

MEETING NUMBER: #3-20 Halton-Hamilton Source Protection Committee

DATE: September 8, 2020

TIME: 1:30 pm to 4:30 pm

LOCATION: Virtual Meeting held on Zoom. Password: **328934**

Link: <https://us02web.zoom.us/j/83470212266?pwd=ZHK4RTU0Z3hVSElXQXB0bG8yRkNHZz09>

AGENDA

Page Number

1. Roll call and welcome 1
2. Disclosures of conflict of interest
3. Review of agenda

THAT the agenda be accepted as distributed.

4. Approval of the minutes of the June 16, 2020 meeting of the Source Protection Committee

THAT the minutes of the June 16, 2020 meeting of the Halton-Hamilton Source Protection Committee be approved as circulated.

5. Business arising from the June 16, 2020 minutes
 - a. Daniel Banks to report back on status of risk management plans for agricultural properties in Halton Region;
 - b. Carmen Vega will provide an update on the status of risk management plans in the City of Hamilton;
 - c. Tea Pesheva to report back on direction from province on making risk management plans public. See Agenda Item #8.
 - d. Training materials: Smart About Salt does not allow participants to share their training material. Therefore it will not be posted to the SharePoint site. Staff may provide a verbal update at the next meeting; and
 - e. Manual: the new LID manual is not yet posted on the Environmental Registry of Ontario. Staff will keep the SPC informed.

6. Correspondence - none received

Halton-Hamilton Source Protection Committee meetings are audio recorded for the purpose of minute taking.

7. Source Protection Committee Chair’s Update – Robert (Bob) Edmondson
8. Ministry of Environment, Conservation and Parks Liaison’s Update - Tea Peshava
9. Business/Reports 4
 - a. SPC-20-09-01 Source Water Protection Program Update 4 - 12

THAT the Halton-Hamilton Source Protection Committee receives for information the Staff report “Source Water Protection Program Update”
 - b. SPC-20-09-02 Source Protection Committee Mission Statement Update 13 – 18

THAT the Halton-Hamilton Source Protection Committee endorses the Staff report “Source Protection Committee Mission Statement Update”
 - c. SPC-20-09-03 S. 36 Updates: Reassessment of Vulnerability of Great Lakes Drinking Water Sources 19 - 32

THAT the Halton-Hamilton Source Protection Committee receive for information the Staff report “S. 36 Updates: Reassessment of Vulnerability of Great Lakes Drinking Water Sources”

AND THAT the Halton-Hamilton Source Protection Committee direct staff to develop a modified source vulnerability factor decision matrix in discussion with municipalities and neighbouring source protection regions.
 - d. SPC-20-09-04 S. 36 Updates: Assessment of Liquid Hydrocarbon Pipelines as a Prescribed Drinking Water Threat 33 - 48

THAT the Halton-Hamilton Source Protection Committee receives for information the Staff report “S. 36 Updates: Assessment of Liquid Hydrocarbon Pipelines as a Prescribed Drinking Water Threat”

AND THAT the Halton-Hamilton Source Protection Committee direct staff to revise current policies and develop draft non-legally binding policies for areas of low and moderate risk levels
 - e. SPC-20-09-05 S. 58 Risk Management Plans Policy Timeline Extension 49 - 51

Halton-Hamilton Source Protection Committee meetings are audio recorded for the purpose of minute taking.

THAT the Halton-Hamilton Source Protection Committee endorses the Staff report “S. 58 Risk Management Plans Policy Timeline Extension”

AND THAT the Halton-Hamilton Source Protection Committee direct Staff to seek a one-year extension on the deadline for risk management plan completion

10. In Camera

- a. SPC-20-09-06 Assessment of Potential Transport Pathways from a proposed Ministry of Transportation Ontario stormwater management project 52 - 57

THAT the Halton-Hamilton Source Protection Committee receives for information the Staff report “Assessment of Potential Transport Pathways from a proposed Ministry of Transportation Ontario stormwater management project”

- b. SPC-20-09-07 S. 36 Updates: Identification of Wells Transport Pathways in Wellhead Protection Areas 58 - 70

THAT the Halton-Hamilton Source Protection Committee endorses the Staff report “S. 36 Updates: Identification of Wells Transport Pathways in Wellhead Protection Areas”

11. Other Business

12. Adjournment

REPORT TO: Halton-Hamilton Source Protection Committee

REPORT NO: SPC-2020-09-01

FROM: Chitra Gowda, Senior Manager, Watershed Planning and Source Protection
cgowda@hrca.on.ca

DATE: August 26, 2020

SUBJECT: Source Water Protection Program Update

Recommendation

THAT the Halton-Hamilton Source Protection Committee **receives for information the Staff report “Source Water Protection Program Update”**.

Executive Summary

The report provides several source water protection program updates of importance and relevance to the Halton-Hamilton Source Protection Committee. It supports a few of the tasks of the Workplan for Comprehensive Review and Update of the Halton Region and Hamilton Region Source Protection Plans per Clean Water Act (2006) - Section 36.

Report

Environmental Registry of Ontario

This section provides information on relevant postings made on the Environmental Registry of Ontario (previously called the Environmental Bill of Rights) at <https://ero.ontario.ca/>

PRIORITY: Proposed amendments to the Director’s Technical Rules

The Director’s Technical Rules made under section 107 of the Clean Water Act, 2006 (“technical rules”) provide the overarching technical methodologies by the province, that are applied to local scientific data and information by source protection authorities and committees. This results in the required delineation of drinking water vulnerable areas and identification of threat activities (and their risk levels) within those areas. Thus, the technical rules allow for the use of local scientific information to support source protection plan policies, that in turn protect sources of our drinking water.

Most source protection plans have now been through at least three years of annual progress reporting on policy implementation. Through a cycle of continuous improvement, the province of Ontario considers stakeholder feedback on the source water protection program including the

provincial technical rules. The province amends the regulations and technical rules accordingly, with the latest update to the technical rules occurring in 2017 and to the regulations in 2018.

On August 11, 2020, the province of Ontario proposed more changes to the technical rules through the Environmental Registry of Ontario posting #019-2219: “Proposed amendments to the Director’s Technical Rules made under section 107 of the Clean Water Act, 2006”, available online at <https://ero.ontario.ca/notice/019-2219>. This posting is open to public consultation for a period of 90 days ending on **November 9, 2020**. Per the posting, the proposed updates to the Director’s Technical Rules will:

- “reduce administrative burden for local decision-makers while maintaining technical rigour
- provide clarity on the information required to evaluate whether drinking water systems are vulnerable to climate change impacts
- clarify the intent of the rules around local threats are to be focused on activities that do not already require provincial or federal approval
- adopt an evidence-based approach to delineating geographic areas where activities are cumulatively having a negative affect on the quality of drinking water
- address administrative matters through minor clarifications and typographical corrections
- clarify the Tables of Drinking Water Threats contained in the rules, which set out the circumstances under which prescribed activities pose a drinking water threat, to support plan implementation and a better understanding of the risks to drinking water as follows:
 - more accurately identify areas where the handling, storage and application of road salt may pose a risk to drinking water sources based on the lessons learned from the first round of source protection planning
 - provide a list of land use activities that may use, handle or store dense non-aqueous phase liquids
 - align the definitions of prescribed drinking water threats with other provincial regulations for storm water and other wastewater works, snow storage, non-agricultural source material, and waste
 - combine and simplify the circumstances of both handling and storage of fuel under one risk category
 - revise the hazard rating for above-grade handling and storage of fuel to recognize its significant risk to groundwater supplies
 - clarify the commercial fertilizer circumstances to better reflect the actual risk posed
 - make editorial and administrative changes to the Tables to allow for ease of use and better search capabilities and better support the identification of risks and plan implementation”.

HHSPR staff have since requested the Ministry of Environment, Conservation and Parks (MECP) to host an information session on the proposed changes, in order to support an analysis by staff on implications for the HHSPR. Similar requests have been made by others. On August 21, the MECP sent an email to the nineteen source water protection program managers requesting questions from them and municipalities on the proposed changes, by September 4, 2020. Staff have now reached out to

municipalities to seek their questions accordingly. After the MECP has had a chance to review the questions, they plan to set up a virtual meeting with the program managers to answer questions which may assist with comments to be submitted on the ERO posting.

Given the importance of the technical rules to the work of the HHSPC and staff and the comment deadline of **November 9, 2020**, staff note the need for a special SPC meeting in October, pending MECP’s approval. Please see the firm and suggested timelines below in **Table 1**.

Table 1: Timeline for Review and Comment on the Proposed Amendments to the Technical Rules

No.	Item	Date
1	Start of posting of the proposed amendments to the technical rules on the Environmental Registry of Ontario	August 11, 2020 (firm)
2	Deadline for program managers to provide questions to MECP	September 4, 2020 (firm)
3	Virtual meeting by MECP with program managers to answer questions	To be determined by MECP
4	Deadline for HHSPR staff to conduct analysis of proposed changes – implications for the HHSPR and provide a special report to the SPC	October 9, 2020*
5	Special SPC meeting to review staff analysis and discuss (pending MECP’s approval)	Week of October 16, 2020*
6	Deadline for SPC to provide comments to staff	October 30, 2020*
7	End of the 90-day public consultation on the proposed amendments to the technical rules	November 9, 2020 (firm)

*Dependent upon the date of the MECP virtual meeting

The process described above indirectly supports the Task #2 (part 1) of the Workplan for Comprehensive Review and Update of the Halton Region and Hamilton Region Source Protection Plans per Clean Water Act (2006) - Section 36: “Amendments to make the documents compliant: Update documents to align with revisions to the Technical Rules and the Tables of Drinking Water Threats regarding circumstances and chemicals of concern”.

Annual Progress Report Follow Up

In mid-July, the MECP sent staff a follow up question about the number of road signs installed on municipal roads, as reported on in the supplemental form for the 2019 annual progress report. HHSPR staff checked internal records and reached out to City of Hamilton and Halton region municipal staff, who in turn provided timely responses. HHSPR staff promptly responded to MECP well within their deadline, providing clarity around the number of road sign installed on municipal roads in the HHSPR. There is a cumulative total of 20 road signs installed on municipal roads in the Halton-Hamilton SPR. These road signs were installed by the City of Hamilton prior to the source

protection plan being approved. MECP has acknowledged the response and noted the same in their Electronic Annual Reporting (EAR) tool.

Updating Ontario's Water Quantity Management Framework

In fall 2019, the province of Ontario extended the moratorium for new and increasing bottled water takings so that they could complete a thorough review of the province's water taking programs, policies and science tools. The findings of the review and resulting recommendations were posted for public consultation on June 18, 2020, through the Environmental Registry of Ontario posting #019-1340: "Updating Ontario's Water Quantity Management Framework", available online at: <https://ero.ontario.ca/notice/019-1340>. This posting closed on August 2, 2020.

The review concluded that the government's current approach to managing water takings is effective. As well, certain actions were identified to update Ontario's water quantity management framework, including establishing water use priorities to guide decisions where there are competing demands for water; updating the current approach to managing water takings in water quantity-stressed areas; making the water taking data more accessible to the public; and giving municipalities more say into water bottling decisions. These actions require corresponding regulatory changes, which are also provided in the posting.

In related news, Nestle announced in July 2020 that it will be selling its Pure Life bottled water business to a water bottling and recycling company Ice River Spring, pending regulator approval.

Conservation Halton submitted comments to the province, and a summary is provided here. It was agreed that a regulation should establish priorities of water use, with the highest priority placed equally on the environment and drinking water needs, and second highest priority on agricultural irrigation. Prioritization helps manage takings in areas subject to drought, identified water quantity stressed areas, etc. and helps communities adapt to climate change impacts. As well, the regulation should also include criteria and guidance on how ecosystem health and environmental flow can be maintained.

Municipal drinking water supply is proposed as a highest priority use. The longer-term drinking water needs of non-municipal users are equally important including Indigenous communities, future expansions of seniors' homes, daycare centers, livestock watering, schools, hospitals, etc.

The proposed framework should incorporate existing risk assessment information and utilize watershed planning. Under legislation such as the Clean Water Act, water quantity and quality risks are already identified to some of our water resources. The watershed planning approach should be utilised, as it incorporates climate change, cumulative impacts and needs assessments and other key considerations on a watershed/drainage area basis.

The effects of group water takings on water availability and aquatic ecosystems should be considered. It is suggested that the watershed or sub-watershed (a completed catchment area) scale

be the area of study. Drinking water source protection water budgets and stress assessment results should be used. It was agreed that water bottling companies be required to seek support from the host municipality when applying for a new or expanded water taking. A rationale should be provided to explain why applications of takings that are less than 379,000 litres per day, are proposed to be excluded from that requirement.

Source Protection Committee member recruitment update

The Halton-Hamilton (HH) Source Protection Committee (SPC) industrial-commercial sector representative position became vacant in June 2020 when member Michael Kandravy of Suncor moved away. To maintain source protection committee membership per the Clean Water Act, 2006 HH Source Protection Region (SPR) staff prepared a notice and application form, and advertised the vacancy per legislative requirements.

The vacancy was advertised for a period of more than one month using the source protection region website, social media, and through letters prepared by staff and sent to industrial/commercial organizations and companies, economic development organizations, and local Chambers of Commerce. Interviews were held and a candidate recommended to the Hamilton Region and Halton Region Source Protection Authority boards. The appointment of the SPC industrial-commercial sector representative will be confirmed upon decision of both boards by late September 2020. The SPC will be updated at that time with the member appointment. The program manager and SPC Chair will provide an orientation session to the new member in advance of the next SPC meeting.

Working groups

The program manager is a member of source water protection related working groups. A brief introduction to the groups is provided below. In future reports, matters of high importance will be reported to the SPC.

Halton-Hamilton implementation group

This is a group of HHSPR staff and municipal staff to work together on priority matters including S. 36 source protection plan updates, transport pathways notifications, and consultant inquiries related to source protection planning. Most of the discussions transpire through emails.

Source water quality-climate change vulnerability assessment group

This is a Conservation Ontario-led provincial-scale working group. The focussed group of four (plus the chair) includes climate change and source water protection experts from conservation authorities and MECP. The main goal is to support the use of a source water quality-climate change vulnerability assessment tool developed by a multi-stakeholder group. The group will also discuss the proposed changes to the technical rules as it relates to the incorporation of climate change impacts in assessing water quality risks to sources of drinking water.

Lake Erie implementation working group

This is a group focussed on source protection plan implementation within the neighbouring Lake Erie source protection region. Matters of common interest can include S. 34 updates and draft policies for municipalities that span both source protection regions.

Lake Erie Project Team for Guelph-Guelph/Eramosa

The draft wellhead protection area – quantity (WHPA-Q) for the City of Guelph drinking water system of Guelph-Guelph/Eramosa extends into the HHSPR in Morriston, Township of Puslinch. The Lake Erie program manager provides information updates to HHSPR, and the estimated timeline for developing draft policies is early 2021.

Working collaboratively with the Lake Erie Region will support the **Task #5 (part 1) of the Workplan for Comprehensive Review and Update of the Halton Region and Hamilton Region Source Protection Plans per Clean Water Act (2006) - Section 36: “Guelph-Guelph/Eramosa wellhead protection area for water quantity: Add mapping and text, and source protection committee to discuss policies to address future threat activities”**.

Specifically, the **amended Order** issued in March 2019 by the Minister, MECP pursuant to S. 36 of the Clean Water Act, requires that the Halton-Hamilton source protection plan update to **“align with neighboring Source Protection Plans to incorporate the water quantity risk assessment and policies when included in the approved Grand River source protection area for Guelph-Eramosa”**.

Section 34 source protection plan update

A S. 34 update is initiated by a source protection authority per the Clean Water Act. Regulatory changes to the Clean Water Act and Safe Drinking Water Act in 2018 resulted in a modified business process around new or changing municipal residential drinking water systems, to ensure early source protection planning. An overview of the process is provided in **Figure 1**.

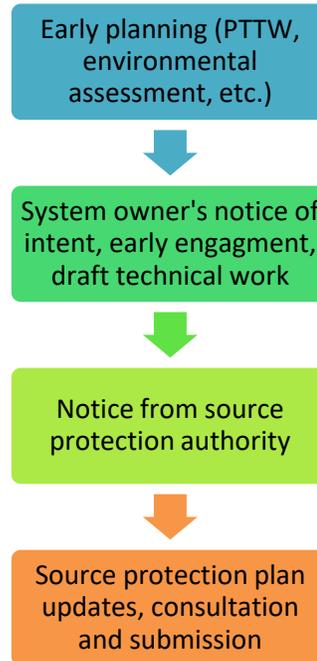


Figure 1: An Overview of the Section 34 Process for Source Protection Plan Updates

The S. 36 workplan for Halton-Hamilton notes the anticipation of source protection planning work for the City of Hamilton Freelon groundwater well supply system. The S. 36 workplan also notes that in order to expedite the treated water supply process per regulatory changes made in 2018, a plan update under S. 34 of the Clean Water Act will be proposed by the source protection authorities.

The pumping rate of one of the wells is being increased, to provide operational flexibility and redundancy. An environmental assessment is not being undertaken due to the nature of the increase, which is within the amended Permit to Take Water limit. The City of Hamilton retained EarthFx Inc. consulting services to undertake the required WHPA re-delineation technical study. The draft technical study incorporating previous staff comments was provided to HHSPR staff in July 2020 who then proceeded to engage the MECP as part of the 'early engagement process'. The MECP provided early feedback in a timely manner, and EarthFx Inc. is in the process of responding to the feedback. Once the process of early engagement on the technical study is completed, the next steps are threats risk assessment and policy adequacy review. Note that the threats risk assessment will be undertaken in collaboration with County of Wellington source water protection staff. This is because a portion of the draft WHPA falls within the Township of Puslinch.

Walkerton Commemoration

This year while everyone adapts to the severe impacts of the COVID-19 pandemic, we are all reminded of another public health tragedy that struck Walkerton in Ontario twenty years ago. An inquiry by Justice O’Conner in 2002 resulted in strong legislation for a multi-barrier approach to protecting drinking water sources in Ontario.

To commemorate the twentieth year since the Walkerton drinking water tragedy, a provincial-scale commemoration campaign was initiated in May 2020 by Conservation Ontario. It involved a two-week long social media campaign and web blog/article, followed by published magazine articles underlining the importance of a watershed management approach. At that time, Conservation Halton and the Hamilton Conservation Authority posted commemorative content on social media. Staff also updated the HHSPR website to add a link to the Conservation Ontario blog.

Several source protection authorities developed strong news releases on behalf of their SPCs. A few SPC Chairs also wrote letters to the Minister, Environment, Conservation and Parks indicating the necessity and importance of the continuation of drinking water source protection on a watershed basis. Quinte and Lower Trent conservation authorities and Conservation Ontario developed a “Trust the Tap” campaign to highlight the vast improvements made in source water protection and the municipal treated drinking water process. Read more at:

<http://quintesourcewater.ca/web/commemorating-walkerton-20-years-later/>

Other organizations released videos, social media posts and news releases as well. Justice O’Connor provided a webinar hosted by the Ontario Municipal Water Association, where he shared his reflections on Walkerton after 20 years. The webinar recording is at: <https://omwa.org/>. In June 2020, the Municipality of Brockton launched the Walkerton Clean Water Legacy Scholarship, to “honour those who suffered because of the water crisis, and support the next generation of students embracing environmental stewardship and the protection of clean water”.

The Halton-Hamilton SPC has achieved large milestones in drinking water source protection, supported by the watershed expertise provided by the Conservation Halton and Hamilton Conservation Authority. Staff are planning a one-week social media campaign to commemorate Walkerton and a longer campaign over fall 2020 to enhance awareness of the work of the SPC, conservation authorities, and partners in the Halton-Hamilton Source Protection Region. Themes may include:

- Meet the Halton-Hamilton SPC! (role, milestones, updated mission statement)
- Your watershed-based source protection authorities (roles of Conservation Halton and Hamilton Conservation Authority under the Clean Water Act)
- Role of municipalities (Clean Water Act and Trust the Tap)
- Do you live in a drinking water protection zone (urban and rural resident actions, road sign)
- Halton-Hamilton Source Protection Plan implementation progress and updates (progress tracking and the cycle of continuous improvement)
- Do you know where your drinking water comes from (map-based).

Resources developed previously by the conservation authorities, Conservation Ontario and others could be used. Staff will inform the SPC when the Walkerton commemoration social media campaign is ready for Twitter, Instagram and Facebook. The SPC members are encouraged to share or repost the social media posts widely.

Other Interesting Matters

Over the summer, the Ontario Clean Water Act and drinking water source protection program and featured prominently in articles in Water Canada (https://cdn.watercanada.net/wp-content/uploads/2020/07/07142612/WC113_JulAug2020_WEB.pdf), and the Environmental Science and Engineering magazine - June/July 2020 (https://issuu.com/esemag/docs/ese_magazine-2020-june-july).

The Rural Ontario Institute is offering its annual Advanced Agricultural Leadership Program (AALP) in November 2020. This is an 18-month leadership development opportunity for persons in the agricultural, agri-food and rural community who want to broaden their horizons, deepen their understanding of Ontario's diverse agri-food industry and expand their networks. Participants examine social, political, environmental, and economic issues as they relate to agriculture, the agri-food industry and society. For more information: <https://www.ruralontarioinstitute.ca/aalp/>

Signed & respectfully submitted:



Chitra Gowda, Senior Manager
Watershed Planning and Source Protection
cgowda@hrca.on.ca

REPORT TO: Halton-Hamilton Source Protection Committee

REPORT NO: SPC-2020-09-02

FROM: Chitra Gowda, Senior Manager, Watershed Planning and Source Protection
cgowda@hrca.on.ca

DATE: August 26, 2020

SUBJECT: Source Protection Committee Mission Statement Update

Recommendation

THAT the Halton-Hamilton Source Protection Committee **endorses the Staff report Source Protection Committee Mission Statement Update**

Executive Summary

The Halton-Hamilton Source Protection Committee mission statement was developed more than a decade ago. The committee has since achieved large milestones in drinking water source protection with support from the watershed-based Conservation Halton and Hamilton Conservation Authorities that form the source protection region. Staff suggest that the committee consider updating their mission statement to signify a renewed commitment in the twentieth year since the Walkerton drinking water tragedy. Draft updated wording is provided for the committee's discussions and consideration.

Report

In Walkerton, Ontario, a waterfall memorial stands dedicated to victims of a drinking water contamination tragedy that happened twenty years ago. It is a stark reminder to all of us about the crucial need for proper water management. This year, in 2020, we commemorate Walkerton and renew our commitment to protecting drinking water sources for the generations to come.

The SPC Report 20-09-01 describes plans to commemorate the twentieth year since the Walkerton drinking water tragedy. Staff also reviewed the Halton-Hamilton Source Protection Committee (SPC) mission statement. It was developed and included in the 2009 Terms of Reference document, which was the SPC's first workplan to set out tasks of different agencies in establishing the initial assessment reports and source protection plan. The 2009 mission statement is shown below, and accompanies the SPC code of conduct and rules and procedures documents.

Mission Statement from the Halton-Hamilton SPC's Terms of Reference, 2009

"The goals of this source protection process are to:

- Outline in the Terms of Reference the steps to be taken and the estimated costs to develop an Assessment Report and a Source Protection Plan;
- Identify in the Assessment Report present and future municipal groundwater and surface water drinking water sources and identify vulnerabilities, assess threats, and evaluate issues regarding water quality and quantity; and
- Establish policies in the Source Protection Plan to reduce or eliminate significant drinking water threats".

The **Attachment 1** shows initial mission statements of other SPCs. Some committees undertook strategic planning sessions at that time, in order to arrive at their initial mission statements. The mission statement in the Halton-Hamilton SPC's terms of reference document from 2009 has served its purpose well. The Halton-Hamilton SPC has since achieved the large milestones of developing the terms of reference, and the initial assessment reports and source protection plan. The initial assessment reports and source protection plan were approved by the province of Ontario in 2015.

Since then, the source water protection program has entered a cycle of continuous improvement as allowed under the Clean Water Act. The SPC has guided updates to the assessment reports and source protection plans. The SPC has also guided three annual progress reports that track policy implementation. Currently, the SPC is involved in numerous comprehensive updates per S. 36 and drinking water system specific updates per S. 34 of the Clean Water Act. The updates ensure that underlying scientific information and policies are kept up to date, as recommended by staff and in consultation with stakeholders including municipalities. In this manner, the SPC strongly supports the purpose of the Clean Water Act to protect current and future drinking water sources, for those systems described under the Clean Water Act in the Halton-Hamilton Source Protection Region (SPR).

In general, mission statements are meant to be inspiring and indicate how an organization or committee's work contributes to communities, customers, the environment, or other end users/beneficiaries.

Since its establishment in 2007, the Halton-Hamilton SPC has achieved large milestones in drinking water source protection, supported by the watershed expertise provided by the Conservation Halton and Hamilton Conservation Authority. Staff suggest an update to the mission statement to signify the milestones accomplished and as a gesture to show a renewed commitment to protecting drinking water sources.

A draft of updated wording is provided for the discussion and consideration of the Halton-Hamilton SPC.

Draft Mission Statement

“To collaboratively develop and support the update/maintenance of a local watershed-based plan for the sustainable protection of municipal drinking water sources in the Halton-Hamilton Source Protection Region that is science based and prevents, reduces or eliminates risks to our Great Lakes and groundwater sources of drinking water”.

Draft guiding principles

“We value:

- Fair and reasonable solutions
- Consensus within our diverse group
- Clarity of information
- Open communication
- Respecting diversity of opinion”.

Other considerations include the incorporation of climate change and supporting community growth and development. For example: “promote watershed-based planning to support climate change resiliency and environmentally sustainable growth and development”.

Signed & respectfully submitted:

Chitra Gowda

Chitra Gowda, Senior Manager
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Attachment 1: Other Source Protection Committee Mission Statements

Thames-Sydenham and Region SPC (2008)

Mission Statement: Protect sources of drinking water by developing a plan based on science and local cooperation.

Guiding Principles

We value:

- Fair and reasonable solutions
- Consensus within our diverse area group
- Clarity of information
- Open communication
- Respecting diversity of opinion

Quinte Source Protection Committee (2009)

Mission Statement: To develop a locally shaped comprehensive plan for the sustainable protection of public drinking water sources in the Quinte Source Protection Region that is both science based and reflective of local knowledge and experience and that will serve to enhance confidence in public drinking water sources.

Guiding Principles and Practices

To Lead:

- Preparation, presentation and promotion of the Source Water Protection Plan (SWPP)
- Involvement of the Public in the development of the SWPP
- Education of the Source Protection Committee (SPC) and the public in issues related to protecting source water
- Promotion of effective stewardship practices regarding environmental resources in areas requiring source water protection for public water supply
- Advocacy for protection of public source water and vulnerable areas

To Support:

- Long term implementation of the SWPP including the preparation of a review of the SWPP
- Science based research and monitoring activities of Quinte Conservation staff
- Quinte Source Protection Authority (QSPA) in an approval process for the SWPP
- Presentations to, and consultations with, Municipalities in the Quinte Source Protection Region
- Provision of advice to QSPA, Quinte staff, municipalities, residents, landowners and groups

To Facilitate

- Open and inclusive public consultation through promoting awareness, stimulating discussion, gathering feedback
- Utilization of a consensus approach to decision-making
- Heightened public awareness of the importance of protecting source water
- Development of confidence in public source water
- Continued improvement of all processes related to the sustainable protection of public drinking water sources in the Quinte Source Protection Region

Trent Conservation Coalition Source Protection Committee Commitment (2009)

The Trent Conservation Coalition Source Protection Committee is a multi-stakeholder committee selected to represent municipal, economic, general public and First Nations interests across the Source Protection Region. The Committee's ultimate role is to develop a Source Protection Plan that establishes policies for preventing, reducing or eliminating threats to sources of drinking water. In developing the plan, the committee members are committed to:

- Basing policies on the best available science, and where there is uncertainty, being mindful of the precautionary approach
- Considering and incorporating voluntarily contributed local and traditional knowledge
- Ensuring that public concerns are heard and taken into consideration
- Consulting with all stakeholders and in particular with impacted landowners/businesses
- Considering all economic impacts
- Making decisions that are fair and reasonable through an open and transparent process
- Advocating ongoing provincial funding to provide financial assistance to property/business owners, municipalities, agencies, and others for stewardship and other implementation measures.

Cataraqui Source Protection Committee Mission statement (2009)

The overall objective of the Cataraqui Source Protection Committee in partnership with local communities and the Ontario government, is to protect the quality and quantity of present and future sources of drinking water in the Cataraqui Source Protection Area. We will work with others to gather technical knowledge on which well-informed, consensus-based decisions can be made in an open and consultative manner. We will aim to propose policies in the Cataraqui Source Protection Plan that are appropriate, effective, and economical for local communities. We will make use of the available science to assess drinking water threats and issues and where there is uncertainty we will be mindful of the precautionary approach.

Saugeen, Grey Sauble, Northern Bruce Peninsula Source Protection Region

Local Source Protection Committee Mission Statement:

Providing leadership to engage the entire community in developing comprehensive, responsible solutions to protect our water resources.

Guiding Principles: We value:

- Comprehensive, science-based research
- Recognizing and engaging all members of the community as valued stakeholders
- Informed decision-making through communication, education and responsiveness to community enquiries
- Being open and transparent
- Sustainable and long-term decision making

REPORT TO: Halton-Hamilton Source Protection Committee

REPORT NO: SPC-20-09-03

FROM: Chitra Gowda, Senior Manager, Watershed Planning and Source Protection
cgowda@hrca.on.ca

DATE: August 26, 2020

SUBJECT: S. 36 Updates: Reassessment of Vulnerability of Great Lakes Drinking Water Sources

Recommendation

THAT the Halton-Hamilton Source Protection Committee **receive for information the staff report S. 36 Updates: Reassessment of Vulnerability of Great Lakes Drinking Water Sources**

AND THAT the Halton-Hamilton Source Protection Committee **direct staff to develop a modified source vulnerability factor decision matrix in discussion with municipalities and neighbouring source protection regions.**

Executive Summary

The vulnerability of the Great Lakes intakes were reassessed based on a larger range of source vulnerability factor allowed per the 2017-updated technical rules under the *Clean Water Act*, and also based on re-delineated intake protection zones (two hour time of travel). This work supports the Section 36 Workplan Task #6 (part 2) of: "Use Technical Rule 95.1 to re-assess the vulnerability scores of the Lake Ontario intake protection zones. If significant threats are possible, undertake a threats assessment". Proposed changes to the technical rules in 2020 may have implications on the reassessment of the intake protection zones.

Report

Technical Rules Background

The vulnerability assessments of surface water intakes within the Halton-Hamilton source protection region are conducted per the *Clean Water Act* technical rules that apply to Great Lakes intakes ("type A" intakes). Upon delineation of the intake protection zones (IPZs), vulnerability scores are assigned considering both source and area characteristics. The final vulnerability scores are obtained by multiplying a Source Vulnerability Factor (Vsf) with an Area Vulnerability Factor (Vaf), for each zone.

The Vsf considers the distance of the intake from shore, the depth of the intake from water surface, and the historical water quality concerns at the intake. The Vaf considers the percentage of the zone

that is land, the land characteristics, and the hydrological and hydrogeological conditions around natural or anthropogenic transport pathways.

Changes were made to the *Clean Water Act* technical rules in 2017 to enable a larger range of vulnerability scores for Great Lakes intakes. Through technical rule 95.1, if it is determined that the intake is in shallow waters, is in close proximity to the shoreline or there has been a history of water quality concerns at the surface water intake, the source vulnerability factor may vary from 0.5 to 1. The **Table 1** below shows the ranges of the scores that are possible are per the 2017 technical rules.

Table 1: Technical Rules Vulnerability Score Ranges for Great Lakes Intakes

IPZ	Source Vulnerability Factor (Vsf) Range, per rule 95.1	Area Vulnerability Factor (Vaf) Range	Vulnerability Score (Vsf X Vaf) Range
IPZ-1	0.5-1.0	10	5.0 to 10.0
IPZ-2	0.5-1.0	7-9	3.5 to 9.0

Reassessment of the Source Vulnerability Factor for Great Lakes Intakes

Staff used technical rule 95.1 to reassess the source vulnerability factor of the Halton-Hamilton Great Lakes intakes. The detailed analysis was presented at the Halton-Hamilton Source Protection Committee (SPC) meeting held on September 17, 2019, by staff Jacek Strakowski. Staff sought input from the SPC on the inclusion of the water quality concerns noted at the Oakville and Burlington intakes. Consensus was reached amongst the SPC on categorizing the Oakville water quality concern as “some” (from choices of “none”, “some”, and “constant” water quality concerns). This decision was subsequently incorporated into the reassessment as elaborated upon in **Attachment 1**.

The **Table 2** below shows the outcomes of the use of the technical rule 95.1 considering SPC discussions, compared to the current source vulnerability factors in the 2019 amended approved assessment reports.

Table 2: Reassessment of the Great Lakes Intakes Source Vulnerability Factor

Lake Ontario Intake	Current* Source Vulnerability Factor Vsf (same for IPZ-1 and IPZ-2)	REVISED Source Vulnerability Factor Vsf using technical rule 95.1 (same for IPZ-1 and IPZ-2)	REVISED Vulnerability Score of IPZ-1 only (Vaf=10, set per technical rules)
Burlington	0.7	0.7	7
Burloak	0.5	0.6 (increased)	6 (increased)
Oakville	0.6	0.7 (increased)	7 (increased)
Woodward	0.6	0.6	6

*2019 amended approved assessment reports

The Essex Region Conservation Authority (ERCA) staff are developing a decision matrix for their Lake Erie intakes, and are currently in discussions with their municipalities to incorporate the criteria of historical water quality concerns.

It is important to note that although the revised IPZ-1 vulnerability scores are higher for Burloak and Oakville, they are **not** high enough to have significant risk level threats in the IPZ-1s. Staff seek SPC direction on developing a modified source vulnerability factor decision matrix in discussion with municipalities and neighbouring source protection regions.

Re-delineation of the Intake Protection Zone-2s

The intake protection zone-two (IPZ-2) of the Great Lakes intakes of the Oakville, Burloak, and Burlington drinking water systems were re-delineated based on current available data for tributary flow, as presented at the December 10, 2019 SPC meeting. See **Figures 1, 2 and 3** attached. **Table 3** below shows the total areas as well as the increase or decrease in the land portion of the IPZ-2s. See **Attachment 2** for details of the technical work.

Table 3: Re-delineation of Great Lakes Intakes IPZ-2

Lake Ontario Intake	Current* IPZ-2 size, km ²		REVISED IPZ-2 size, km ²	
	Lake and land	Land only	Lake and land	Land only
Burlington	54.0	36.3	59.4	41.7 (13% more)
Burloak	57.9	30.4	66.4	38.9 (21% more)
Oakville	94.0	66.2	80.7	53.3 (20% less)
Woodward	34.6	19.5	Technical work is in progress.	

*2019 amended approved assessment reports

Minor change to the Oakville Intake Protection Zone-3 delineation

The land portion of the revised IPZ-2 for Oakville is around 20% smaller. Therefore, a minor change is necessary to extend the event-based (modelled) IPZ-3 down Sixteen Mile Creek and Joshua Creek to meet the IPZ-2 boundary, in order to meet the delineation requirements of the technical rules. Based on a preliminary review, this is not anticipated to have any policy implications. See **Figure 4** attached.

Reassessment of the Area Vulnerability Factor for Great Lakes Intakes

The re-delineation of the IPZ-2s triggered the need to also reassess the area vulnerability factors (Vaf) of the changed IPZ-2s, given the change in the land portions of the IPZ-2s. In August 2020 before the proposed changes to the technical rules were posted on the Environmental Registry of Ontario, staff conducted a vulnerability reassessment for the IPZ-2s.

The **Table 4** below shows the current and revised IPZ-2 assessments. Note that the results of the source vulnerability factor (Vsf) described above are used in the reassessment of the re-delineated IPZ-2s. Although the revised IPZ-2 vulnerability scores are higher, they are **not** high enough to have significant risk level threats in the re-delineated IPZ-2s. See **Attachment 3** for the detailed analysis.

Table 4: Current and Revised Vulnerability Assessment for Great Lakes Intakes IPZ-2

Lake Ontario Intake	Current* IPZ-2 Vulnerability Score			REVISED IPZ-2 Vulnerability Score		
	Source Vulnerability Factor (Vsf)	Area Vulnerability Factor (Vaf)	Vulnerability Score (Vsf X Vaf)	Source Vulnerability Factor** (Vsf)	Area Vulnerability Factor (Vaf)	Vulnerability Score (Vsf X Vaf)
Burlington	0.7	8	5.6	0.7	9 (increase)	6.3 (increase)
Burloak	0.5	8	4.0	0.6	9 (increase)	5.4 (increase)
Oakville	0.6	8	4.8	0.7	9 (increase)	6.3 (increase)
Woodward	0.6	8	4.8	Technical work is in progress.		

*2019 amended approved assessment report; **Per technical rule 95.1.

Staff have observed **challenges** with applying the criteria to determine area vulnerability factors (Vaf) for each IPZ-2. The IPZ-2s are characterized by varying geology including sand, clay, fractured bedrock, till, etc. with different permeabilities in different areas. However, these unique characteristics must be “averaged” in order to be rolled up into one area vulnerability factor. The current method lacks the consideration of variability in permeability and the potential for runoff.

Proposed changes to the technical rules

Based on a preliminary review of the proposed changes to the technical rules posted on the Environmental Registry of Ontario, it appears that there is the possibility of having more than one area vulnerability factor within an IPZ-2, and therefore more than one vulnerability score. If finalized by the province, this would be a major change to the assignment of vulnerability scores in the IPZ-2. It might help address the challenge noted above.

Therefore staff suggest that the assessment of area vulnerability factors for re-delineated IPZ-2s be revisited **after** the technical rules are finalized, in order to avail of the potential to reassess areas within the IPZ-2s. Note that the revised area vulnerability factors are already at the highest possible score of 9. A further increase in area vulnerability factors will not result in significant threats in the IPZ-2s, unless the source vulnerability factors were higher. As noted above, staff seek SPC direction to move ahead with revising the criteria for assessing the source vulnerability factor in discussion with municipalities and neighbouring source protection regions.

Jonathan Bastien (Water Resources Engineer at the Hamilton Conservation Authority), Jeff Lee (Water Resources Analyst), Florentina Perju (GIS/Data Specialist), and Jacek Strakowski

(Hydrogeologist) of Conservation Halton are acknowledged for their work on various components of the technical studies mentioned in this report.

Signed & respectfully submitted:

Chitra Gowda

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Watershed Planning and Source Protection
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Attachments

- 1. Attachment 1: Source Vulnerability Factor Reassessment per Technical Rule 95.1**
- 2. Attachment 2: Summary of the Technical Work for Re-delineation of the IPZ-2s**
- 3. Attachment 3: Area Vulnerability Factor Reassessment for re-delineated IPZ-2s**
- 4. Figure 1: Burlington Intakes – IPZ-1 and Revised IPZ-2**
- 5. Figure 2: Burloak Intake – IPZ-1 and Revised IPZ-2**
- 6. Figure 3: Oakville Intake – IPZ-1 and Revised IPZ-2**
- 7. Figure 4: Halton-Hamilton Region Great Lakes Intakes IPZ-1, Revised IPZ-2 and IPZ-3**

Attachment 1: Source Vulnerability Factor Reassessment per Technical Rule 95.1

The changes made to the Clean Water Act Technical Rules in 2017 introduced a new rule 95.1, to allow for a larger range of source vulnerability factor (Vsf) to be between 0.5 and 1 (previously between 0.5 and 0.7). To determine the source vulnerability factor of a surface water intake the following must be considered: the depth of the intake from the top of water surface, the distance of the intake from land, and the history of water quality concerns at the surface water intake.

Decision Matrix

The Technical Rules do not define “shallow” or a “deep” intake. In other approved assessment reports, a decision matrix was used by Stantec Consulting based mainly on criteria from the Ministry of Environment, Conservation and Parks (MECP, previously known as MOECC) and from the State of Michigan. The MOECC guidelines for the Design of Water Treatment Works (MOE, 1982) prescribe that the preferred submergence for raw water intakes is ten (10) metres; however three (3) metres or more is satisfactory. It does not recommend a preferred distance from shore. The State of Michigan, as part of its Source Water Protection Program (MDEQ, 2004), categorize surface water intakes in four ways according to distance offshore and depth to intake: near shore, shallow water intakes; near shore, deep-water intakes; offshore, shallow-water intakes; and offshore, deep-water intakes.

Table 1: Technical Rule 95.1 Applied to Stantec’s Decision Matrix

Depth Criteria (MOECC)		Distance criteria (MDEQ)		History of water quality concerns (Stantec)	
Intake depth, m	Sub-score*	Distance from shore, m	Sub-score*	Concerns	Sub-score*
>= 10	0.5	>= 500	0.5	None	0.5
> 6.1 and < 10	0.66	>= 300 and < 500	0.75	Some	0.75
> =3.0 and < 6.1	0.83	< 300	1	Constant	1
< 3.0	1				

*Range of 0.5 to 1 based on technical rule 95.1

Table 2: Source Vulnerability Factor (Vsf) Reassessment per Technical Rule 95.1

Lake Ontario Intake	Intake Depth, m	Sub-score*	Distance from shore, m	Sub-score*	Historical water quality concerns	Sub-score*	Vsf
Burlington - East	6.3	0.66	750	0.5	Some	0.75	0.7
Burlington - West	5.5	0.83	750	0.5	Some	0.75	0.7
Burloak	17	0.5	1350	0.5	Some	0.75	0.6
Oakville	8.7	0.66	858	0.5	Some	0.75	0.7
Woodward – Pipe 1	8.5	0.66	945	0.5	None	0.5	0.6
Woodward - Pipe 2	7.3	0.66	640	0.5	None	0.5	0.6
Woodward - Pipe 3	8	0.66	915	0.5	None	0.5	0.6

*Range of 0.5 to 1 based on technical rule 95.1

Attachment 2: Summary of the Technical Work for Re-delineation of the IPZ-2s

The intake protection zone-two (IPZ-2) for a surface water intake is an area that may contribute water to the intake where the time of travel (TOT) to the intake is equal to or less than the time required to allow the operator of a system to respond to a spill or other event that may impair the water quality (paraphrased from the Clean Water Act 2017 technical rules (rule 65). In the Halton-Hamilton Source Protection Region (HH SPR), the TOT used in the delineation was set to two (2) hours.

Staff carried out the IPZ-2 re-delineation technical work in 2019, due to changes to the landscape as well as the availability of new creek hydraulic models. Changes to the landscape due to development resulted in new “preferential pathways” for contaminants to enter the in-stream and lake portion of IPZ-2. Storm sewers, roadside ditches, tile drainage systems are examples of preferential pathways which shorten the TOT of contaminants to the intake. As well, the Hamilton Conservation Authority and Conservation Halton have new creek hydraulic models that better represent the in-stream distance for the 2-hour TOT to the Lake Ontario intakes. These models are being utilised to help keep the science up to date for drinking water source protection purposes. The updated hydraulic models for the Hamilton region are being finalized, therefore the Woodward IPZ-2 re-delineation work is in progress.

The IPZ-2 is comprised of a lake portion and inland portion. The lake portion was delineated previously by HCCL Coastal & River Engineering as part of the Lake Ontario Collaborative Intake Protection Zone studies through hydrodynamic modeling. Areas alongshore the lake portion of IPZ-2, defined as 120m inland or the conservation authority regulated limit, whichever is greater were also included. The inland portion of IPZ-2 were estimated for watercourses flowing into the lake portion of IPZ-2 and are based on up-stream distance for up to 2-hour TOT to the intake. Setbacks are applied to each bank of a watercourse, it is either 120 m distance from the bankfull of a watercourse or the conservation authority regulation limit, whichever is greater. The inland portion of IPZ-2 also includes areas which are preferential pathways for contaminants to enter the in-stream or lake portion of IPZ-2.

Based on the results of the hydrodynamic model, Stantec (lead consultant for the Lake Ontario Collaborative) provided residual TOT for the points where creeks discharge into the lake portion of the IPZ-2. The residual TOT is the remaining time a particle of water must travel from up-stream to arrive at the intake in two hours. When the residual TOT and bank-full stream velocities are known, the upstream distance can be calculated.

Conservation authority hydraulic models developed for floodplain mapping were used to estimate the IPZ-2 upstream distance. A floodplain mapping model divides a creek into small sections through a series of cross sections at which locations stream velocities are output. Using 2-year storm velocities (bank-full flow) and the distances along the stream alignment between the cross sections the distance up-stream corresponding to the residual TOT was determined.

To assess the preferential pathways, storm sewer networks in terms of locations, directions and catchments were obtained from the municipalities and tile drainage maps was obtained from OMAFRA. Setbacks and results of preferential pathway assessment were applied to get the full extent of IPZ-2. The figure below shows an example of inland IPZ-2 delineation.

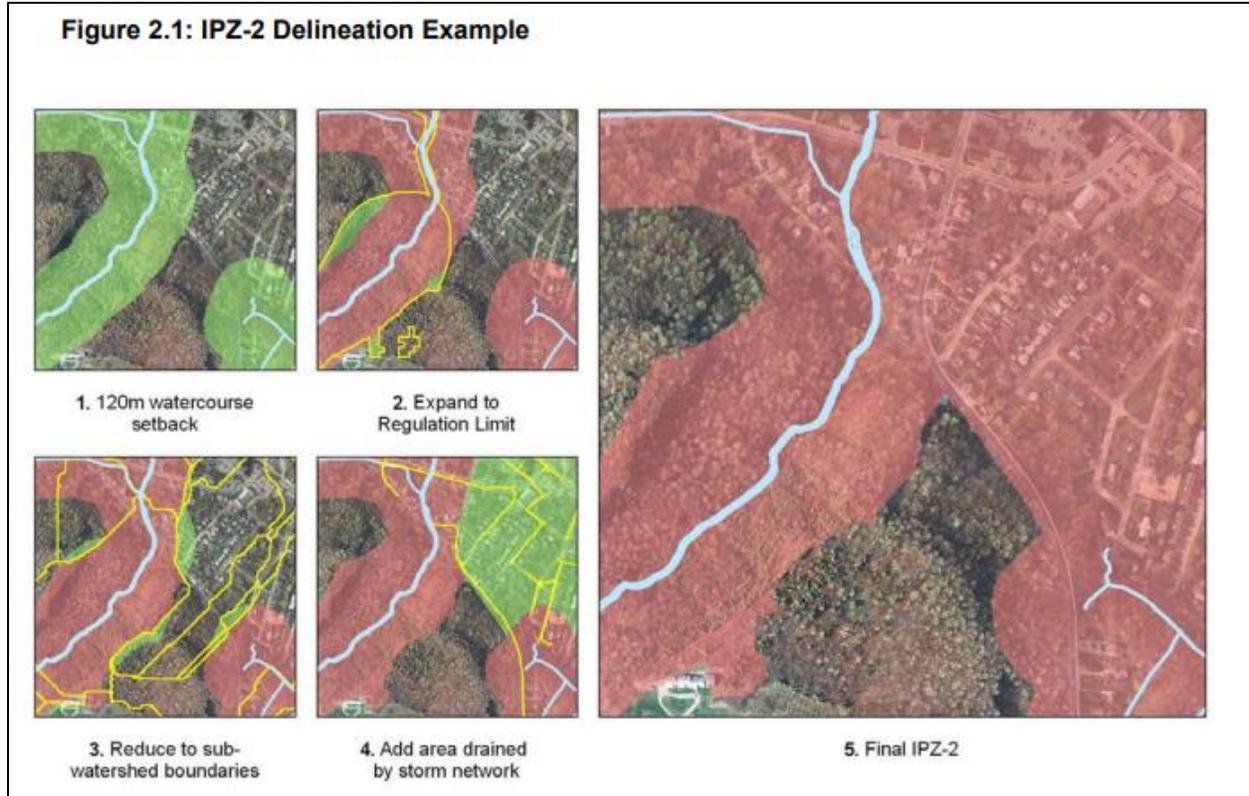


Figure 2.1 from the Stantec 2008, Lake Ontario Collaborative Source Protection Technical Study Module 4 Addendum – Burlington WPP, Burloak WPP, and Oakville WPP

The Stantec IPZ delineation reports are available on protectingwater.ca, in the Halton and Hamilton Assessment Reports section 6.1.3.

Attachment 2: Area Vulnerability Factor Reassessment for IPZ-2s

The Clean Water Act technical rules set the range of scores and factors to consider while assigning a score for an intake protection zone-two (IPZ-2). The area vulnerability factor (Vaf) for an IPZ-2 must be between 7 and 9 and depends on: the percent of land, land cover, soil type, permeability, slope from setbacks and transport pathways. A decision matrix by Stantec consulting used in other assessment reports was used, with an adaption considering tile drained areas with storm runoff catchment areas and permeability with the soil type.

Table 1: Factor Decision Matrix adapted from Stantec

Factor	Sub-score 7 out of 9	Sub-score 8 out of 9	Sub-score 9 out of 9
Percent land of the IPZ-2	<33%	33-66%	>66%
Land cover	Mainly forest	Agricultural and/or mixed vegetated and developed	Mainly developed
Soil type and permeability	Sandy	Silty clay	Clay
Slope from setbacks	<2%:	2-5%:	>5%:
Storm catchment area	<33%	33-66%	>66%
#storm outfalls, watercourses and drains, per 1000 ha	<4	4-7	>7

Table 2: Land Characteristics

Lake Ontario Intake	Percent land of the IPZ-2	Land cover	Soil type and permeability	Slope from setbacks	Average sub-score
Burlington	70% (sub-score 9)	Mainly developed (sub-score 9)	A third of the area is Iroquois lake deposits – sands: very permeable. A third is shallow bedrock: moderately permeable. A third is Halton till deposits: low permeability. ("averaged out" sub-score of 8)	1%, except in new area north of Dundas (escarpment), approx. 3.9% (sub-score 7)	8
Burloak	59% (sub-score 8)	Mainly developed (sub-score 9)	20% of the area is Iroquois lake deposits – sands: very permeable. 60% is shallow bedrock: moderately permeable. 20% is Halton till deposits: low permeability. ("averaged out" sub-score of 8)	1%, even with the new areas (sub-score 7)	8
Oakville	66% (sub-score 8)	Mainly developed (sub-score 9)	25% area is Iroquois lake deposits – sands: very permeable. 35% is shallow bedrock: moderately permeable. 45% is Halton till deposits: low permeability. ("averaged out" sub-score of 8)	1%, even with the new areas (sub-score 7)	8

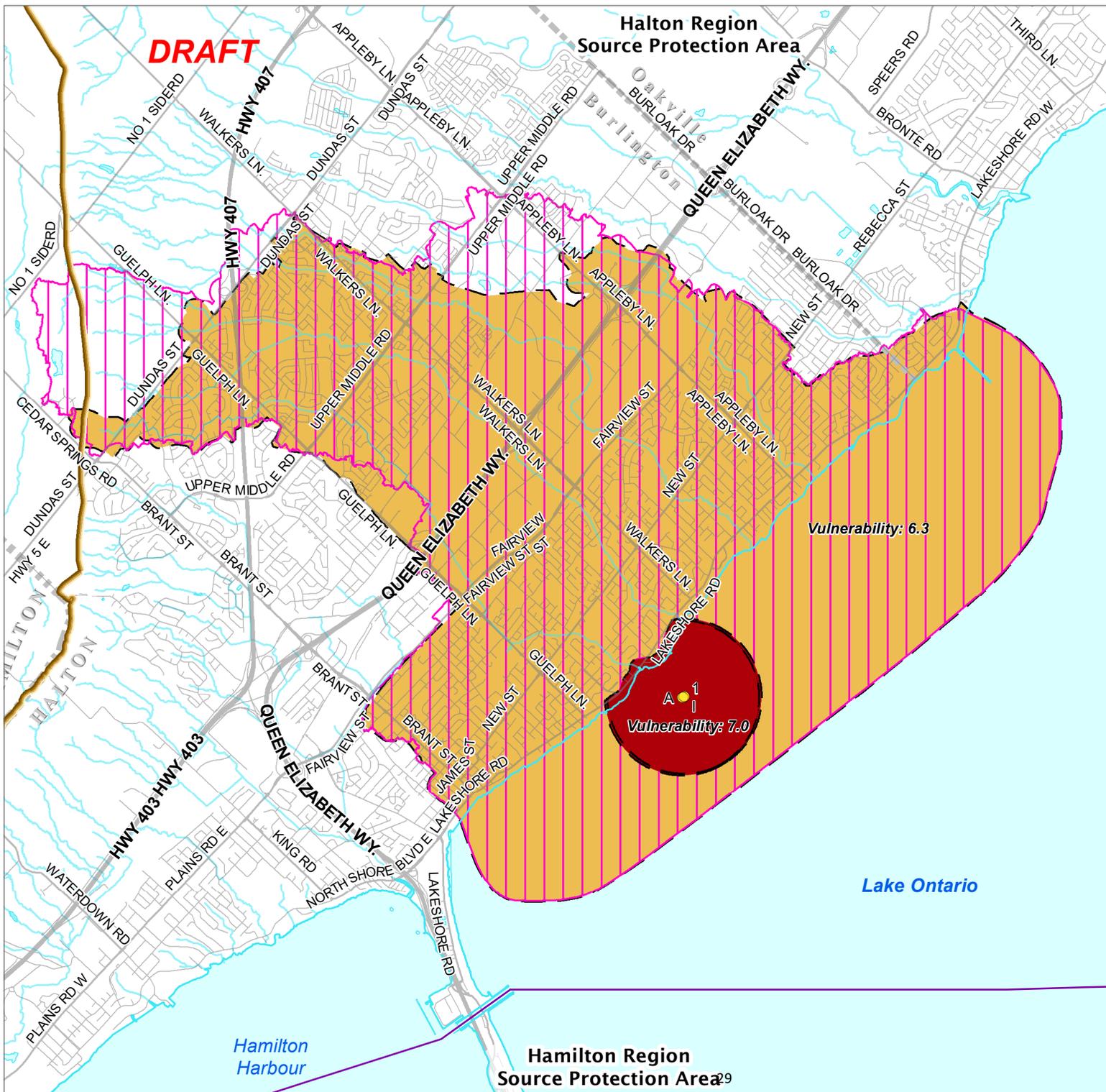
Table 3: Transport Pathways

Lake Ontario Intake	Storm catchment area	#storm outfalls, watercourses and drains, per 1000 ha	Average sub-score
Burlington	Extensive storm catchment area. New small area north-east bring in more storm catchment area; however new north-west areas do not. (sub-score 9)	Several. (sub-score 9)	9
Burloak	Extensive storm catchment area. New areas bringing in more storm catchment area, with exception of very small (approx. 5 %) part. (sub-score 9)	Several. (sub-score 9)	9
Oakville	Overall a smaller IPZ-2, but still has extensive storm catchment area. (sub-score 9)	Several. (sub-score 9)	9

Table 4: Overall Area vulnerability Factor for IPZ-2s

Lake Ontario Intake	Land Characteristics Sub-score (from Table 2)	Transport Pathways Sub-score (From Table 3)	REVISED IPZ-2 Area Vulnerability Factor
Burlington	8	9	9
Burloak	8	9	9
Oakville	8	9	9

Figure 1: Burlington Intakes – IPZ-1 and Revised IPZ-2



Legend

- Source Protection Area
- Upper Tier Municipality
- Lower Tier Municipality
- Niagara Escarpment
- Roads**
 - Highway
 - Regional
 - Local
- Hydrography
- Waterbody
- Municipal Intake**
 - Operational
- Intake Protection Zones (IPZs)***
 - IPZ-1
 - Current IPZ-2
 - Proposed IPZ 2

DRAFT

*Note : Other IPZs that overlap are not shown on this map

Source : Halton Region / Lake Ontario Collaborative / Stantec Consulting Inc. as amended 2010.

Projection : UTM NAD 83 Zone 17

Date : August 2020

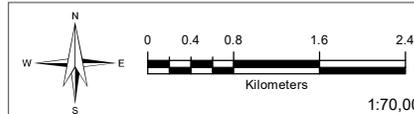
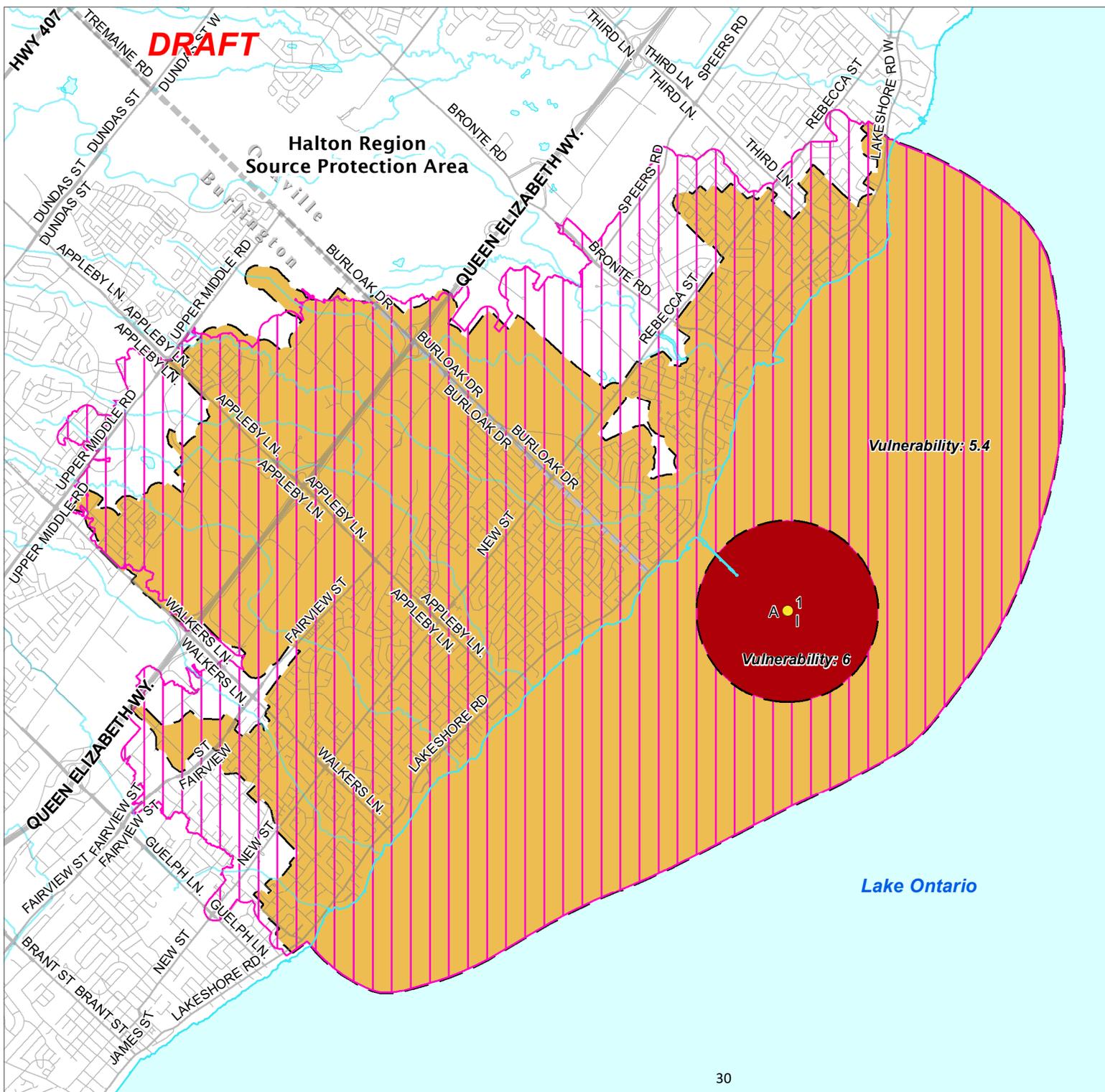


Figure 2: Burloak Intake – IPZ-1 and Revised IPZ-2



Legend

- Source Protection Area
- Municipal Intake**
- Operational
- ▨ Upper Tier Municipality
- ▩ Lower Tier Municipality
- Roads**
- Highway
- Regional
- Local
- ~ Hydrography
- Waterbody
- Intake Protection Zones (IPZs)***
- IPZ-1
- Current IPZ 2
- Proposed IPZ 2

DRAFT

*Note : Other IPZs that overlap are not shown on this map

Source : Halton Region / Lake Ontario Collaborative / Stantec Consulting Inc. as amended 2010.

Projection : UTM NAD 83 Zone 17

Date : August 2020

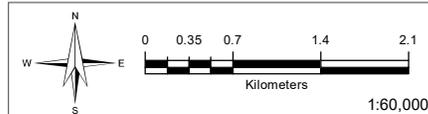
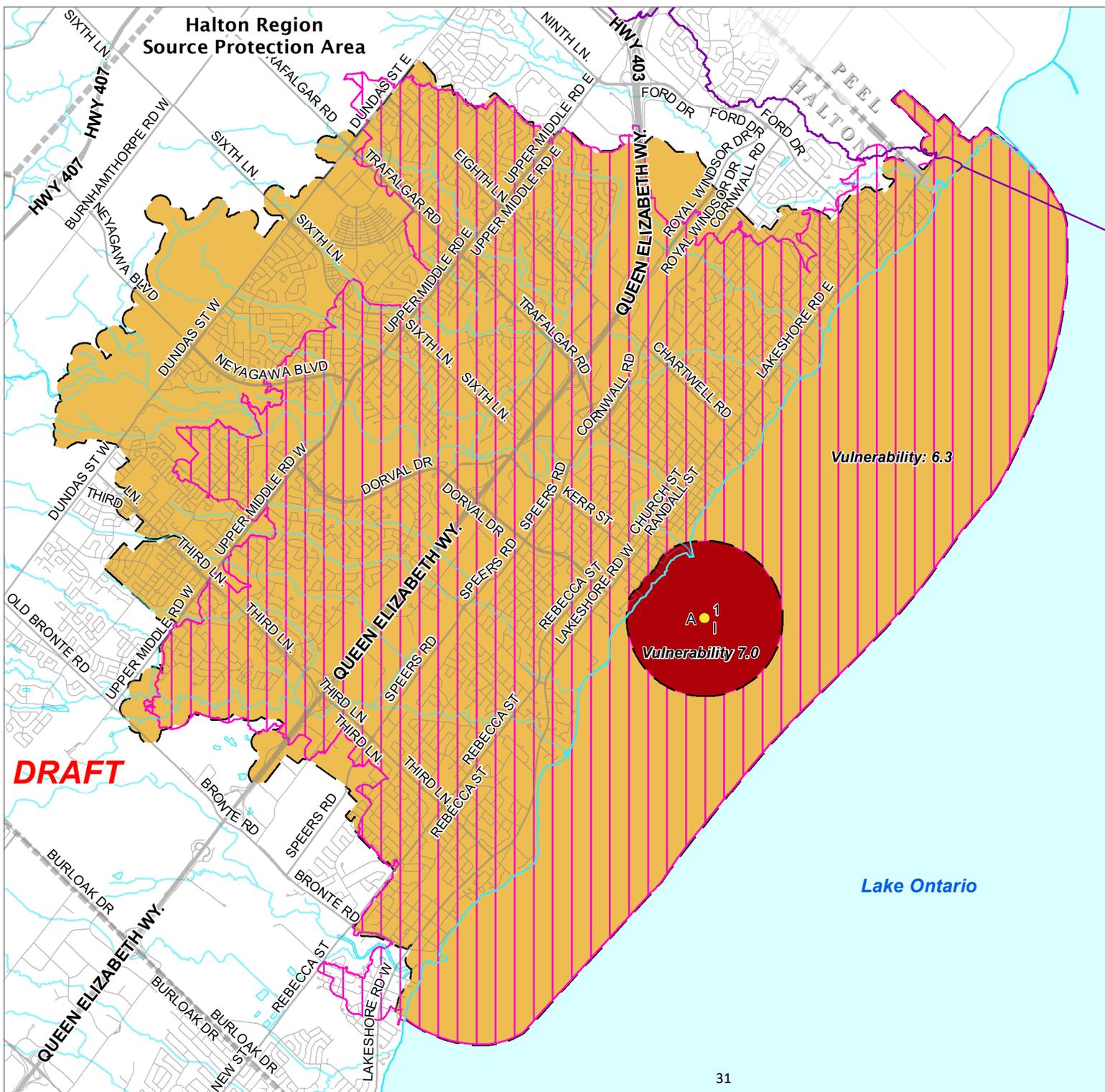


Figure 3: Oakville Intake – IPZ-1 and Revised IPZ-2



Legend

- Source Protection Area
- Municipal Intake**
- Operational
- Upper Tier Municipality
- Lower Tier Municipality
- ~ Hydrography
- ~ Waterbody
- Roads**
- Highway
- Regional
- Local
- Intake Protection Zones (IPZs)***
- IPZ-1
- Current IPZ 2
- Proposed IPZ 2

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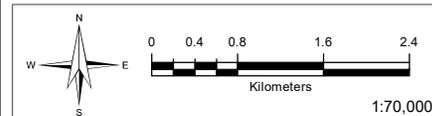
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*Note : Other IPZs that overlap are not shown on this map

Source : Halton Region / Lake Ontario Collaborative / Stantec Consulting Inc. as amended 2010.

Projection : UTM NAD 83 Zone 17

Date : August 2020



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Figure 4:
Halton-Hamilton Region
Great Lakes Intakes IPZ-1,
Revised IPZ-2 and IPZ-3

Legend

Municipal Intake

- Operational
- Source Protection Region
- Source Protection Area
- Hydrography

Wellhead Protection Area

- A-E Scores

Intake Protection Zone(Proposed)*

- 1 - 1 km
- 2-2hours

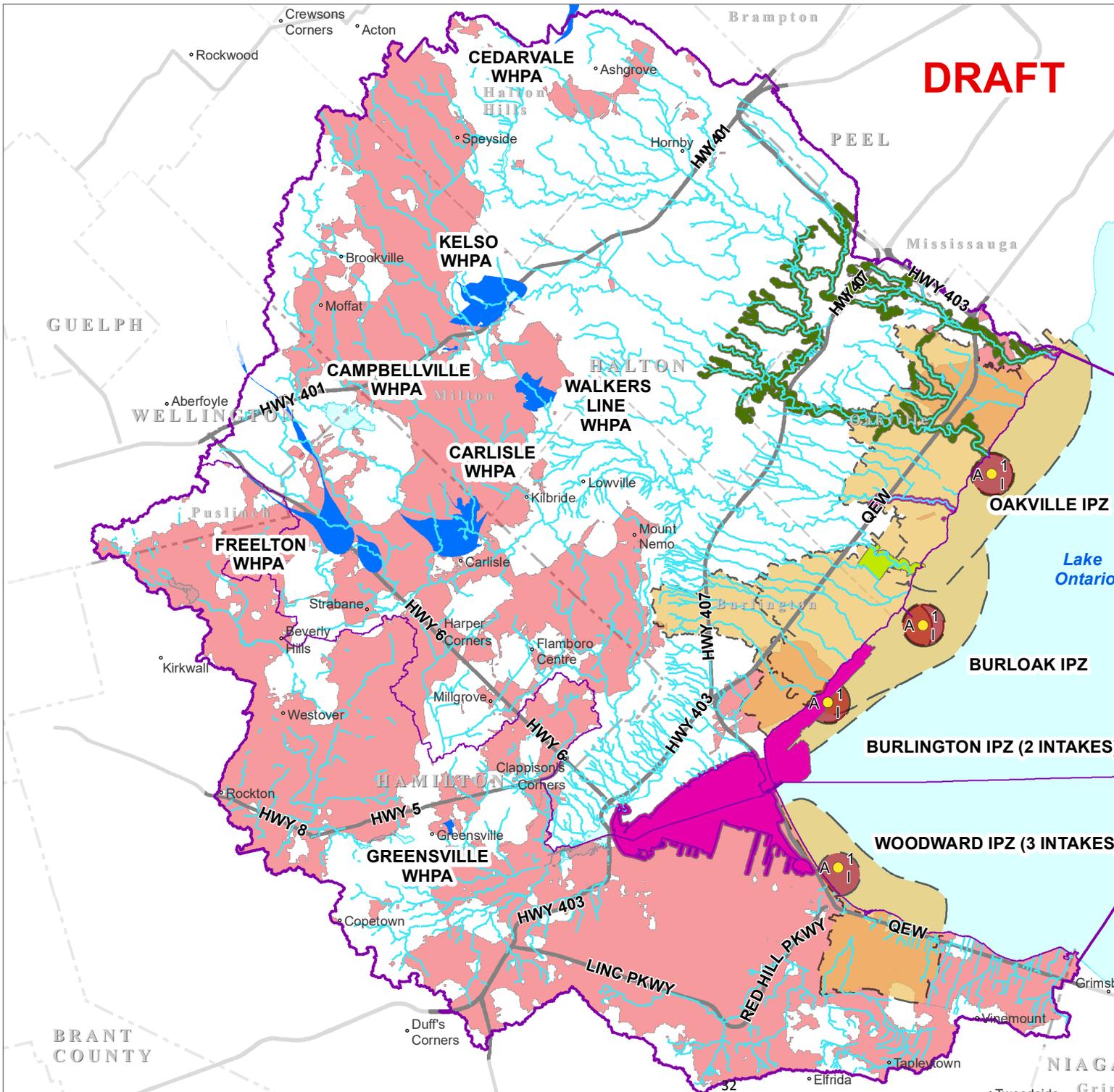
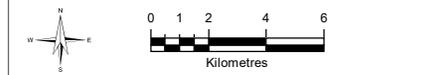
IPZ 3: Event-Based Modelling
Significant Threat Areas

- Handling and Storage of Fuel
- Conveyance of Oil in a Pipeline
- Discharge from a wastewater treatment facility other than a bypass

Potential Threat Areas

- Highly Vulnerable Aquifer

*Note : This figure shows the proposed IPZ-2s for Burlington, Burloak, Oakville, and the current IPZ-2 for Woodward
 Projection : UTM NAD 83 Zone 17
 Date : August 2020



REPORT TO: Halton-Hamilton Source Protection Committee

REPORT NO: SPC-20-09-04

FROM: Chitra Gowda, Senior Manager, Watershed Planning and Source Protection
cgowda@hrca.on.ca

DATE: August 26, 2020

SUBJECT: S. 36 Updates: Assessment of Liquid Hydrocarbon Pipelines as a Prescribed Drinking Water Threat

Recommendation

THAT the Halton-Hamilton Source Protection Committee **receives for information the Staff report S. 36 Updates: Assessment of Liquid Hydrocarbon Pipelines as a Prescribed Drinking Water Threat**

AND THAT the Halton-Hamilton Source Protection Committee **direct staff to revise current policies and develop draft non-legally binding policies for areas of low and moderate risk levels.**

Executive Summary

The “establishment and operation of a liquid hydrocarbon pipeline” was added to the *Clean Water Act* list of prescribed drinking water threat activities in 2018, with new circumstances of occurrence. Staff conducted a risk assessment using the threats approach to determine the circumstances under which this activity will be a significant, moderate or low threat in the Halton-Hamilton Source Protection Region (HHSPR). Staff researched policy approaches by other source protection areas and regions. This work supports the Section 36 Workplan Task #3, parts 1 and 2: “Add as a prescribed threat and remove local threat” and “Identify threat locations and assess significance following re-assessments to vulnerability scores of intake protection zones”, with the exception of the Freelon WHPA because related technical work is in progress.

Report

Current event-based approach to risk assessment and S. 36 updates

During the first round of source protection planning, liquid hydrocarbon pipelines were not included as a prescribed drinking water threat. The Halton-Hamilton source protection committee (HHSPC) was one of six committees that included pipelines in their source protection plan as a local threat. The HHSPC identified oil pipeline threats using the event-based area (modelling) approach to risk assessment, with the circumstance of occurrence being: the conveyance of oil by way of a pipeline that crosses a body of open water.

As identified in the approved assessment report, four oil companies transport liquid hydrocarbon products in pipelines across the Halton-Hamilton source protection region (HHSPR). These pipelines cross open bodies of water including creeks, Hamilton Harbour, and Lake Ontario.

The two existing significant drinking water threats identified through the event-based area approach involving modelling spill scenarios from an oil pipeline are located about two kilometres from the Lake Ontario shore.

While undertaking updates per the S. 36 workplan, the term “local threat” will be replaced with “prescribed drinking water threat” where used in conjunction with liquid hydrocarbon pipelines in the assessment report, source protection plan and explanatory document, with the exception of archived materials (such as dated technical studies or dated correspondence). The explanatory document will explain the change.

The description and results of the event-based area approach to risk assessment of pipelines will remain unchanged. This is per the MECP Bulletin: Overview of Requirements for Amendments under S36 of the Clean Water Act (Supplemental Bulletin #3 – Updates to Director’s Technical Rules and Tables of Drinking Water Threats) (December 2018).

Threats approach to risk assessment and S. 36 updates

The “establishment and operation of a liquid hydrocarbon pipeline” was added as a prescribed drinking water threat through an amendment made to the General Regulation (O. Reg. 287/07) under the Clean Water Act on July 1, 2018 to consistently require the assessment of risk that liquid hydrocarbon pipelines pose to sources of drinking water across all source protection areas. As a result, these pipelines will now be considered significant, moderate or low threats to drinking water in certain vulnerable areas as determined through the provincial Table of Drinking Water Threats. The outcomes of the threats risk assessment must be included in the assessment report and will influence source protection plan policy needs.

The **new circumstances** include consideration of the following, for specified chemicals of concern in any quantity:

- pipelines above ground or above a water
- pipelines below ground and not crossing underneath a water body
- pipelines within or under a water body.

In July and August 2020, HHSPR staff reassessed the vulnerability of IPZs and identified wells transport pathways in WHPAs, **resulting in a small number of changes in vulnerability scores** for the review of the SPC. These assessments are described in detail in SPC Report 20-09-03: S. 36 Updates: Reassessment of Vulnerability of Great Lakes Drinking Water Sources, and SPC Report 20-09-07: S. 36 Updates: Identification of Wells Transport Pathways in Wellhead Protection Areas. See the revised vulnerable areas and locations of known pipelines in the attached **Figure 1**.

In August 2020, HHSPR staff conducted a risk assessment using the threats approach to determine the vulnerable areas and circumstances under which ‘the establishment and operation of a liquid hydrocarbon pipeline’ would be a potential significant, moderate or low threat to drinking water sources.

The threats approach is based on the quantitative risk score estimation for an activity that is or would be a drinking water threat in a specific vulnerable area. It involves the use of vulnerability scores and circumstances of occurrence described in the provincial Table of Drinking Water Threats available online at the Source Protection Portal: <https://swpip.ca/>. The revised vulnerability scores were used in the threats risk assessment.

Areas of risks of low, moderate and significant are required to be listed in the assessment report, and identified in maps if significant. For existing significant risks, enumeration tables in the assessment report should include the count of liquid hydrocarbon pipelines based on available information. The **Table 1, Table 2 and Table 3** below indicate the number of potential significant, moderate and low threat circumstances posed by liquid hydrocarbon pipelines, within IPZs, WHPAs and the highly vulnerable aquifers (HVAs) respectively.

Table 1: The number of circumstances for the establishment and operation of a liquid hydrocarbon pipeline considered to be drinking water threats in HHSPR IPZs

Municipal Surface Water Intake	Number of circumstances (VS: Revised Vulnerability Score)							
	IPZ-1				IPZ-2			
	VS	S	M	L	VS	S	M	L
Burlington	7.0	0	2	1	6.3	0	0	3
Burloak	6.0	0	0	3	5.4	0	0	2
Oakville	7.0	0	2	1	6.3	0	0	3
Woodward	6.0	0	0	3	technical work in progress			

S: Significant, M: Moderate, L: Low - risk level of threats

As seen in **Table 1**, in the HHSPR IPZs there are no significant threats possible through the threats (vulnerability scores) approach; however as indicated in SPC Report 20-09-03, staff are seeking SPC direction on developing a modified scoring matrix. This, along with proposed changes to the technical rules, may change the outcome.

From **Table 2** below, it is seen that it is possible to have **existing and future significant drinking water threats** in WHPA-A and WHPA-B of vulnerability score 10 and in WHPA-E of score 9, in the HHSPR. However, there are currently no known, existing pipeline threats in the HHSPR WHPAs.

Table 2: The number of circumstances for the establishment and operation of a liquid hydrocarbon pipeline considered to be drinking water threats in HHSPR WHPAs

Number of Circumstances			
WHPA and Vulnerability Score	S	M	L
WHPA-A and WHPA-B, score of 10	3	1	0
WHPA-B and WHPA-C, score of 8	0	3	0
WHPA-B, WHPA-C, WHPA-D, score of 6	0	0	3
WHPA-E, score of 9 (Carlisle)	2	3	1
WHPA-E, score of 8.1 (Carlisle)	0	2	1

S: Significant, M: Moderate, L: Low - risk level of threats

From **Table 3** below, only a low risk level from liquid hydrocarbon pipelines is possible within a Highly Vulnerable Aquifer.

Table 3: The number of circumstances for the establishment and operation of a liquid hydrocarbon pipeline considered to be drinking water threats in HHSPR HVAs

Number of circumstances in a Highly Vulnerable Aquifer (Vulnerability Score is 6)		
S	M	L
0	0	3

S: Significant, M: Moderate, L: Low - risk level of threats

Staff will continue to engage oil pipeline companies to request updates on pipeline locations and new projects, and to raise awareness of the outcomes of the threats risk assessment and planned source protection plan updates under the *Clean Water Act* S. 36. HHSPR staff will also request support from MECP in confirming the location of any other liquid hydrocarbon pipelines that may not already be identified. This information will be used to update the assessment report.

Staff will also gauge stakeholder interest in revisiting the modelling scenarios of bulk fuel storage in Oakville, Ontario and oil pipeline releases, to improve the event-based area approach. As documented in the approved S. 36 Workplan, these items were included because the SPC and the associated stakeholders did not accept the results of the Lake Ontario Collaborative modelling studies as final and credible. As noted in the assessment reports, stakeholder input was not used to finalize the modelling scenarios and additional review indicated that the scenarios modelled are not reflective of real events that could occur.

Should stakeholders confirm interest in revisiting the modelling scenarios, staff will work with stakeholders to develop credible scenarios for inland contaminant release and transport to the outlets of the appropriate creeks. The existing results of the in-lake model, i.e. travel times and

chemical degradation, will then be used to assess risk to the municipal intake source water. No additional in-lake modelling will be necessary for these reassessments.

Proposed changes to the technical rules

The province is proposing changes to the technical rules per their August 2020 Environmental Registry #019-2219: “Proposed amendments to the Director’s Technical Rules made under section 107 of the Clean Water Act, 2006”. See SPC Report 2020-09-01 for general information.

In the proposed changes, “liquid hydrocarbon” is being defined as “a mixture containing hydrogen and carbon and is liquid at the temperature and pressure under which its volume is measured or estimated”. Further, the proposed changes clarify that the intent of the technical rules around local threats are to be focused on activities that do not already require provincial or federal approval.

The current definition of the liquid hydrocarbon pipeline threat activity is noted in the Ministry of Environment, Conservation and Parks (MECP) Bulletin: New Administrative Amendments and Prescribed Threats under the Clean Water Act (August 2018), “This new prescribed threat captures pipelines designated for transmitting or distributing liquid hydrocarbons to terminals and distribution centers; it does not capture pipelines that move liquefied natural gas or liquid petroleum gas. It also does not capture pipelines operated by the Ministry of Natural Resources and Forestry (MNRF) as defined in the Oil, Gas and Salt Resources Act, or those that operate within a property such as a refinery. Pipelines that convey liquid fuel within a single property would fall under the prescribed threat ‘handling and storage of fuel’.”

The MECP is planning on hosting information sessions for SPAs on the proposed changes to the technical rules. While the proposed changes are not anticipated to affect the S. 36 work being undertaken on liquid hydrocarbon pipelines crossing WHPAs and HVAs, staff will keep the SPC updated on this matter. As indicated in the SPC Report 2020-09-03, the proposed changes to the technical rules may change the IPZ vulnerability scores, which in turn would require a reassessment of the pipelines within IPZs using the threats risk assessment approach.

Policy Considerations

A summary of the current assessment and regulation of oil pipelines is provided in the **Attachment 1**. Several source protection areas and regions are considering new policies or updates to current policies to address the prescribed drinking water threat of “establishment and operation of a liquid hydrocarbon pipeline”. Measures being discussed include:

- Notification of pipeline integrity testing/inspections to the lead source protection authority
- Spill prevention/contingency plans to incorporate drinking water vulnerable area mapping
- Emergency response to mitigate impacts to drinking water sources.

The current Halton-Hamilton Source Protection Plan policies L-1-S, L-2-S, T-52-S already include such measures to address the existing significant threat (identified through events-based approach). See **Attachment 2**. The policies are discretionary and non-legally binding and apply within the event-based area IPZ-3s. Other source protection area/region plan policies for oil pipelines as local threats

are similar to the current Halton-Hamilton Source Protection Plan policies. The following policy tools can continue to be used for liquid hydrocarbon pipelines as a prescribed drinking water threat activity:

- Specified Actions
- Best Management Practices
- Education and Outreach.

The legal effect of the policies using these tools will depend on the risk level and the implementing body. It is not anticipated that there would be any changes to the legal effect of current policies, which are non-legally binding.

Suggested revisions to current policies

At the December 2019 SPC meeting, based on the September 2019 discussions between HHSPR and SPC with Canada Energy Regulator, it was discussed that the three-year inline and visual inspection recommendation in policy L-1-S a. may not be appropriate given the extent of federal regulation of the pipelines as described by Canada Energy Regulator. Further, the SPC noted the matter of risk associated with locating safety valves in or close to drinking water vulnerable areas.

Based on these discussions of the SPC at its December 2019 meeting, staff seek direction from the SPC on revising policy L-1-S to recommend that the age and condition of a pipeline be considered in determining the frequency of inline and visual inspection, and that the pipeline companies give due consideration to watercourses and the areas around them and drinking water vulnerable areas, while locating safety valves. Editorial changes will also be made, for example replacing 'National Energy Board' with 'Canada Energy Regulator'.

Consideration for new policies for areas of low and moderate level threat risks

Other SPCs are considering policies not only for significant threat areas but also for areas of low and moderate risks including highly vulnerable aquifers (HVA). See **Attachment 2**. In one instance, the SPC is exploring the use of a legally binding "must conform" policy directed to the source protection authority, requiring the latter to become engaged in the planning and design phase of any such pipeline. Staff seek direction from the SPC on considering the development of draft policies for areas of low and moderate risks including HVAs, in discussion with other source protection regions and oil pipeline companies.

Exemption from policies where there is no reasonable prospect of pipelines

Based on the threats risk assessment conducted, it is possible to have significant threats in the WHPAs in the Halton-Hamilton Source Protection Region. There are no known liquid hydrocarbon

pipelines passing through the Halton-Hamilton WHPAs; however confirmation of this and for any planned pipelines will be sought from oil pipeline companies.

Regulation amendments in 2018 provide an exemption from including policies when there are no existing pipelines nor any reasonable prospect that pipelines would be established in the future. This means that where hydrocarbon pipelines are not established today nor have a likely prospect in the future within areas they pose a significant risk, SPP policies are not required. In this case, the Explanatory Document must include:

- An explanation of the reasons for concluding there is no reasonable prospect
- A description of the process and summary of information used to reach the conclusion (i.e., consideration of established land uses; land use planning documents).

HHSPR staff will continue to consult with neighbouring source protection areas and regions as policies are developed to ensure that consistent policy tools are used for pipelines that cross our boundaries. The SPC is asked to consider policy tool options based on the information presented and discussed at this meeting. HHSPR staff will proceed with the preparation of draft policies and updates to the Explanatory Document at the direction of the SPC. Staff will report back to the SPC on December 8, 2020.

Next Steps

1. Engage oil companies to confirm existing and planned liquid hydrocarbon pipeline locations and to determine interest in refinement of the events-based modelling.
2. Update the assessment report and present the tracked changes to the SPC in Dec. 2020.
3. Develop draft policies for review by the SPC in Dec. 2020.

Signed & respectfully submitted:

Chitra Gowda

Chitra Gowda, Senior Manager
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Attachments

1. **Figure 1: Halton-Hamilton Region IPZ-2 and Known Pipelines**
2. **Attachment 1: Summary of the current assessment and regulation of oil pipelines including notes of a meeting with Canada Energy Regulator on September 25, 2019**
3. **Attachment 2: Current Halton-Halton-Hamilton source protection plan policies and examples of draft policies by other source protection region for liquid hydrocarbon pipelines.**

Attachment 1: A summary of the current assessment and regulation of oil pipelines

There are both federal and provincial bodies that are responsible for assessment and regulation of oil pipelines in Ontario. At a federal level, the Impact Assessment Agency of Canada (IAAC) assesses the impacts of major Canadian projects, including pipelines that transport liquid hydrocarbons. The IAAC is a federal body accountable to the federal Minister of Environment and Climate Change. IAAC works with other bodies like the Canada Energy Regulator (CER), formerly the National Energy Board. Regulatory responsibilities associated with pipeline and oil and gas transmissions (i.e. transportation) fall under the jurisdiction of CER. Both the CER and IAAC include the protection of drinking water sources in their role in assessments. At a provincial level, the Ontario Energy Board is responsible for any pipeline wholly contained within Ontario.

On September 25, 2019, HHSPR staff, the SPC Chair and industrial-commercial sector SPC member met with CER to gain a better understanding of roles, regulations and risk mitigation. A summary of that discussion including CER safety and inspection details is provided below, and was brought to the SPC meeting held on December 10, 2019.

Notes – Conference Call Meeting with Canada Energy Regulator (CER)

Date: September 25, 2019

Attendees: Marc-Andre Plouffe, Director Eastern Region, Canada Energy Regulator Armand Ngonga, Pipeline Integrity Engineer, CER, Robert Edmondson, Chair of the Halton-Hamilton Source Protection Committee (SPC), Michael Kandravy, SPC member representing industry, Diane Bloomfield, Manager, Source Water Protection, Halton-Hamilton Region

Meeting overview: Diane provided an overview of Ontario's source water protection program and how it relates to liquid hydrocarbon pipelines. She then explained Halton-Hamilton Source Protection Plan policies L-1-S, L-2-S, and T-52-S. SPC members lead a discussion with CER through a series of questions.

What we learned:

- The Eastern Region Office of CER, located in Montreal, is always available to help us. Pipeline companies are required to answer stakeholder and the public's questions and address concerns raised.
- The oversight goal of the CER is to protect people and the environment and the replacement of the National Energy Board Act with the Canadian Energy Regulator Act, 2019 did not change that. However, many changes were made to the regulator's role in assessments. All energy projects that are interprovincial and international are evaluated, not just pipelines. If a pipeline project is <75 km in length the CER would assess and regulate, however, the Minister has the ability to designate a project to be assessed (for example if there is lots of opposition). Larger projects are assessed by the CER, with their report being submitted to the Impact Assessment Agency of Canada (Agency) for consideration. The ultimate decision lies with Cabinet. CER has one commissioner on the Agency and CER supports the Agency. Having the Agency in place facilitates consistency in methodology for the assessment of all projects.
- Both the CER and Agency include the protection of drinking water sources in their assessments. They require the submission of an impact study from the proponent that outlines the risks of the project and they require a mitigation plan to reduce risks identified. Conditions of approval may be imposed based on their assessment of the documents provided and testimony given during hearings. During the assessment the proponent is also asked for a strong emergency management plan.

- The proponent provides rationale for the routing of the pipeline and the locations of shut-off valves. Testimony can be given before the Agency to request changes and the addition of locally strategic shut-off valves.
- The framework followed for assessments and regulation is CSA Z662-19(Oil and gas pipeline systems). This Canadian Standard is reviewed every four years. The Standard sets minimum requirements using a risk based approach and the onus is on the proponent to bring solutions to challenges/risks identified regarding design, construction, and operation. Any new threat not included in the Standard and any concern brought forward by a stakeholder must be addressed by the proponent. Companies are required to have emergency management plans on their websites.
- The requirements for integrity management programs are based on the risk assessment completed by the proponent, and for operating pipelines, an assessment by CER. Integrity management programs are designed to ensure the pipeline product stays in the pipe. They include the maintenance, inspection, leak detection and response for the lifecycle of the pipeline project. Damage prevention plans are also required that detail how leaks, ruptures and third party damage will be avoided. The frequency of inspections by CER is based on a risk matrix that includes the condition of the pipeline, the history of minor leaks, and the frequency of incidents such as pressure drops and releases. Older pipes with a history of minor leaks would be inspected more frequently. Oil spill response plans must plan for all possible risks including the contamination of drinking water. Exercises are conducted to test the response readiness.
- Setting a three-year inline and visual inspection recommendation in policy L-1-S a. may not be appropriate. The frequency of these inspections depends on factors such as the technology used, the history of releases, the age of the pipeline. If the pipeline was just constructed and pressure tested, then it could be 10 years before it is inspected. External corrosion is a risk for new pipelines and integrity digs are required to confirm the amount of corrosion loss and its rate. The terrain, moisture conditions and what pipe coatings were used all factor into the risk. Some old pipelines are in use where inline testing cannot be done because instruments won't fit. Other tests must be completed and these pipelines are deemed riskier. Westover Express Pipeline Ltd. (Enbridge) Line 10 was recently replaced, while TNPI pipeline is aging. CER determines inspection requirements for each pipeline on a case by case basis.
- Incidents are reported daily on the CER website <https://www.cer-rec.gc.ca/sftnvrnmnt/index-eng.html> And companies can be tracked on their Safety Performance Portal <https://www.cer-rec.gc.ca/sftnvrnmnt/sft/dshbrd/index-eng.html>
- The Pipeline Safety Act, 2015, regulates when release incidents occur and pipelines are abandoned. If a product release occurs, the company is financially responsible for the clean up of the material and to return the environment to the state it was in before the incident. They must ensure all pipelines are safe prior to starting them up again. Safety Orders can be issued by CER when a company does not respect the conditions imposed by the CER. This could include operating at only 80% pressure and fines. Pipelines are frequently abandoned in place if they aren't compromising the safety of people. Typically, the surface overlying the pipe has regenerated with vegetation, etc. and more damage would be done to the environment by requiring the pipe's removal. Pipelines are cleaned, filled with concrete if they cross a river or road, and are segmented so they are not a conduit. Funds are set aside by the company each year for the eventual abandonment of the pipelines.

In addition to the meeting notes above, below is useful information from Report IR-032-20-CSPC - Cataraqui Source Protection Plan – Draft Pipeline Policy (presented at the Cataraqui SPC meeting held on March 30, 2020).

Canada Energy Regulator (CER)

- In addition to CER posting daily incidents, as noted in the September 25, 2019 meeting summary by HHSPR, there is also a webpage that contains all incidents reported from 2008 which can be queried according to: the region where the incident took place, incident type, status, pipeline phase, reported date/year, company, provinces, substance, release type, what happened, why it happened, approximate volume released, type of equipment involved, and a map of where the incident occurred.
- Companies are required by the CER to specifically list requirements in their Emergency Response Plan for “environmental or other areas requiring special consideration” and to have a site-specific plan for sensitive areas (e.g. an area with a large population of people or an environmentally sensitive area such as wetlands, national parks, rivers and lakes).
- Emergency response plans are filed with the CER but are not available online via the CER. Companies are required to make emergency response plans available on their websites (Note: it can be difficult to locate them on the company websites).
- During project planning, the environmental assessment requires that considerations be made for aspects such as biophysical and socioeconomic elements (e.g. reduction in water quality and quantity).
- All inspections are posted online as of September 28, 2015.

Ontario Energy Board (OEB):

Since the OEB regulates pipeline systems that are wholly contained in Ontario, their focus is related primarily to Ontario’s natural gas distribution system. For any new pipelines, the OEB focuses on:

- Prevention of incidents: Companies must comply with Canadian National Standard; and the Technical and Safety Standards Association (TSSA) requires that the OEB approve new pipelines in accordance with their mandate (i.e. particular design, operation, maintenance, safety and integrity requirements).
- Response preparedness: Notify the Spills Action Centre in the event of a spill; require companies to have contingency planning and emergency response programs / plans; and the TSSA investigates certain incidents in Ontario (e.g. substantial damage) and releases follow-up reports. The Ontario Ministry of the Environment Conservation and Parks verifies any site cleanup.
- Liability and compensation: Companies must demonstrate financial ability to respond to leaks and spills.

Attachment 2: Current Halton-Halton-Hamilton source protection plan policies and examples of draft policies by other source protection region for liquid hydrocarbon pipelines

Current Halton-Halton-Hamilton source protection plan (SPP) policies for liquid hydrocarbon pipelines

The Halton-Hamilton SPP was approved in August 2015 and amended in January 2019. The current policies in the SPP for the local threat of “the conveyance of oil by way of a pipeline that crosses a body of open water” are:

L-1-S: Where the conveyance of oil in pipelines across open water bodies is an existing significant threat to lake-based drinking water sources,

- a. fuel pipeline owners are recommended to conduct inline pipeline integrity testing and visual inspections of pipeline crossings at open water bodies at a frequent timing of every three years.
- b. the Source Protection Department of the Conservation Authorities shall consult with fuel pipeline owners to determine if pipeline integrity testing and visual inspections have occurred and to request a report on the findings of the testing and inspections, and actions taken.

L-2-S: To reduce the risks to drinking water sources from the construction of pipelines conveying oil across open water bodies,

- a. the National Energy Board and the Ontario Energy Board in their consideration of any oil pipeline application where this activity would be a significant drinking water threat are requested to ensure that the applicant has complied with or included appropriate design standards, monitoring, and maintenance practices that when implemented will prevent a pipeline from becoming a significant drinking water threat.
- b. the Source Protection Department of the Halton Region and Hamilton Conservation Authorities shall consult with the National Energy Board and the Ontario Energy Board to determine if pipeline design standards and the requirements for monitoring and maintenance practices in vulnerable areas consider drinking water source protection.

T-52-S a and c.: Where discharges from sewage treatment plants, the handling and storage of fuel, and the conveyance of oil in a pipeline that crosses an open body of water are existing significant drinking water threats to Lake Ontario municipal intakes,

- a. the Ministry of the Environment and Climate Change shall provide mapping of intake protection zones three and the locations of known significant threats to the Spills Action Centre, and if necessary modify procedures to ensure that the operators of all water treatment plants that could be affected by a spill are notified.
- b. the owners of facilities where these significant drinking water threats have been identified are requested to update emergency preparedness/contingency plans to include the location of municipal intakes, actions to be taken to protect drinking water sources should an incident occur, and the requirement for inclusion of the protection of drinking water sources in emergency preparedness exercises.

Examples of draft policies by other source protection region for liquid hydrocarbon pipelines

South Georgian Bay Lake Simcoe source protection region. July 2020 proposed policy for future threats. *Note that on July 7, 2020, the SPC directed staff to revise the draft policy shown below into a legally binding policy directed to SPA staff. It is a work in progress.*

The Canada Energy Regulator, the Ontario Energy Board and the pipeline proponent are encouraged to provide the Source Protection Authority the location of any new proposed liquid hydrocarbon pipeline within the Source Protection Region and are encouraged to ensure that liquid hydrocarbon pipeline applications, where this activity would be a significant drinking water threat, include appropriate design standards, monitoring, and maintenance practices that when implemented will prevent such a pipeline from becoming a significant drinking water threat.

Trent Conservation Coalition source protection region. July 2020 proposed policies.

Policy #: Trent G-6(6)

Tool: SA (strategic action)

Legal Effect: S

Implementer: Owner of Pipeline

E/F: E (existing)

Applicable Activity: This policy applies to all liquid hydrocarbon pipelines within an IPZ 1, IPZ 2 and IPZ 3 with a score of 9 or 10 and within a WHPA A, WHPA B or WHPA E with a score of 9 or 10.

Policy Text: Sufficient liquid hydrocarbon pipeline identification signage should be posted, and visibly noticeable, when located in wellhead or intake protection areas, and 'do not anchor' signs should be posted when a navigable waterway has a pipeline submerged in the area.

Policy #: Ganaraska G-6(7), Trent G-6(7)

Tool: MON

Legal Effect: MC (must conform)

Implementer: Ganaraska Conservation Authority and Lower Trent Conservation Authority

E/F: E

Policy Text: Request and report on information from the Owner of the Pipeline by February 1 regarding an annual summary of the actions it has taken to achieve the outcomes of the source protection plan policies for the preceding calendar year.

Policy #: Ganaraska L-2(3), Trent HP-3

Tool: SA

Legal Effect: S

Implementer: Owner of Pipeline, Regulators and Approval Authorities

E/F: E and F

Applicable Activity: Where the conveyance of liquid hydrocarbon by way of a pipeline is an existing significant drinking water threat.

Policy Text: The applicable source protection authority is to be included in the consultation process and given the opportunity to provide feedback for new pipelines, changes to a pipeline or change in material being transported in a pipeline.

Policy #: Ganaraska L-2(4), Trent HP-4

Tool: SA

Legal Effect: S

Implementer: Owner of Pipeline

E/F: E and F

Applicable Activity: Where the conveyance of liquid hydrocarbon by way of a pipeline is an existing significant drinking water threat.

Policy Text: The applicable source protection authority is to be advised of any abandonment or change of use of any pipelines.

Policy #: Ganaraska L-2(6), Trent HP-6

Tool: SA

Legal Effect: S

Implementer: Conservation Authorities

E/F: E and F

Applicable Activity: Where the conveyance of liquid hydrocarbon by way of a pipeline is an existing significant drinking water threat.

Policy Text: Conservation Authorities are to provide to pipeline owners, information on watershed characteristics (such as flow rate, flood and erosion hazards), flood warnings and statements and other local data for the purposes of source protection, if available and as requested by the pipeline

Suggested Moderate and Low Threat Policy

Policy #: Ganaraska L-2(10), Trent HP-10

Tool: SA

Legal Effect: S

Implementer: Owner of Pipeline

E/F: E and F

Applicable Activity:

Where the conveyance of liquid hydrocarbon by way of a pipeline is an existing moderate drinking water threat.

Policy Text:

Owners of pipelines should ensure that their Environmental Protection Programs, Emergency Management Programs and Emergency Procedure Manuals should:

- a) Include drinking water source protection information
- b) Contain risk assessments to identify areas where a pipeline release may impact a drinking water intake. Tributaries are to be included when assessing risk to a drinking water intake.

- c) With reference to L-2(1)(b), address the risk identified to prevent a release and to mitigate impacts of a release.
- d) Contain a communications protocol and it is to include the notification to the municipal drinking water plant operator and owner of the impacted or potentially impacted municipal drinking water system
- e) Include spill response procedures including contractor names and contact information and any internal contacts for spill response
- f) Be reviewed and updated regularly with a focus on drinking water source protection information, response actions, and communication protocols owners.

Cataraqi source protection area. March 2020 draft policies.

Draft Policy for the Transportation of Liquid Hydrocarbons in Highly Vulnerable Aquifers

For the establishment and operation of a liquid hydrocarbon in pipeline in highly vulnerable aquifers where this activity would be a low drinking water threat,

- a. The responsible federal and provincial regulating bodies, as applicable, in their consideration of any oil pipeline application should include highly vulnerable aquifers as sensitive areas in emergency response plans; and
- b. Notify the Cataraqi Source Protection Authority not more than 60 days following any pipeline integrity inspections that are conducted within highly vulnerable aquifers in the Cataraqi Source Protection Area.

Draft Policy for the Transportation of Liquid Hydrocarbons in Highly Vulnerable Aquifers for Future Wellhead Protection Areas

For any new wellhead protection areas or intake protection zones where the establishment and operation of a liquid hydrocarbon in pipeline would be a moderate or low drinking water threat,

- a. The responsible federal and provincial regulating bodies, as applicable, in their consideration of any oil pipeline application should include wellhead protection areas and intake protection zones as sensitive areas in emergency response plans; and
- b. Notify the Cataraqi Source Protection Authority not more than 60 days following any pipeline integrity inspections that are conducted within highly vulnerable aquifers in the Cataraqi Source Protection Area.

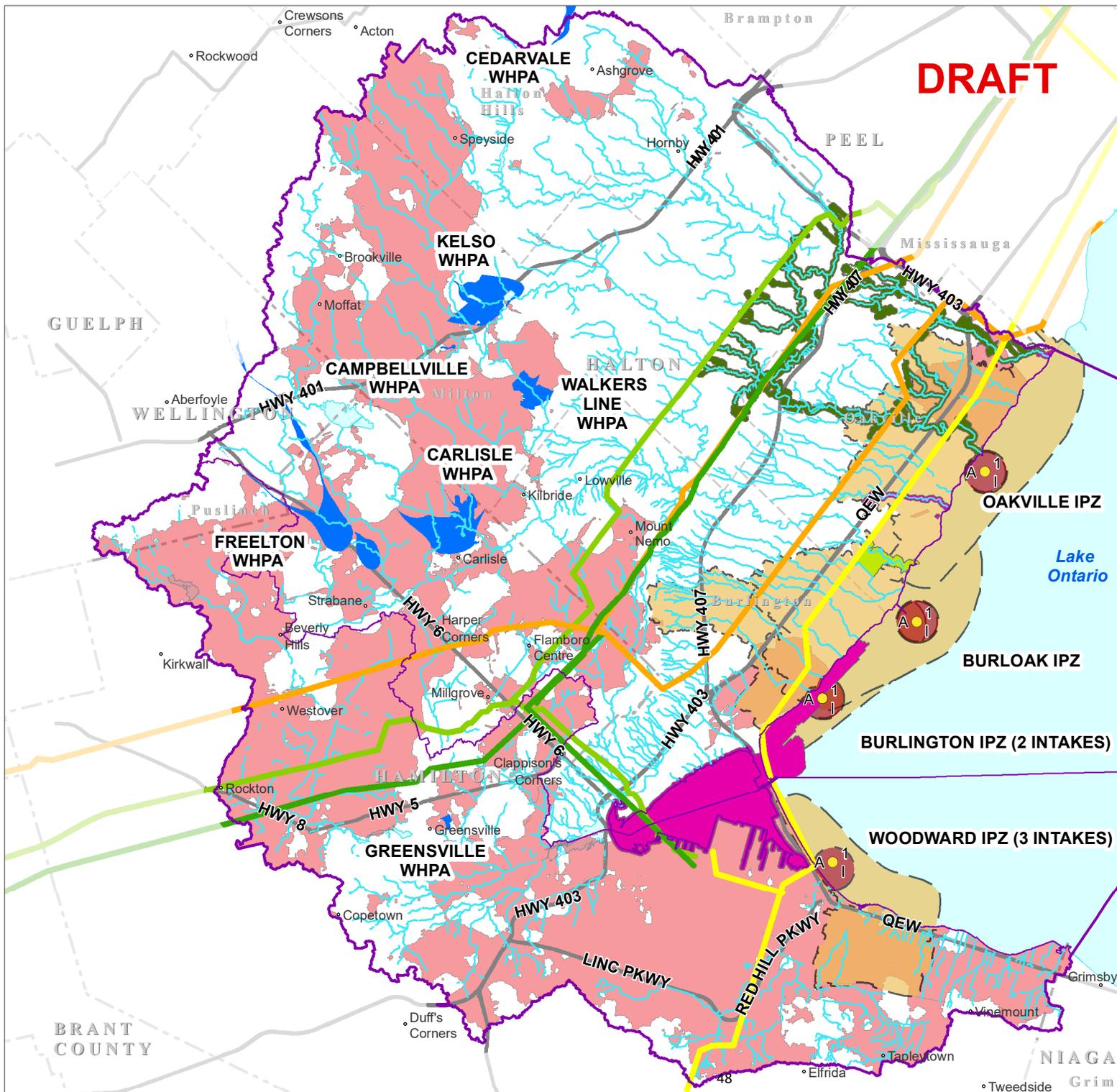
Draft Policy for the Transportation of Liquid Hydrocarbons in Highly Vulnerable Aquifers for Future Intake Protection Zones

For any new intake protection zones where the establishment and operation of a liquid hydrocarbon in pipeline would be a significant drinking water threat,

- a. The responsible federal and provincial regulating bodies, as applicable, in their consideration of any oil pipeline application shall include intake protection zones as sensitive areas in emergency response plans and at a minimum include the following provisions in their plans:
 - i. specific procedures for responding to a pipeline rupture in an area where
 - ii. the pipeline crosses a body of open water;

- iii. a communications protocol;
 - iv. the location of available spill response materials; and
 - v. provisions to immediately notify the affected water treatment plant and
 - vi. municipality in the event of a pipeline rupture.
- b. Notify the Cataraqui Source Protection Authority not more than 60 days following any pipeline integrity inspections that are conducted within highly vulnerable aquifers in the Cataraqui Source Protection Area.

Figure 1:
Halton-Hamilton Region
IPZ-2 and Known Pipelines

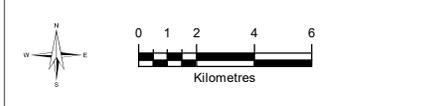


DRAFT

Legend

- Municipal Intake**
 - Operational
- Oil Pipelines**
 - Enbridge
 - Imperial Oil
 - Sun Canadian
 - Trans Northern Pipeline Inc
 - Westover Express
- Wellhead Protection Area**
 - A-E Scores
- Intake Protection Zone(Proposed)***
 - 1 - 1 km
 - 2-2hours
- IPZ 3: Event-Based Modelling**
- Significant Threat Areas**
 - Handling and Storage of Fuel
 - Conveyance of Oil in a Pipeline
 - Discharge from a wastewater treatment facility other than a bypass
- Potential Threat Areas**
 - Highly Vulnerable Aquifer

*Note : This figure shows the proposed IPZ-2s for Burlington, Burloak, Oakville, and the current IPZ-2 for Woodward
Projection : UTM NAD 83 Zone 17
Date : August 2020
Map not to scale



REPORT TO: Halton-Hamilton Source Protection Committee

REPORT NO: SPC-20-09-05

FROM: Chitra Gowda, Senior Manager, Watershed Planning and Source Protection
cgowda@hrca.on.ca

DATE: August 26, 2020

SUBJECT: S. 58 Risk Management Plans Policy Timeline Extension

Recommendation

THAT the Halton-Hamilton Source Protection Committee **endorses the Staff report S. 58 Risk Management Plans Policy Timeline Extension**

AND THAT the Halton-Hamilton Source Protection Committee **direct Staff to seek a one-year extension on the deadline for risk management plan completion.**

Executive Summary

The deadline for risk management officials to establish risk management plans for existing significant threats in the Halton-Hamilton Source Protection Region is December 31, 2020. Work was progressing well, however the unexpected COVID-19 global pandemic and a few other factors will cause a delay to complete a limited number of risk management plans. Staff recommend an extension to the policy timeline by one year.

Report

The effective date of the Halton-Hamilton (HH) Source Protection Plan is set as December 31, 2015 by the Minister, Environment, Conservation and Parks (previously known as Environment and Climate Change). The HH source protection plan contains polices that utilise Part IV of the Clean Water Act, including the establishment of risk management plans by risk management officials, and also a policy setting a deadline. The policy G-1 states that risk management plans for existing significant threats must be established within five years of the date that the HH source protection plan comes into effect. Therefore all risk management plans for existing threats within the HH Source Protection Region (SPR) must be established by December 31, 2020.

As described in the 2019 Annual Progress Report for the HH source protection plan, municipalities have made great progress in establishing risk management plans for significant threat activities. Risk management officials and inspectors continued to verify threat activities occurring in the region in 2019. Screening processes are in place at municipalities to ensure applications for future

development are reviewed appropriately for potential threat activities and source protection policy application. In 2019, two significant threat activities were added (commercial fertilizer application and use of land by livestock). The municipal risk management officials continue to put full effort into establishing the last few risk management plans. However the unexpected and unprecedented COVID-19 global pandemic and a few other factors caused delays in work required including site visits. Work is carefully being resumed using modified procedures including physical distancing during site visits, and multiple phone interactions with the property landowners to explain emailed maps and other scientific and policy information, in lieu of in-person meetings. As well, negotiations for certain types of activities require more time than others.

A few other source protection regions have requested policy timeline extensions from the Ministry of Environment, Conservation and Parks (MECP) and obtained approval for the same. The extensions requested range from one to three years. It is noted that at the time of writing the source protection plans, the extent of the work and time to be taken to establish a risk management plan were unknown. The COVID-19 pandemic is a major reason for the policy timeline extension requests, along with the fact that negotiations for certain types of activities, for example activities on farms and at small industrial-commercial companies, require more time than others.

If a risk management official encounters persons (undertaking significant threat activities) who are uncooperative there are methods outlined in the Clean Water Act to establish a risk management plan, and it may become necessary to issue an order. Risk management officials are keen on continuing their collaborative, negotiated process with the landowner. An order that imposes a risk management plan is a last resort tool.

It is anticipated that there are two risk management plans in the HHSPR that will likely be delayed beyond 2020 due to the COVID-19 pandemic and the nature of the activities which require more time for negotiations with the persons undertaking the activities. Staff will send a letter to MECP requesting an extension to risk management plan policy timelines to December 31, 2021. It is expected that risk management officials will be required, as condition of the extension approval, to work with the source protection region to prepare a plan to move forward. Risk management officials would eventually submit a simple plan to the source water protection program manager similar to that shown in **Attachment 1**. As well, during the S. 36 update of the source protection plan, revisions will be made to the text of the policy G-1 to reflect the extended policy timelines.

Signed & respectfully submitted:



Chitra Gowda, Senior Manager
Watershed Planning and Source Protection
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Attachments

- 1. Plan to establish risk management plans in the Halton-Hamilton Source Protection Region**

Attachment 1: Plan to establish risk management plans in the Halton-Hamilton Source Protection Region

Risk Management Official Name:		
Task For Risk Management Officials	<i>Suggested Timelines</i>	Risk management Official's Timeline
Develop Workplan and submit to Program Manager at Halton-Hamilton Source Protection Region	<i>October 8-20</i>	September-30-20
Contact all persons requiring risk management plans	<i>November-30-20</i>	
Complete initial site visits	<i>February-30-21</i>	
Issue Orders if necessary	<i>May-01-21</i>	
Negotiate risk management plans	<i>September-01-21</i>	
Completion Date (mandatory)	December-31-21	December-31-21