and storage of NASM have been updated to remove the term "dairy producer". Any references to "dairy producer" in the assessment reports or source protection plan will be removed (Update 13)

Discretionary Updates:

The MECP amendments to the Director Technical Rules are enabling provisions which allow for source protection authorities to consider local circumstances in order to determine if an update to the SPP and AR is warranted. These **discretionary** updates have been considered and the items identified for inclusion in this Section 36 workplan are listed below (Update 14):

  - An enabling rule was created that allows for a broader range of vulnerability scores for Great Lakes and connecting channel intakes. The Thames-Sydenham and Region would like to consider changes to the vulnerability scoring for surface water intakes to determine whether a change in vulnerability scores is appropriate. This assessment will be conducted for those intakes determined to be shallow, near-shore, or more vulnerable to contamination than the previous rules would allow. These updates will be undertaken in consultation with the

SPC, affected municipalities, and neighbouring Source Protection Regions, to share information and check for consistency in analysis and conclusions.

- An amendment to the rules now allows the setback from a water body to be reduced based on local conditions, rather than using the Regulation Limit of a conservation authority when delineating an Intake Protection Zone. The Technical Rules now state that the delineation of IPZs include the Regulation Limits where the area drains into the IPZ only (i.e. there is no need to capture very extensive areas that drain areas downstream of an intake). The Thames-Sydenham and Region would like to review the Wallaceburg IPZ-3 delineation, in particular, where an extensive Regulation Limit was used in delineating the extent of the IPZ-3. The Assessment Report and Source Protection Plan will be updated accordingly.
- "Short Names" in the Tables of Contents of the Tables of Drinking Water threats have been updated to align with legal descriptions. The Thames-Sydenham and Region will update the terminology in the AR and SPP to reflect these changes.

Incorporation of climate change into water quality risk assessments:

The MECP has identified the importance and need to better incorporate potential climate change impacts into source protection planning and management. The Technical Rules allow for the MECP to direct SPCs to ensure that the potential impacts of climate change are taken into account in local science-based assessment reports, if the rules require a climate change analysis. A project is currently in progress to develop a guidance document and assessment tool for SPAs to use to identify climate vulnerabilities to the quality of their sources of municipal drinking water. It is expected to be completed in fall 2018. If completed in the established timeframe, the Thames-Sydenham and Region intends to use the tool to evaluate climate change impacts for all drinking water systems within the region (Update 15).

2.1.7 G: Impacts of Prohibition Policies on the Agricultural Community

This section focuses on the analysis of policies that prohibited agricultural activities outside of a WHPA-A or IPZ-1. Source Protection Authorities with these types of policies contained in their Source Protection Plans were asked to conduct an analysis. The analysis was to review the cumulative impact of these prohibition policies and assess whether or not they are having a notable impact, either through a negative impact on agricultural operations, or from a positive impact on water quality.

The following table lists the policies in the Thames-Sydenham Region Source Protection Plan that prohibit agricultural activities outside of WHPA-A or IPZ-1:

Policy Number	Policy Title	Existing/Future Threats	Applicable Zone outside of WHPA-A and IPZ-1
Thames-Sydenham and Region Excluding Oxford County			
2.23	Application of Non-Agricultural Source Material (NASM) to Land – Prohibition	Existing/Future	WHPA-B (vulnerability score 10)
2.25	Future Non-Agricultural Source Material (NASM) Storage - Prohibition	Future	WHPA-B (10)
2.28	Future Commercial Fertilizer Storage – Prohibition	Future	WHPA-B (10)
2.30	Application of Pesticides – Management and Prohibition	Existing/Future	WHPA-B (10)
2.33	Future Pesticide Storage (greater than 2500 kg) – Prohibition	Future	WHPA-B (10)
Oxford County			
OC-2.16	New Storage of Agricultural Source Material - Prohibition	Future	WHPA-B (10)
OC-2.18	Application of Non-Agricultural Source Material (NASM) to Land – Prohibition	Existing/Future	WHPA-B (10) & ICA
OC-2.20	Future Handling/storage of Non-Agricultural Source Material (NASM) – Prohibition	Future	WHPA-B (10) & ICA
OC-2.23	Future Commercial Fertilizer Storage (greater than 2500 kg) – Prohibition	Future	WHPA-B (10) & ICA
OC-2.26	Future Pesticide Storage/Handling Retail– Prohibition MCPA & Mecoprop >250 Kg All other prescribed pesticides >2500 Kg Manufacture – Prohibition MCPA & Mecoprop >2500 Kg	Future	WHPA-B (10)

In the spring of 2018, Thames-Sydenham and Region staff contacted Risk Management Officials throughout the Region to determine the impacts of these prohibition policies on agricultural properties that they are working with. Results from that communication indicated that there had been no property-specific or cumulative impact as a result of implementing these policies. Prohibition policies in the Thames-Sydenham and Region SPP largely apply to future threats, and based on our review, no new threats have been proposed that would be subject to these

prohibitions. Likewise with the policies that apply to existing threats, no existing threat activities to which these prohibitions apply have been identified. Based on this analysis, it has been determined that no change to these policies is required at this time.

It should be noted however, that there have been some limited impacts to farms where the prohibition of agricultural activities is being implemented by local risk management officials through risk management plan policies. Please refer to Section 2.1.5 E above for more information. As indicated in Section 2.1.5 E, an evaluation of the impacts to farms as a result of these risk management plan prohibitions is included in this Section 36 workplan as an item for review.

2.1.8 H: Specific directions in some source protection plan approval letters

The S. 36 Order issued to the Upper Thames River SPA required that the following be considered in the workplan:

- Opportunities to achieve Great Lakes Targets
- Results of monitoring policies, programs, and nutrient loading data
- Effectiveness of education and outreach policies at reducing nutrient loading to Lake Erie.

Consideration of: "opportunities to achieve Great Lakes Targets" and the "results of monitoring polices, program and nutrient loading data" have been previously discussed in Section 2.1.1 A, "Results of Environmental Monitoring Programs" above. Please refer to this section for further information about these items. The effectiveness of education and outreach policies at reducing nutrient loading to Lake Erie is discussed below.

Effectiveness of education and outreach policies at reducing nutrient loading to Lake Erie:

Education and Outreach (E&O) policies in the source protection plan are designed to increase awareness and understanding of drinking water threats, and promote best management practices as a means of reducing the risks to drinking water sources. A general policy approach (Policy 1.01, OC-1.06) was developed for Education and Outreach in the Thames-Sydenham and Region, to reduce redundancy and allow flexibility in the development of education and outreach programs. These policies were developed with a focus on existing programs and the development of new programs only where necessary, to address all levels of threats (significant, moderate and low).

Information is being collected from policy implementers on an annual basis about the implementation of education and outreach policies in the Thames-Sydenham and Region. However, due to the general nature of these policies, it is difficult to determine what activities or issues are specifically being targeted by education and outreach efforts. Although policy

implementers are asked to indicate, in general, what their E&O efforts targeted (significant, moderate, or low drinking water threats; transport pathways; drinking water issues; spills prevention; local threats; or conditions), they are not required to indicate what specific threats or issues are being addressed, provide detailed information about their E&O efforts, or the effectiveness of their E&O efforts. Implementers are provided space in their reporting templates to provide more details about their E&O efforts, and to share success stories. However, to date, very little additional information beyond the required reporting items has been reported. For these reasons, we do not have a good sense of how effective the education and outreach policies have been at reducing nutrient loading to Lake Erie. The source protection authorities will try to address this gap in reporting by requesting additional information in future monitoring reporting templates.

2.1.9 I: Other local considerations

Transport Pathway Adjustments:

Thames-Sydenham and Region are aware of several transport pathways which have been decommissioned so that they no longer present a conduit to the drinking water source. These pathways have therefore been identified for removal from the vulnerable area mapping in the Assessment Reports and Source Protection Plan. Vulnerability scores that were elevated as a result of the transport pathway will be adjusted accordingly. Likewise, in some cases new pathways have been identified which should be recognized on SPP and AR vulnerable area mapping and are being identified for inclusion in this Section 36 workplan (Update 16). These updates will include a reassessment of the drinking water threats for the areas where adjustments to mapping and vulnerability scoring is made.

Consideration of Wind Turbines and Wind Turbine Construction as a Local Threat:

Recent concerns about the impact of wind turbines and wind turbine construction on private well water quality have been raised through delegations to the Thames-Sydenham and Region Source Protection Committee. Committee members have also expressed their concerns about these water quality issues presented through delegations, and are interested in pursuing any actions they can take to help resolve it. They consider the Source Protection Plan a “living document” that should be updated to reflect local changes, including the identification of any new local threats to drinking water.

The Technical Rules under the *Clean Water Act* allow for activities to be identified as local drinking water threats provided that there is evidence that the activity poses a chemical or pathogen risk to drinking water. The Source Protection Committee is interested in pursuing further information about the hazard that wind turbines present to drinking water before requesting that they be added as a local threat. An analysis of the information about the

hazards of wind turbines on groundwater is therefore included in this Section 36 workplan (Update 17).

2.2 Workplan Consultation

Consultation on the workplan was conducted in a variety of forms. This included in-person meetings, emails, presentations and phone calls with staff from the municipalities of the Thames-Sydenham and Region, including risk management officials (RMOs) appointed or delegated to the CAs, MECP, the SPC and the SPAs.

The purpose of the consultation was to discuss the proposed workplan and receive comments and feedback. The following list outlines the consultation conducted:

No.	Date	Consultation Details
3	May-July 2018	Consultation with MECP on workplan content (phone calls, emails)
4	June 15, 2018	The SPC reviewed a listing of identified SPP (including ARs) issues, challenges and limitations. This was in preparation of the workshops to consult with municipalities. Workshop materials were further revised following this meeting.
5	June 25, 26, and 28th, 2018	Three municipal consultation workshops were held for municipalities. The purpose was to: • Recommend areas of the SPP including ARs, to be updated (with rationale) • Obtain feedback and comments regarding the proposed updates.
6	June and July 2018	Some individual communications were conducted for stakeholders unable to attend the workshops.
7	September 2018	Draft workplan for S. 36 updates circulated for consultation and comment.
8	Oct. 5, 2018	Stakeholder comments on Draft workplan for S. 36 updates due.
9	Oct. 19, 2018	An SPC meeting to discuss the draft workplan and receive comments.
10	Oct./Nov. 2018	SPA meetings to approve the proposed workplan.
11	Nov. 30, 2018	The proposed S. 36 workplan gets submitted electronically to MECP.

3. Proposed Review and Updates

Based on the preliminary analysis, consultations with various stakeholders, and feedback from the Ministry on the draft proposal, the Upper Thames River SPA recommends that updates be carried out under S. 36 of the Clean Water Act, 2006 as described in the table below. Most of the proposed updates result in updates to both the AR and SPP.

Update No.	Description of Proposed Review and Update	Applicable Document	Timeline
1	Update references to the nitrate issue for the Wallaceburg intake to indicate that it is no longer an issue and remove Policy 4.13 of the SPP.	AR and SPP	Updates will be completed by the TSR SPC by September 2020; Submission of S.36 updates to MECP in October 2020.
2	Determine if a nitrate Issue Contributing Area (ICA) should be delineated for the Thornton well field within the Woodstock Drinking Water System. This will include assessing if current policies in the plan will be appropriate or if modifications to the policies will be necessary.	AR for mapping and threats assessment; SPP for policy changes	Technical work will be completed by Oxford County. Updates will be completed by the TSR SPC by September 2020; Submission of S.36 updates to MECP in October 2020.
3	Updating drinking water system information in the Assessment Reports to reflect changes to operating authorities for several systems in the Thames-Sydenham and Region.	AR tables	This update will be completed by the TSR SPC by July 2020; Submission of S.36 updates to MECP in October 2020.
4	Updating the WHPA delineations and vulnerability scores for the Beachville, Ingersoll, Mount Elgin, and Woodstock (Tabor wellfield) Drinking Water Systems using the Tier 3 Water Budget Models. This will include assessing if current policies in the plan will be appropriate in the revised WHPAs or if modifications to the policies will be necessary.	AR for mapping and threats assessment; SPP for policy changes	Technical work will be completed by Oxford County. Updates will be completed by the TSR SPC by September 2020; Submission of S.36 updates to MECP in October 2020.
5	Review managed land and livestock density calculations for the Thornton wellfield within the Woodstock Drinking Water System for accuracy. This will include assessing if current policies in the plan will be appropriate or if modifications to the policies will be necessary.	AR for mapping and threats assessment; SPP for policy changes	Technical work will be completed by Oxford County. Updates will be completed by the TSR SPC by September 2020; Submission of S.36 updates to MECP in October 2020.
6	Updating the wellhead protection area (WHPA) mapping and vulnerability scores for a new groundwater well at the existing Shakespeare Drinking Water System, including assessing if current policies in the plan will be appropriate in	AR for mapping; SPP for policy changes	This update will be completed by the TSR SPC by September 2020; Submission of S.36 updates to MECP in October 2020.

Update No.	Description of Proposed Review and Update	Applicable Document	Timeline
	the new WHPA or if modifications to the policies will be necessary.		
7	Updating the WHPA delineation for the Ridgetown Drinking Water System to include 4 new wells and remove 3. Determine if current policies in the plan will be appropriate for the adjusted WHPA, or if modifications to the policies will be necessary.	AR for mapping and threats assessment; SPP for policy changes	Technical work to be completed by Chatham-Kent; AR and SPP updates will be completed by the TSR SPC by September 2020; Submission of S.36 updates to MECP in October 2020.
8	New wellhead protection area mapping, vulnerability scores, and threats assessment for private well water systems in St. Clair Township as requested through council resolution. This will include assessing whether the wells meet the criteria for inclusion in the AR/SPP as set out in O. Reg. 287/07, a threats assessment, and if current policies in the plan will be appropriate in the new WHPAs or if modifications to the policies will be necessary.	AR for mapping and threats assessment; SPP for policy changes	Technical work to be completed by St. Clair Township; AR and SPP updates will be completed by the TSR SPC by September 2020; Submission of S.36 updates to MECP in October 2020.
9	Review agricultural application policies to consider the intent of using the Risk Management Tool to align with Nutrient Management Act prohibitions.	SPP	Review and any updates will be completed by the TSR SPC by September 2020; Submission of S.36 updates to MECP in October 2020.
10	Review the impacts of the specific approaches taken to implement agricultural policies in the Town of St. Marys WHPA, and, if necessary, review agricultural policies to consider whether separate policies should be written for the Town of St. Marys to reflect local RMO decisions based on the sensitivity of the vulnerable area.	SPP	Review and any updates will be completed by the TSR SPC by September 2020; Submission of S.36 updates to MECP in October 2020.
11	Consider change in timeline of Part IV, S. 58 Risk Management Plan Policies	SPP	This update will be completed by the TSR SPC by September 2020; Submission of S.36 updates to MECP in October 2020.
12	Assess the new prescribed threat per Clean Water Act O. Reg. 287/07 - liquid hydrocarbon pipelines and update the AR and SPP to identify areas where pipelines would be a significant, moderate and low threat. Policies will need to be included to address this threat in these new areas. Where “local threat” is used to describe pipelines it needs to be replaced with “prescribed threat,” in both the assessment	AR for assessment of pipeline risk; SPP for any policies	Assessments will be completed by Oxford County in Oxford, and by TSR staff for the rest of the TSR by December 2019; Updates will be completed by TSR SPC by July 2020; Submission of S.36 updates to MECP in October 2020.

Update No.	Description of Proposed Review and Update	Applicable Document	Timeline
	report and source protection plan		
13	Assess and make appropriate updates to align with the March 2017 Technical Rule changes including the Tables of Drinking Water Threats that are mandatory to apply: • Reflect that above grade fuel storage poses a significant risk in IPZs and WHPA-E scoring 9 or higher; • Update the significant groundwater recharge area vulnerability scoring. • Remove any reference to "dairy producer" with respect to the threat circumstances for the application and storage of NASM.	AR for wording, mapping and threats assessment; SPP for any policies	Updates will be completed by the TSR SPC by September 2020; Submission of S.36 updates to MECP in October 2020.
14	Further assess and make appropriate updates to align with the March 2017 Technical Rule changes including the Tables of Drinking Water Threats that are enabling provisions. • Great Lakes/connecting channel surface water intake vulnerability assessment of surface water drinking water systems that are shallow, near-shore, or more vulnerable to contamination in the Thames-Sydenham and Region. • Reducing setbacks from watercourses based on local conditions. • Aligning policy wording with updated 'short names' in the Tables of Contents of the Tables of Drinking Water threats.	AR for wording, mapping and threats assessment; SPP for any policies	Assessment and updates will be completed by the TSR SPC by September 2020; Submission of S.36 updates to MECP in October 2020.
15	Evaluation of climate change impacts for all drinking water systems within the TSR region based on the pending guidance document and assessment tool.	AR and SPP	Assessment and updates will be completed by the TSR SPC by September 2020; Submission of S.36 updates to MECP in October 2020.
16	Removal, addition and/or adjustment of transport pathways identified within vulnerable areas as a result of new information. A reassessment of drinking water threats for these areas is included in this update.	AR for wording, mapping and threats assessment;	Updates will be completed by the TSR SPC by September 2020; Submission of S.36 updates to MECP in October 2020.
17	Review of information relevant to the local impacts of wind turbine and wind turbine construction on private well water quality for possible inclusion of a new local threat.	AR for any threats updates; SPP for any policies	Review and updates will be completed by the TSR SPC by September 2020; Submission of S.36 updates to MECP in October 2020.

3.1 Project Management and MECP Support for Updates

The Ministry provides support through its capacity funding under the DWSP program, technical bulletins, guidance, and feedback, and this support for local program delivery is acknowledged.

The Upper Thames River SPA continues to lead the SPR efforts including the development of the S. 36 workplan being submitted. The Thames-Sydenham and Region SPC with support by the Upper Thames River SPA, Lower Thames SPA, and St. Clair Region SPA will lead the updates to the SPP including ARs, accordingly. The continuation of support by MECP will be necessary to undertake the proposed updates under S. 36, and the required consultation. This includes SPR staff capacity and expertise, SPC meetings, municipal implementation working group meetings, and stakeholder engagement workshops prior to submission of an updated SPP including ARs. The Upper Thames River SPA recommends that current staff levels within the Thames-Sydenham and Region SPR be maintained in order to carry out the proposed updates through March 2021.

4. Conclusion

The overall timeline for completion of all of the proposed updates and submission of the Section 36 updates to MECP is October 2020. The Thames-Sydenham and Region SPC will complete the proposed changes with support from Upper Thames River SPA, St. Clair Region SPA, and Lower Thames Valley SPA staff, and in consultation with MECP, applicable implementing bodies and municipalities. Consultation may also take place with persons engaged in significant drinking water threat activities, if the policy changes affect persons engaged in existing significant threat activities.

5. References

1. Ministry of the Environment and Climate Change, December 2016. Source Protection Plan Bulletin - Overview of Requirements for Assessment Report and Source Protection Plan Amendments under S. 36 of the Clean Water Act.
2. Ministry of the Environment and Climate Change, October 2017. Source Protection Plan Bulletin - Overview of Requirements for Assessment Report and Source Protection Plan Amendments under S. 36 of the Clean Water Act. (Supplemental Information #1 – Municipal Engagement)
3. Ministry of the Environment and Climate Change, March 2018. Source Protection Plan Bulletin - Overview of Requirements for Assessment Report and Source Protection Plan Amendments under S. 36 of the Clean Water Act. (Supplemental Information #2 – Prohibition of Agricultural Activities Outside WHPA-A or IPZ-1)
4. Ministry of the Environment and Climate Change, August 2018. Source Protection Plan Bulletin - Overview of Requirements for Assessment Report and Source Protection Plan Amendments under S. 36 of the Clean Water Act. (Supplemental Bulletin #3 – Updates to Directors' Technical Rules and Tables of Drinking Water Threats)
5. Thames-Sydenham and Region Source Protection Committee. Thames-Sydenham and Region Source Protection Plan. Approved September 17, 2015.

Report to	Upper Thames River Source Protection Authority		
Cc	SP Management Committee	**Date**	November, 2018
From	Jenna Allain, Source Protection Coordinator		
Re:	Drinking Water Source Protection Governance		

Purpose

To update the Upper Thames River Source Protection Authority on the governance of the Drinking Water Source Protection program.

Background

The Clean Water Act, 2006 is part of the multi-barrier approach to ensure clean, safe and sustainable drinking water for Ontarians, by protecting sources of municipal drinking water such as lakes, rivers and well water. Under this legislation, the Drinking Water Source Protection Program was established by the Government of Ontario. This resulted in the development of science-based assessment reports and local source protection plans by multi-stakeholder source protection committees, supported by Source Protection Authorities.

At the last meeting of the Upper Thames River Source Protection Authority, there were questions about the roles and responsibilities of the Source Protection Authorities and Source Protection Committee. Staff were asked to provide a report on the governance of the source protection program at a future Source Protection Authority meeting.

Discussion

About Our Governance

The Province

The Province of Ontario, through the Ministry of the Environment, Conservation and Parks (MECP), sets the rules (under the *Clean Water Act*) and provides ongoing guidance. The MECP is also responsible for implementing some of the policies in the Source Protection Plan.

Source Protection Authorities

The Source Protection Authorities had the important role of laying the groundwork for the source protection planning process, including creating the Source Protection Committee, and engaging municipalities in the process of that creation. The Source Protection Authority reviews the work completed by the Source Protection Committee to ensure that it has been carried out in accordance with the Regulations in the *Clean Water Act*.

The Source Protection Authorities in the Thames-Sydenham and Region Source Protection Region are:

- Upper Thames River Source Protection Authority (the lead Authority)

- St. Clair Region Source Protection Authority
- Lower Thames Valley Source Protection Authority

Source Protection Committee

The Source Protection Committee is the primary authority for making decisions at the watershed level. The Source Protection Committee is made up of local citizens in the watersheds, who applied for that role and were selected by the Source Protection Authority (through the Striking Committee), based on a competitive process. In this region, we have 15 members (5 economic representatives, 5 municipal representatives and 5 public sector representatives, two First Nations representatives, plus a Chair.

Conservation Authorities

Part of the Conservation Authorities' role is to act as the Source Protection Authority. The Conservation Authority provides staff, expertise, and experience to share information, facilitate cooperation amongst the many agencies involved. They were also responsible for pulling together the Terms of Reference, Assessment Reports and Source Protection Plan, under the guidance of the Source Protection Committee.

In this region, the Conservation Authority partners are:

- Upper Thames River Conservation Authority
- Lower Thames Valley Conservation Authority
- St. Clair Region Conservation Authority

Municipalities

Municipalities are a key partner in the source protection process and work closely with the Source Protection Committee and Source Protection Authorities. Municipalities have a primary role in implementing the source protection plan.

Indigenous Communities

In this region there are eight indigenous communities: Chippewas of Kettle and Stoney Point First Nation, Aamjiwnaang First Nation, Walpole Island First Nation, Chippewas of the Thames First Nation, Delaware Nation, Munsee-Deleware Nation, Caldwell First Nation and Oneida Nation of the Thames. At this time, the Chippewas of Kettle and Stony Point First Nation is the only First Nation with an intake included in the Assessment Report.

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