

## **Discussion Paper: Review of the existing local liquid hydrocarbon pipeline policies**

### **Section 36. CTC Workplan 2018 Item 11**

## Executive Summary

The CTC (Credit Valley -Toronto and Region- Central Lake Ontario) Source Protection Plan, along with the supporting Assessment Reports, was approved by the Province of Ontario (Ministry of Environment and Climate Change) and came into effect on December 31, 2015. An order was issued under Section 36 (S. 36) of the *Clean Water Act, 2006* by the Minister of the Environment and Climate Change in July 2015 to prepare and submit a workplan for a S. 36 Source Protection Plan (SPP) update, to the Ministry by December 21, 2018 (submitted). A S.36 update is a broad scale review, and the activity is focused on keeping the Assessment Report and Source Protection Plan up to date with general amendments and policy efficacy changes. The CTC 2018 Section 36 workplan sets out a number of tasks, each with their own completion date, ranging from April 2019 to June 2024. The Province later allowed for flexible and open workplan deadlines.

Subsequently, following amendments to the Directors Rules and Table of Drinking Water Threats in 2017-2018, the Ministry of Environment Conservation and Parks (MECP) issued an amended s.36 order on July 22, 2019, which specifically requires:

- Updating of liquid hydrocarbon pipeline references in Assessment Reports (AR)/Source Protection Plans (SPP) to a prescribed threat and ensure policies apply to all relevant protection zones,
- that AR's have been updated as part of the CTC 2022 s.51 amendment, and
- the update of SPP pipeline policies that have not yet been updated.

Optional in the order are inclusion of s.36 workplan items that are consistent with the Act, its regulations and Technical rules in effect at time of the updates (i.e., 2021 Phase 2 DTR's). The Province has also indicated that it does not intend to direct any further S.36 orders with the understanding that updates to the Assessment Reports are ongoing under Section 34 and Section 51 amendments (*Clean Water Act, 2006*).

Table 1 in the CTC S. 36 workplan (P. ii) lists numerous tasks. Task 11 is to *review the current local liquid hydrocarbon pipeline policies* to determine if they are adequate, given that this local threat was added as a Provincial threat under the Director's Technical Rules (DTR) July 2018 amendments (CTC Source Protection Region, 2018). Pipelines were established as a local threat based on event-based modelling in the CTC in 2015 and policies were developed at that time. Circumstances were not included in the Provincial Table of Drinking Water Threats, until the July 2018 amendments.<sup>1</sup>

This paper examines the current governance, oversight, operating and maintenance procedures as well as spill response regarding the threat. It additionally reviews the current policies for

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<sup>1</sup> See Environmental Registry of Ontario posting: [Amendments to Ontario Regulation 287/07 "General" under the Clean Water Act, 2006](#)

gaps as well as the circumstances of the newly established provincially prescribed threat for existing or future potential significant threats.

If it is determined by the Source Protection Implementation Working Group that there is a need for the update of current policies and or the addition of new policies, the team will proceed with the preparation of new or updated policies, consultation with stakeholders and the Province, as required, prior to implementation. Draft policies based on conclusions are presented as part of this paper.

During the development of the inaugural CTC SPP in 2015, the Source Protection Committee (SPC) considered '*Pipelines Transporting Petroleum Product (Containing Benzene) Crossing Tributaries of Lake Ontario*' as a potential threat to Lake Ontario Drinking water sources. The SPC discussed this potential threat in detail and consulted extensively with pipeline owners, and Federal and Provincial oversight agencies. The SPC, while noting that the industry was already highly regulated, instructed staff to add a pipeline rupture spill to the list of scenarios for the Lake Ontario Intake Protection Zone (IPZ)-3 event-based modelling. A significant threat was determined, and this item was added as a local threat to the CTC SPR list of threats and policies developed to ensure that Emergency Response Plans included Source Water Protection data.

In 2018 the Director's Technical Rules were amended and '*the establishment and operation of a liquid hydrocarbon pipeline*' was added as a provincially prescribed threat. Upon review, it was determined that there are no additional existing significant threats in the CTC Source Protection Region, per the listing of liquid hydrocarbon pipelines in the Provincial list of prescribed threats. This review has determined that existing hydrocarbon pipelines only pose a low threat primarily to highly vulnerable aquifers (HVAs), except where the threat is identified under IPZ-3 event-based studies.

It has also been established that there are already several Federal and Provincial instruments that currently address the fundamental concerns of source water protection (SWP) through their provisions and emergency response plans that have been recently upgraded and include consideration of drinking water sources. Municipalities are also very well aware of SWP sensitive areas and are the same agencies charged with emergency response on-the-ground action.

Nevertheless, considering that the CTC SPR is an area of growth with a growing population and with it a demand for liquid hydrocarbon products, that it is an area where pipelines currently exist and with many vulnerable source water protection areas, it is reasonable to assume that additional or larger pipelines may be constructed and or that changes may be made to currently existing pipelines in the future. The current CTC pipeline policies were developed to address the specific event-based modelled threats regarding ruptures of the pipelines across tributaries leading into Lake Ontario but the vulnerability score-based circumstances in the updated 2018 Technical Rules are currently not addressed for future threats.

It is also recommended that awareness and communication with agencies with oversight be upgraded to ensure an enhanced and transparent flow of information when there is any new or changed status of hydrocarbon pipelines within the SPR. It is recommended that similar to neighbouring SPRs, a few additional policies (6) should be developed to address these potential future threats for this now established Provincially prescribed threat. It is further recommended that these new policies be maintained along with the LO-PIPE-1 (2015) policy. New LO-G-5 and GEN-9 policies are recommended to encourage the Province and other parties to provide related spills data for support of localized technical analyses. It is also recommended that current LO-G policies are expanded to improve awareness of sensitive drinking water areas and Source Water Protection policies for spill response planning. These proposed amendments to the LO-G policies are also from the *Consideration of Transportation of Dangerous Goods* discussion paper. Both discussion papers should be considered together to understand proposed policy changes.

## Preamble

The Credit Valley, Toronto and Region, Central Lake Ontario (CTC) Source Protection Plan (SPP), along with the supporting Assessment Reports, was approved by the Province of Ontario (Ministry of Environment and Climate Change) and came into effect on December 31, 2015. Section 36 under the *Clean Water Act, 2006* contains the provision to comprehensively review and update source protection plans, including Assessment Reports at established intervals (approximately every 5 years as directed by the Province).

The CTC Source Protection Region was issued an order under section 36 of the *Clean Water Act, 2006* by the Minister of the Environment and Climate Change in July 2015. The order including extensions, directed staff to consult with program partners to prepare and submit a workplan for a Section 36 Source Protection Plan update to the Ministry by December 21, 2018. This workplan sets out a number of tasks, each with their own completion date, ranging from April 2019 to June 2024. The Province, understanding challenges presented by the CoVid pandemic, staff turnover, multiple S. 34 updates in the CTC and other emerging pressing issues which affect municipal budgets, has since allowed for flexible and open workplan deadlines. The CTC, nevertheless, continues to strive to complete all tasks outlined in the 2018 workplan as expeditiously as possible. Current timelines estimate all tasks completed by the end of the 2024 fiscal year.

The Province has indicated that future S. 36 comprehensive update orders are not currently anticipated with the understanding that updates to the Assessment Reports are ongoing amendments. Updating these documents ensures that all municipal drinking water systems are protected, and that changing biophysical and social conditions are captured in future planning for source protection. It is agreed that it is more practical to perform these updates in an ongoing fashion and it is feasible to couple this work in the future with Section 34 and 51 amendments upon completion of this 2018 order.

### CTC S. 36 Consideration/Review Items

The 2018 CTC SPR Section 36 workplan (P. ii - Table 1), includes numerous tasks. Three of those tasks, listed two “consideration of new policy tasks” and a policy review task:

- **Item 6:** The consideration of a new local threat with policies to address the transportation of dangerous substances,
- **Item 9:** The consideration of additional policies to address drinking water “issues” identified in 2015.
- **Item 11:** The work plan also documented a task to review the existing local liquid hydrocarbon pipeline policies to determine if they are adequate, given that this local threat was added as a Provincial threat under the Director’s Technical Rules (DTR) July 2018 amendments. The circumstances related to pipelines may differ from those considered in 2015 in the CTC.

It is expected that *new* policies, where developed, will go through research and consultative processes as did original SPP policies. Such work may also include technical studies, numerical modelling exercises and industry consultation, to determine the level of risk prior to the drafting of any new policies. All work will be brought to the Committee's Implementation Working Group and the Source Protection Committee for approval/endorsement.

CTC staff will examine these CTC Section 36 2018 workplan items to:

- Review where available, background information regarding incidents,
- Prepare technical analysis including numerical modelling as needed,
- Determine new/updated risks to the CTC where relevant,
- Review action/legislation/legal instruments in other jurisdictions,
- Prepare a rationale document for consideration by the SPC,
- Update documentation with SPC input,
- Prepare new/ updated draft policies as necessary.

If it is determined that there is a need for updated pipeline policies, the team will proceed with the preparation of draft policies, consultation with stakeholders and the Province, as required prior to implementation.

This work began in 2023 and will continue in 2024. It is anticipated that staff will complete the policy recommendations for these items, supported by a discussion paper, by Spring of 2024. Interim reports will be brought forward by staff periodically, to the SPC Implementation Working Group and then to the SPC. This report pertains to *Item 11: The review of the existing local liquid hydrocarbon pipeline policies*.

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## 1 Background

In 2015, the CTC Source Protection Region (CTC SPR) submitted its first Source Protection Plan (SPP) under the *Clean Water Act* (2006). The SPP is supported by an Assessment Report (AR) which describes the jurisdiction where the SPP applies including delineated Source Protection areas; namely Well Head Protection Areas (WHPAs), Intake Protection Zones (IPZs), Highly Vulnerable Areas (HVAs) and Significant Groundwater Recharge Areas (SGRAs). Within WHPAs, IPZs and HVAs, vulnerability analyses and scoring determine which anthropogenic activities constitute significant, moderate or low threats to the drinking water source in question. Additional to these zones, the Director's Rules under the CWA (2006) direct the delineation of zones known as Issue Contributing Areas (ICAs) when monitoring data demonstrates an increasing contaminant trend.

In 2006, the Province listed 21 prescribed activities that could pose a threat to drinking water complemented by a table listing the circumstances under which these activities could be a significant, moderate or low threat. These circumstances are outlined in the [Provincial Table of Drinking Water Threats](#) (SWPIP.ca). Both the list of activities and the circumstances are subject to revision under the principle of continuous improvement and are driven by new information, data, and scientific advancement. In 2018, the Ontario Regulation 287/07 was amended to add the "establishment and operation of a liquid hydrocarbon pipeline" to the list of prescribed drinking water threat activities for a current total of 22 threats (O. Reg. 385/08, s. 3; O. Reg. 206/18, s. 1).

Prior to this 2018 update, under Technical Rule 119 of the *Clean Water Act* (2006), the CTC SPR along with six other Source Protection Regions identified hydrocarbon pipelines (designated as transmitting or distributing "liquid hydrocarbons") as a local threat. This was approved by the Province and policies to address this threat were developed as part of the 2015 CTC SPP. The Ministry of the Environment and Climate Change defined oil in their 2015 approval of this local threat activity, as *liquid hydrocarbons*.

Total Petroleum Hydrocarbons (TPH) is a term used to describe a broad family of several hundred chemical compounds that originally come from crude oil. In this sense, TPH is really a mixture of chemicals. They are called hydrocarbons because almost all of them are made entirely from hydrogen and carbon (U.S. Department of Health and Human Services, 1999). The compounds also contain minor amounts of nitrogen, sulphur, and oxygen. Petroleum hydrocarbons (PHCs) are the primary constituents in crude oil, gasoline, diesel, and a variety of solvents and penetrating oils. Crude oil consists of hydrocarbon molecules extracted from the ground and transformed in petroleum (oil) refineries into petroleum products, such as gasoline, diesel fuel, asphalt base, heating oil, kerosene, and liquefied petroleum gas. The main classes of PHCs of environmental concern are aromatic hydrocarbons that have distinct aromas. (e.g., benzene, PAHs, MTBE) (Envirowiki, 2022). Hydrocarbons come from petroleum sources and are mixtures of organic compounds that occur in geological substances such as oil, bitumen, and coal.



Liquid hydrocarbons are further defined as including crude oil, condensate, and liquid petroleum products. When the Province amended the Ontario Regulation 287/07 in 2018, the definition was not changed. The now MECP, however, did provide additional clarification that the prescribed threat captures pipelines designated for transmitting or distributing liquid hydrocarbons to terminals and distribution centers. The MECP made it clear that the threat does not capture pipelines that move liquefied natural gas (predominantly methane mixed with other products and cooled for ease of transport) or liquefied petroleum gas (propane) as the risk associated with these products are more associated with explosive or cryogenic impacts versus drinking water contamination. 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 (Halton-Hamilton Source Protection Region, p. 282, 2022)

## **1.1 Prescribed drinking water threats – Clean Water Act, 2006, updated 2021**

1.1 (1) The following activities are prescribed as drinking water threats for the purpose of the definition of “drinking water threat” in subsection 2 (1) of the Act:

1. The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.
2. The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.
3. The application of agricultural source material to land.
4. The storage of agricultural source material.
5. The management of agricultural source material.
6. The application of non-agricultural source material to land.
7. The handling and storage of non-agricultural source material.
8. The application of commercial fertilizer to land.
9. The handling and storage of commercial fertilizer.
10. The application of pesticide to land.
11. The handling and storage of pesticide.
12. The application of road salt.
13. The handling and storage of road salt.
14. The storage of snow.
15. The handling and storage of fuel.
16. The handling and storage of a dense non-aqueous phase liquid.
17. The handling and storage of an organic solvent.

18. The management of runoff that contains chemicals used in the de-icing of aircraft.
19. An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body.
20. An activity that reduces the recharge of an aquifer.
21. The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard.
22. The establishment and operation of a liquid hydrocarbon pipeline. O. Reg. 385/08, s. 3; O. Reg. 206/18, s. 1.

## **1.2 Addition of “Pipelines” as a local threat in the CTC SPP 2015 – IPZ-3**

Initially, circa 2004 when the SWP program was being designed, the focus was on groundwater sources. This was as the attention was on the Walkerton tragedy (2000) and the multiple barriers that had failed during the incident. The technical rules primarily focused on groundwater science (as associated with the prescribed activities) and the vulnerability scoring technical direction for surface water sources resulted in no drinking water threats for Great Lake sources. Pipeline threats were not listed for groundwater nor surface water sources. The CTC SPC, however, expressed concern regarding threats to Lake Ontario given that it is the most important and largest source of drinking water serving a large percentage of Ontario’s population. Hydrocarbon pipelines are located within the developed areas of the CTC SPR.

## **1.3 Event-based modelling**

During the CTC SPC deliberations, the Committee urged the Province to consider additional threats that could impact the GTA’s largest source of drinking water, Lake Ontario.

The Province subsequently developed technical rules to allow for event-based modelling to determine threats to drinking water from surface water sources including the Great Lakes. The CTC together with the Province and other SPRs situated along Lake Ontario initiated the Lake Ontario Collaborative (LOC).

The LOC developed a 3-D model of the Lake, listed and simulated with various spill volumes, spill scenarios based on actual North American examples. The team calculated time-of-travel data from the spill site to the water treatment plant and concentrations of contaminants at the intake, all to determine the threats to these sources and to prepare policies to prevent such scenarios from actually occurring. The scenarios were linked to contaminants associated with the Provincial prescribed activities. The following scenario was selected for hydrocarbon pipelines: *A spill of gasoline/refined product from large pipelines co-located with the Ontario Power transmission corridor across the North part of the GTA where the pipeline crosses under the watercourses and which would discharge to the major tributaries flowing south to the north shore of Lake Ontario.*

For the pipeline scenario, ruptures in the pipe at water crossings in the CTC were simulated using HEC-RAS (a River Analysis System developed by the Hydrologic Engineering Center of the US Army Corps of Engineers) to calculate the time of travel from the point of stream crossing to Lake Ontario and then a MIKE-3 Lake Ontario model to estimate the concentration at the intake. The pipelines used typically range in size between 150 and 760 millimetres and carry hydrocarbon products such as gasoline and jet fuel or crude oil. A rupture of a pipeline may occur due to corrosion of the pipes, stresses due to ground movements such as stream bed washout under the pipe, and third-party damage, such as contact during excavation.

The indicator modelled parameter of concern for the LOC scenarios was benzene and the raw water quality threshold used for assessing the threat from benzene was the ODWS at the time (0.005 mg/l). It should be noted that the Ontario Drinking Water Quality Standard for benzene was changed in 2015 to 0.001 milligrams per litre (O.Reg. 373/15 under the *Safe Drinking Water Act, 2002*).

The selected LOC spill scenarios were based on “real” events that have occurred in the past. The pipeline spill scenario events used for the LOC are based on the Enbridge pipeline rupture event that occurred near Kalamazoo, Michigan during the summer of 2010. Details regarding the spill scenario characteristics and how the model (MIKE-3) was calibrated and validated were informed by the Michigan spill. The pipeline policies are designed to mitigate and eliminate risks to the municipal drinking water systems from pipeline ruptures along the lines as they traverse major water bodies that lead into Lake Ontario where the drinking water intakes for the CTC are located.

The simulations that resulted in concentrations above treatment capacities (requiring plant shut-downs or alternate source needs) were listed as Intake Protection Zone-3 threats and these zones were delineated for policy implementation. Policies include contingency plans, emergency response and notification upgrades.

The Ontario Drinking Water Standard (ODWS) change for benzene does not dictate a revision of the IPZ-3s in the Assessment Reports. The IPZ-3s in the CTC have been maintained. Updates to the IPZ-3s are optional and at the discretion of the Lake Ontario Collaborative Group. It is believed that maintenance of a higher level of conservatism for the historical ODWSs may be prudent.

The Lake Ontario Working Group per the CTC policies specifically LO-G-2, has been working on the enhancement of the Mike-3 model used in the event-based modelling to identify significant threats and delineate the IPZ-3s in the CTC (2015). The LOC group recently launched a Lake Ontario Water Quality Forecasting System (LOWQFS) which the municipalities of Durham, Toronto, Peel and Halton are now using to assess spills and forecast impacts to the Lake Ontario intakes. The LOWQFS is currently being demonstrated to several agencies including the MECP’s Spills Action Centre (SAC). The SAC is encouraged to utilize this tool to enhance Emergency

Response Protocols for all types of spills including liquid hydrocarbon pipelines. A general policy to recommend the use of this tool is advisable (proposed policy LO-G-5).

#### **1.4 Addition of a new Prescribed Threat by the Province in 2018**

With the Provincial addition of hydrocarbon pipelines as a Provincial prescribed activity that could pose a threat to drinking water sources, the Province updated the Drinking Water Threats table which outlines all of the circumstances under which this activity may represent a threat. The technical framework sets out the following circumstances for specified chemicals in any quantity transported by pipelines: pipelines above ground or above a water body, pipelines below ground and not crossing underneath a water body, and pipelines below ground within or under a water body (MECP, 2021). The *Clean Water Act, 2006* requires that all such circumstances that result or could result in the existence of a significant threat must be acted on to reduce and eventually eliminate the threat. Policies are developed to achieve this goal.

#### **1.5 What is the concern regarding Liquid Hydrocarbon Pipelines?**

Petroleum Hydrocarbons (PHCs), also known as fossil fuels benefit society by providing fuel for transportation (gasoline, jet fuel), heating and the manufacture of goods but they also can cause environmental issues during extraction, production, transportation, and consumer usage. The contaminants of concern with respect to potential liquid hydrocarbon pipeline threats are benzene, toluene, ethylbenzene, and xylene (collectively known as BTEX), and petroleum hydrocarbons F1 (nC6-nC10), F2 (>nC10-nC16), F3 (>nC16-nC34), F4 (>nC34). Most petroleum hydrocarbon constituents are toxic to some degree (CCME, 2001). Those that have lighter molecular weights, such as BTEX compounds, dissolve more readily, are mobile, and can flow within groundwater or surface water for great distances. Those with heavier molecular weights are persistent in the environment, dissolving and degrading very slowly. Benzene is a known carcinogen, while toluene, ethylbenzene, and xylenes are less toxic. (HHSPA, p. 282, 2022).

Crude oil moves from petroleum wellhead to refinery using barges, tankers, over land, pipelines, trucks, and railroads. The transportation of liquid hydrocarbons via pipelines in Canada is considered as the safest and most efficient way to transport these substances and this mode is used to transport the majority of product across the province. Eighty-eight percent of crude oil is transported by pipelines in Canada, the balance transported by marine tankers and rail, (Canada Energy Regulator, 2023a). Rail transportation has increased in the last decade, due to pipeline capacity constraints out of western Canada, but pipelines by far are the mode of transportation that moves the largest volume of liquid hydrocarbon products. Canadian Energy Pipeline Association member companies transport 3 million barrels per day (HHSPR, P. 282, 2022)

There are multiple pipeline companies that operate liquid hydrocarbon pipelines in the CTC SPR. Enbridge Lines 9 and 8 crude oil pipeline which runs from Sarnia in Ontario to Montreal, and Trans-Northern that transports products such as gasoline, diesel fuel, aviation fuel and

heating fuel west from Montreal to Toronto and from Nanticoke (on Lake Erie) to Toronto. The pipeline operates bi-directionally between Toronto and Oakville, Ontario. Sun-Canadian, Imperial Sarnia Products Pipeline (Hamilton to Finch terminal), and Enbridge's Line 8 also transport products such as gasoline, diesel, heating oil and jet fuel within the CTC SPR. Trans-Canada has segments of pipeline that traverse Ontario (the Eastern triangle Parkway line and the Iroquois line) but these are natural gas pipelines that are not captured by the Clean Water Act, 2006. The CER maintains an [interactive pipeline map](#) with various attribute data including incident reports.

Pipeline design and operation is strictly regulated in Canada and Ontario. The Canada Energy Regulator (CER) and Ontario Energy Board (OEB) maintain strict controls and records to manage safe operation and transmission of petroleum products and natural gas. The CER is the main oversight body whose role is to review pipelines, energy development and trade, share energy information and enforce safety and environmental standards internationally and inter-provincially. The OEB is Ontario's independent energy regulator that oversees how energy companies operate in Ontario. Their responsibilities include the setting of delivery rates, approval of new electricity transmission lines and natural gas pipelines, and the establishment and enforcement of rules for Ontario based energy companies. The OEB is mainly concerned with natural gas and has little jurisdiction over hydrocarbon pipelines, but it does produce guidelines with respect to environmental reporting relevant to pipeline companies.

Petroleum hydrocarbon products are essential to the development and maintenance of our communities (primarily for power supplies, heating/cooling and transportation). Our cities and population continue, however, to grow and with said growth, the demand for fuel increases. The CTC SPC is concerned with potential incidents (spills and leaks) associated with the existing pipelines that could impact precious drinking water supplies as well as the potential for catastrophic accidents. Questions regarding the age, size and location of the pipelines and associated infrastructure with respect to the developed areas and the proximity to vulnerable drinking water sources have increased. In spite of strict regulations and the CTC policies, whenever there is a major incident in Ontario, there is renewed discussion regarding whether we are doing enough to safeguard our drinking water supplies.

The CER monitors and reports incidents at CER regulated pipelines and facilities<sup>2</sup>. Twelve incidents were reported between Feb. 2022 and Feb. 2023. Primarily spills (release of substance) are reported, as a result of operation beyond design limits and fire. Volumes were small.

Because hydrocarbon pipelines were already listed as a threat (local) with policies in the CTC, this paper is to review the current policies (Specify Action policies directed at the Province: LO-G-1, LO-G-2, LO-G-3, LO-G-4 and LO-PIPE-1) for efficacy, to determine whether there are gaps

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<sup>2</sup> See [CER'S Pipeline Incident dashboard](#).

or emerging issues that need to be addressed, to review pipeline governing legislation and what is being done in other jurisdictions but most importantly, to consider the circumstances now listed in the updated 2021 Provincial Drinking Water Tables to ensure that all circumstances have been addressed or whether new or revised policies are required.

## 2 Discussion

### 2.1 Hydrocarbon Pipelines

There are several hydrocarbon pipelines that traverse the CTC SPR that are used to provide and transport fuel to major cities across the Province. As noted, the major lines in the CTC are operated by Trans Northern Pipelines Inc. and Enbridge Pipelines Inc. Sun-Canadian and Imperial Oil Sarnia Products also transport products such as heating oil and jet fuel within the province. These pipelines are governed by the Federal Canada Energy Regulator (CER). The main function of the CER is to keep energy moving safely and efficiently through pipelines and power lines. Operators must adhere to strict requirements related to operations, consultation, safety, maintenance, monitoring and reporting. Hydrocarbon pipelines are regularly monitored and inspected (remotely and locally) to confirm their integrity. Integrity digs are conducted where pipelines are older and/ or are located in vulnerable locations such as stream valley crossings, environmentally sensitive areas (ESAs) and source protection vulnerable areas. Digs, for the most part, are prioritized based on pipeline integrity gauge results. Transportation of fuel via pipeline in spite of documented spills, is still regarded by experts as the safest way to transport these products.

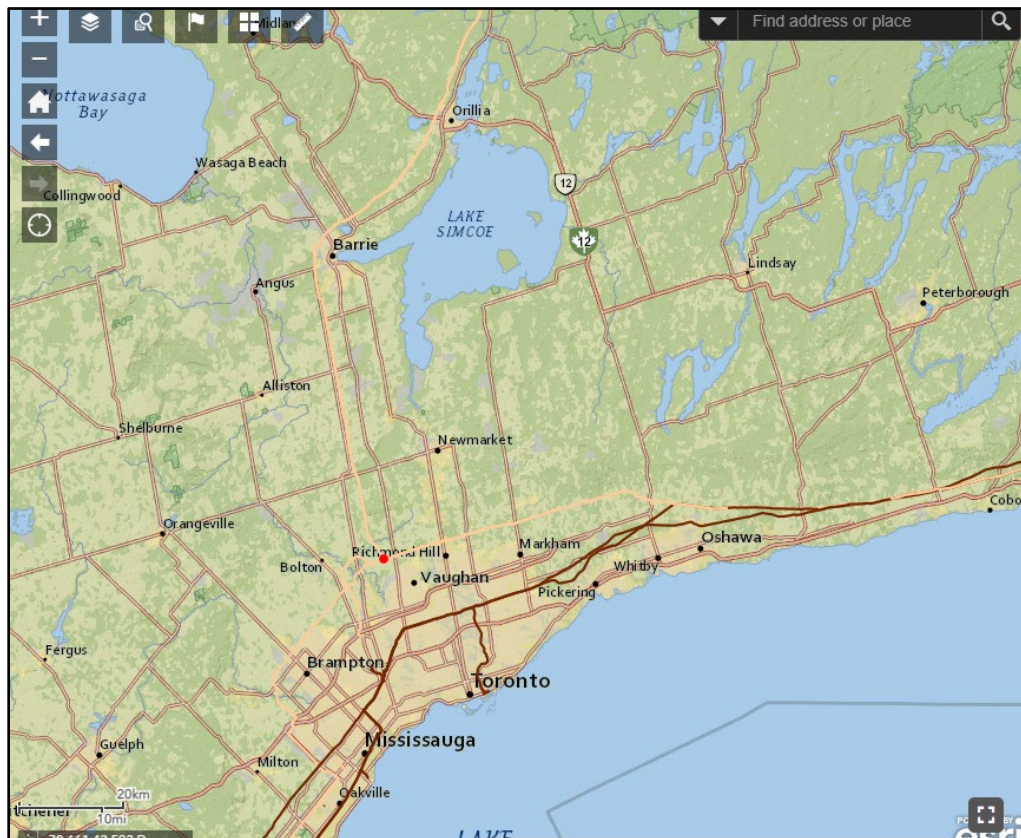


Figure 1. GTA clip of Hydrocarbon Pipeline mapping from the CER website (CER, 2023b)

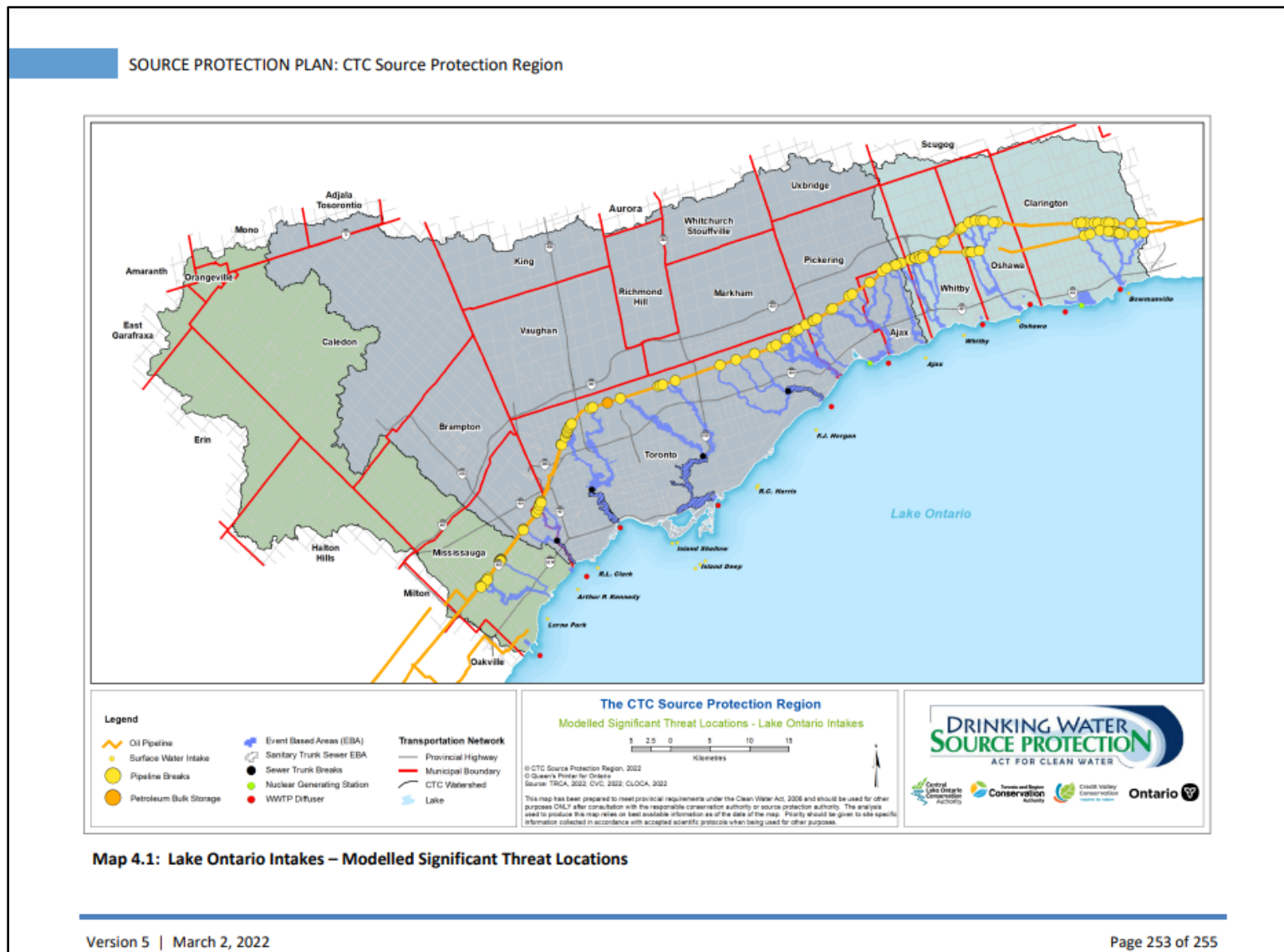


Figure 2. Map 4.1 – CTC Source Protection Plan 2015 showing the location of pipeline related IPZ-3s (CTC SPC, 2022)



The pipeline IPZ-3 simulations performed by the LOC for the CTC SPR resulted in significant pipeline rupture threats at CTC water treatment plants from potential ruptures at 16 creeks or rivers located in the CTC and neighbouring SPRs (16 Mile and Joshua Creeks (HHSPA); Credit River, Etobicoke Creek, Humber River, Don River, Highland Creek, Rouge River, Petticoat Creek, Duffins Creek, Carruthers Creek, Lynde Creek, Oshawa Creek, Bowmanville Creek (CTCSPR); and Wilmot Creek and Graham Creek (GRSPA).

## 2.2 Changes to pipeline circumstances in the Drinking Water Tables

The Province added the establishment and operation of a liquid hydrocarbon pipeline as a prescribed threat in 2018 and following updated the Drinking Water Tables to include the circumstantial details with the associated chemicals and levels of threat. The threat is associated with pipelines that were subject to the National Energy Board Act (since repealed and replaced by the *Canada Energy Act*) and O. Reg 210/01 under the *Technical Standards and Safety Act, 2001*, where a rupture and release results in the presence of certain chemicals in ground or surface waters. The chemicals of concern include various classes of petroleum hydrocarbons and BTEX compounds. Risk level (Significant, Moderate or Low) is determined by the vulnerability zone/ score. The circumstances for significant threats (which *must* be addressed at the very minimum) are captured in the following table.

Threat 22: The pipeline is designated for transmitting or distributing to terminals and distribution centres listed as Conveyance of a liquid hydrocarbon by a pipeline within the meaning of O. Reg. 210/01 or the CER Act.

**Table 1. Circumstances for significant threats**

Vulnerable Zone/ Score, Circumstance	Risk level
IPZ-1 (10) where the pipeline is above ground or above a water body	Significant
IPZ-1 (9), IPZ-2 (9), IPZ-3 (9), WHPA-E (9) where the pipeline is above ground or above a water body	Significant
WHPA-A (10), WHPA-B (10) where the pipeline is below ground and is not crossing underneath a water body	Significant
IPZ-1 (10) where the pipeline is below ground and is crossing within or underneath a water body	Significant
IPZ-1 (9), IPZ-2 (9), IPZ-3 (9), WHPA-E (9) where the pipeline is below ground and is crossing within or underneath a water body	Significant
WHPA-A (10), WHPA-B (10) where the pipeline is below ground and is crossing within or underneath a water body	Significant
WHPA-A (10), WHPA-B (10) where the pipeline is above ground or above a water body	Significant

In addition, there are 18 and 32 vulnerable area threat categories (45 and 76 circumstances respectively) where the threat is moderate (WHPA-B to D Scores 8, WHPA-E Scores 9-6.4 and IPZ scores 10-6.4) or low (WHPA-B to D Scores 6, WHPA-E Scores 8.1-4.5, IPZ scores 8.1-4.5 and HVAs score 6), associated with lower vulnerability scores in the various zones including HVAs

and where the pipeline passes (above, below or within waterbodies) similar to the circumstances for significant threats.<sup>3</sup>

The CTC SPR has had hydrocarbon pipelines as a local threat since its first SPP in 2015. Per Technical Rules 68, 69 and 70, the circumstances were associated with event-based modelling conducted by the Lake Ontario Collaborative to assess threat to the intakes located in Lake Ontario. As noted, ruptures were simulated where the pipeline traversed a major stream, and a spill was modelled to determine the potential concentration that the compounds would be at the intakes in Lake Ontario.

The Ontario Drinking Water Standard (ODWS) threshold was used and any spill that resulted in a concentration above the threshold was deemed a significant threat. There were no pipeline location specific circumstances associated with the original scenarios. The introduction of the Provincial circumstances now requires the CTC SPR to review whether any of these new circumstances that are associated with the location of pipelines within vulnerable zones exist within the jurisdiction and to develop policies if and where they do or may be located in the future and result in a significant threat. It is also worth noting that Conservation Ontario strongly encourages the CER to consider including a requirement for pipeline owners to notify SPAs when a company plans to move and/or permanently end the operation of a liquid hydrocarbon pipeline or as the CER Act refers to it as, “leave to abandon” the pipeline. The CTC may consider similar language as a trigger in one of the newly proposed policies.

## **CTC IPZs**

The CTC IPZ-1 s are all located within Lake Ontario with the exception of the Oshawa WTP, R.L. Clark and Toronto Island (shallow) intake which extends partially onto the land. All of the IPZ-1s and 2s have vulnerability scores that are less than 6 with the exception of the RC Harris and Toronto Island (shallow) intakes in Toronto that scores 6. The IPZ-3s extend from Lake Ontario north to the pipeline crossing and the pipelines do not overlap. There are no IPZ zones within the CTC SPR that have vulnerability scores where a pipeline could represent a significant or moderate threat by the 2021 circumstances and there are no hydrocarbon pipelines that traverse the IPZ 1s, 2s nor overlap the IPZ-3s.

The IPZ-3 pipeline activities are all deemed significant threats per the Director’s Rules approved methodologies. Policies have been developed to address all of the event-based modelled threats in the CTC SPR. No additional threats have been identified for the CTC IPZs for the change in the Director’s Rules.

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<sup>3</sup> These circumstances can be searched and reviewed at <https://threats.swpip.ca/>

## CTC WHPAs

A review determined that there are no hydrocarbon pipelines that traverse any of the CTC WHPAs and thus no circumstance in the 2021 Table of Drinking water threats triggers the enumeration of a pipeline threat in the CTC SPR WHPAs.

## HVAs

There are three 2021 circumstances listed for HVAs (Highly Vulnerable Aquifers – score 6) for conveyance of a liquid Petroleum Hydrocarbon by pipeline. All HVA circumstances are listed as *low* threats to Drinking Water sources. Similar to the significant threats, the circumstances relate to the location of the pipeline (above ground/water body, below ground/not crossing beneath a water body, or below ground and crossing within/beneath a water body).

In the CTC, HVAs were mapped and cover a significant amount of land. This is because of the intrinsic geology with many shallow unconfined aquifers present. A review has determined that though the existing pipelines currently traverse the CTC SPR through mostly low and medium vulnerability areas (south slope physiographic region), there are some areas that are mapped as HVAs that are traversed (Iroquois beach deposits). As these are low threat scenarios that generally do not affect the deeper municipal drinking water sources, no action is recommended for HVAs.

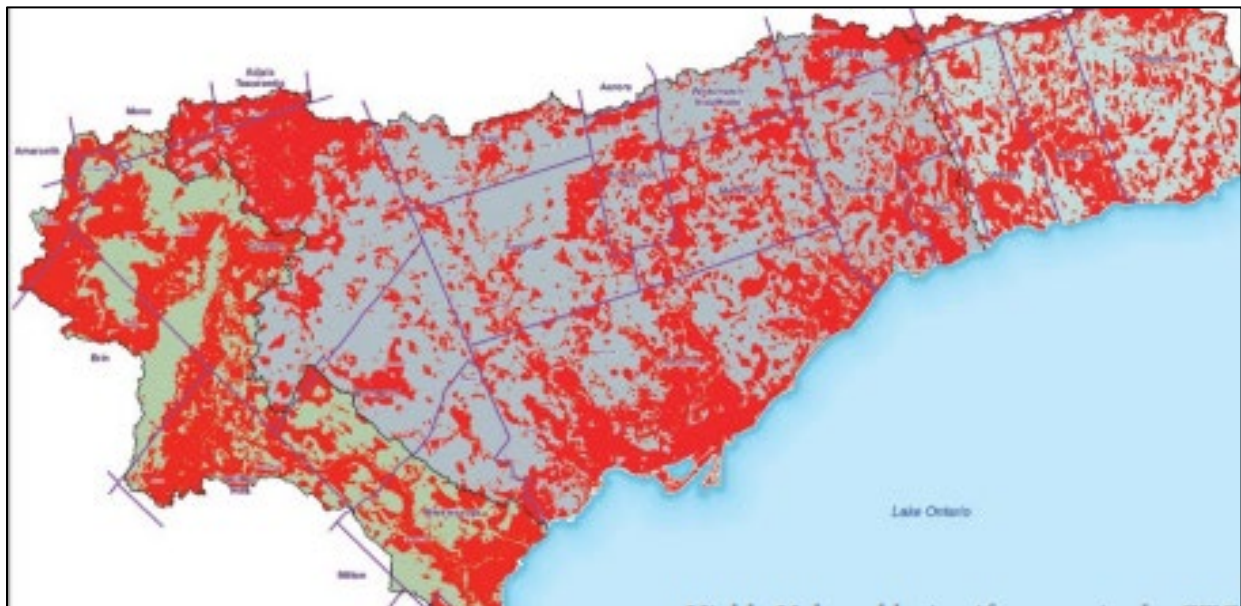


Figure 3. CTC HVA map from CTC brochure (CTC SPR, 2015)

In summary, there are currently no liquid hydrocarbon pipelines that cross wellhead protection areas (WHPAs) where they could pose significant risks. They also do not overlap the IPZ-3s. The pipelines cross highly vulnerable aquifers (HVAs). With the exception of the modelled threats shown to pose significant risks to Lake Ontario sources of municipal drinking water in IPZ-3s,

the existing pipelines do not pose a significant risk in HVAs, IPZ-1s and IPZ-2s and do not overlap the IPZ-3s.

### 2.3 Legislative Instruments and Jurisdiction

The following are a list and description of the most pertinent legislation governing hydrocarbon pipelines in Ontario:

#### **Canadian Energy Regulator Act, 2019.**

The *National Energy Board Act* (R.S.C., 1985, c. N-7) was repealed and replaced with the *Canadian Energy Regulator Act* in 2019. Regulations made under the NEB Act remain in force under the Canadian Energy Regulator Act. The Canada Energy Regulator (CER) was formed on August 28, 2019, when the *Canadian Energy Regulator Act* (CER Act) became law. Every decision or order made by the National Energy Board is considered to have been made under the *Canadian Energy Regulator Act* and may be enforced as such. Every certificate, license or permit issued by the National Energy Board is considered to have been issued under the *Canadian Energy Regulator Act*.

The Canada Energy Regulator (CER) is the agency of the Government of Canada under its Natural Resources Canada portfolio. The CER Onshore Pipeline Regulations (OPR) are made under the Canadian Energy Regulator Act. Companies are responsible for meeting the requirements of the OPR to manage safety, security and environmental protection throughout the entire lifecycle of their facilities, from design, through to construction, operation and abandonment.

The CER's role is to review and make decisions regarding pipelines and power lines in Canada that cross provincial or international boundaries. The agency must consider economic, environmental and social factors in the decision-making process. The CER regulates the pipelines during their full life cycle, from design to end of life abandonment. Currently the CER regulates over 73,000 km of pipeline.

The pipelines of interest in the CTC SPR are the large hydrocarbon fuel transmission pipelines owned and operated by Trans-Northern Pipelines Inc. (crude oil and liquid petroleum products), Enbridge Inc (crude oil - Line 8 and 9), Sun Canadian pipelines and Imperial's Sarnia Pipeline products. These are all regulated by the CER. There are also pipelines operated by Trans-Canada Pipelines Ltd., but these are not covered under the updated Technical Rules definition of hydrocarbon pipelines as they transport natural gas.

#### **Ontario Energy Board Act, 1998**

The *Ontario Energy Board (OEB) Act* is a provincial piece of legislation that establishes the OEB as a regulator of Ontario's electricity and natural gas sectors. Its function is to ensure that the energy sector is reliable and sustainable. It sets rates which include time-of-use rates and also

sets delivery charges. The OEB is mainly concerned with natural gas and has little jurisdiction over hydrocarbon pipelines. Its main role in this regard has to do with guidelines with respect to environmental reporting, for example, the *Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Projects and Facilities in Ontario, 8<sup>th</sup> Edition 2023* (Environmental Guidelines) provide guidance to project proponents on how to prepare the Environmental Report that is required by the OEB as part of Hydrocarbon Project applications. Hydrocarbon Projects are defined as those that require approval of the OEB under section 90 or 91 of the *Ontario Energy Board Act, 1998* (OEB Act), and natural gas storage applications under 36.1(1), 38(1), and 40(1) of the OEB Act (Ontario Energy Board, 2023)

## Canadian Standards Association Z662 (CSA Z662)

The latest edition of the CSA Z662 – Oil and Gas Pipeline Systems standard, came into effect in June 2023. The goal of the CSA Z662 is to achieve safety and integrity of a pipeline throughout its lifecycle. The CSA Z662 is adopted into legislation upon its publication, pursuant to provisions of Section 1 of the Canada Energy Regulator Onshore Pipeline Regulations.<sup>4</sup>

Embedded in the CSA Z662 is “the concept of Designated Geographical Areas (DGAs) that is similar in concept to high consequence areas (HCAs) for hazardous liquid pipelines. These HCAs include unusually sensitive areas (USAs) which mean drinking water or ecological resource areas that are unusually sensitive to environmental damage from a hazardous liquid pipeline release.” (P.804, 2023 CSA Z662, June 2023).

According to CER (Clauses 4.3.7.2 to 4.3.7.4 in Z662:19 and Z662:23), CSA Z662 requires that liquid pipeline companies identify, and document DGAs in the vicinity of the pipeline. The criteria for DGA include areas where an incident could disrupt commercial navigational activities, *impact a major drinking water* or food source, where there is a type of sensitive fish species or there are endangered or protected species in the water body through or near which the pipeline may traverse. A DGA may be a water body (including aquifers) that is being used as a major drinking water source that could be impacted by a pipeline uncontrolled release incident and as such heightened protection measures may be required. Regulated companies are required to identify pipeline segments where a release could adversely affect a DGA and consider a number of factors such as the:

- terrain including topography and soil type,
- potential pathways such as waterways or ditches,
- flow characteristics,
- potential release volume,
- and their emergency response plan including capability and time to respond.

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<sup>4</sup> Information from [CSA Group website](#).

Additionally, a more conservative safety factor (known as location factor) must be used when designing liquid pipeline segments that can affect a DGA. This applies to new pipelines. It is not required to be retroactive, thus this will protect areas that are impacted by new pipeline construction. Existing SWP areas are protected by the SPP policies, and these policies may be updated separate to Z662 updates. DGAs have similarities to high consequence areas (HCAs) that have been discussed and considered during the preparation of the inaugural SPPs. Amongst source water protection experts, there is a familiarity with the concept of HCAs, which are heavily populated, environmentally sensitive areas that could be affected by an unintended release of liquid hydrocarbon from a pipeline.<sup>5</sup>

## **Technical Standards and Safety Act, 2000**

The Technical Standards and Safety Authority's (TSSA's) mandate is to help protect the public, environment, and property from fuel-related hazards such as spills, fires, and explosions. They oversee the ongoing operation and maintenance of existing hydrocarbon pipelines. They also ensure that the pipeline integrity programs are carried out by pipeline operators to ensure their safe operation. They have provincial jurisdiction over the safe and responsible handling of petroleum products used as motor or appliance fuels. This includes gasoline, diesel/fuel oil, natural gas, and propane handled at retail outlets, private outlets, bulk plants, and in tank vehicles. The TSSA does not have authority at refineries. The TSSA is responsible for enforcement of the *Technical Standards and Safety Act, 2000*, and its regulations. The Act governs the construction and operation of oil and gas pipelines located entirely within Ontario. Under Ontario Regulation 210/01 – Oil and Gas Pipeline Systems, a license is required from the Fuels Safety Division. The Oil and Gas Pipeline Systems Code supplements this regulation. The TSSA and the Ministry of the Environment, Conservation and Parks share the regulation and enforcement for reporting and clean-up of spills. TSSA is a delegated administrative authority and is accountable to the Province (source: HHSPA).

## **Fisheries Act, 1985**

In general, *Fisheries and Oceans Canada enforces the Fisheries Act*; however, the section that applies to contamination is under the authority of Environment Canada and Climate Change Canada. Section 36(3) of the *Fisheries Act* states that: "no person shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish or in any place under any conditions where the deleterious substance or any other deleterious substance that results from the deposit of the deleterious substance may enter any such water."

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<sup>5</sup> CSA Z662 - County of Essex\_Ex TAB6\_20200724.PDF;  
<https://www.rds.oeb.ca/CMWebDrawer/Record/682652/File/document>

## **Canadian Environmental Protection Act (CEPA) 1999 – Spills – Federal**

A spill, as defined in Part X of the Canadian Environmental Protection Act, is a discharge a) into the natural environment, b) from or out of a structure, vehicle or other container; or c) that is abnormal in quality or quantity in light of all of the circumstances of the discharge.

The primary objective for the Act is to help prevent or reduce the risk of spills of pollutants and prevent, eliminate or ameliorate any adverse effects that result or may result from spills. This may include notifying appropriate levels of government as well as the affected members of the public and development of plans. The impacts as well as the outcomes of most spills are directly related to the level of preparedness.

The Canadian Environmental Protection Act is governed by the Federal Environment and Climate Change Canada (ECCC). The department's program focus reflects the interdependence between environmental sustainability and economic well-being.

Under the Department of the Environment, the powers, duties and functions of the Minister of Environment and Climate Change extend to matters such as:

- *the preservation and enhancement of the quality of the natural environment, including water, air and soil quality, and the coordination of the relevant policies and programs of the Government of Canada*
- renewable resources, including migratory birds and other non-domestic flora and fauna
- meteorology; and
- the enforcement of rules and regulations

The ECCC department delivers its mandate through acts and regulations, such as the Canadian Environmental Protection Act, 1999 (CEPA 1999), the pollution prevention provisions of the Fisheries Act, the Federal Sustainable Development Act, the Species at Risk Act, the Migratory Birds Convention Act, 1994, the Canada Wildlife Act, and the Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act.

## **Environmental Protection Act R.S.O. 1990, c. E. 19**

The Environmental Protection Act is the primary pollution control legislation for environmental protection in Ontario and can be used together with the Ontario Water Resources Act. It grants the Ministry of the Environment, Conservation and Parks broad powers to deal with the discharge of contaminants causing negative effects. The legislation prohibits discharge of any contaminants into the environment that cause or are likely to cause adverse effects. Amounts of approved contaminants must not exceed limits prescribed by the regulations. The Act also requires that spills of pollutants are reported and cleaned up promptly. The Environmental Protection Act also has the authority to establish liability on the party at fault. One section of the Act imposes a duty on corporate officers and directors to take all reasonable care to

prevent the corporation from causing or permitting unlawful discharges of contaminants into the natural environment.

## **The Spills Action Centre - Ontario**

Under the Environmental Protection Act (EPA), it is the duty of the owner or controller of a spilled pollutant to clean up a spill. They must do everything that is practical to prevent and eliminate the negative effects from a spill, including restore the natural environment to its original state. The Spills Action Centre (SAC) handles reports of spills, adverse drinking water results and environmental concerns from the public. SAC operates a 24-hour, province-wide, toll-free telephone reporting service. SAC tracks and follows up on required cleanup activities, provides advice and information related to spills or environmental incidents, coordinates a response with other agencies, if needed and initiates government response when required. SAC operates under the EPA. Spills and upsets that cause an adverse effect, spills that are likely to enter or enter any waters, as defined in the Ontario Water Resources Act, directly or through drainage structures, or spills of greater than 100 litres on land accessible by the public shall be immediately reported to the Ministry's Spills Action Centre and the offending Company shall take appropriate remedial action to limit the impact.

The Spills Action Centre is under the Ontario Ministry of Environment Conservation and Parks and has access to the Source Protection Program data and maps (also under the governance of the MECP). The SAC is fully aware of highly vulnerable drinking water areas. Discussions with SAC personnel revealed that in the event of a pipeline spill, SAC contacts all relevant parties including the pipeline owners, ECCC, the relevant Source Protection Regions, OPP, relevant federal and provincial agencies and the municipalities. The Source Water Protection maps and data are reviewed and provided to the emergency response teams, if the spill could impact such areas, to inform any special procedures that would be deemed necessary or prudent.

Along with the Province, municipalities, the SAC and Pipeline companies all have been provided with the Source Water Protection data and mapping. As these agencies have Emergency Response Plans and protocols including those that apply to hydrocarbon pipelines, without becoming too prescriptive, it may be prudent to upgrade the LO-G-1 policy to require these agencies to include vulnerable zones and emergency protocols related to drinking water sources in their emergency response plans and this should apply to all existing and future pipelines.

## **Municipal Dangerous Goods Spill Response Plans**

Generally, under these plans, the municipalities will respond to a spill if safe to do so to ensure the protection of public health and safety as well as the environment. For clean-up activities, the municipality's role is one of monitoring and, where necessary, enforcement, to ensure appropriate steps are taken by the responsible party to clean up spills. Those responsible for causing the spill are responsible for cleaning it up. Most municipalities in the GTA have



Dangerous Goods Spill Response plans or similar bylaws or policies (pollution prevention and Cleanup, fire protection and life safety, flood plain designation and protection, public works aid agreements).<sup>6</sup>

### 3 Conclusion

Per the Technical Rules, a Source Protection Plan must develop policies for prescribed activities where such activity is or could be a significant threat. During the development of the inaugural CTC SPP in 2015, the SPC discussed this potential threat in detail and consulted extensively with pipeline owners, the NEB (now the CER) and OEB regarding drinking water source protection concerns. Staff reviewed pipeline monitoring, maintenance, and design element documents, attended emergency response drills, pipeline river crossing monitoring exercises and pipeline integrity digs. The SPC was also presented with summaries of the regulatory framework. The pipeline companies are required to inspect pipelines and regulatory agencies conduct audits. The SPC, while noting that the industry was already highly regulated, instructed staff to add a pipeline rupture spill to the list of scenarios for the IPZ-3 event-based modelling. A significant threat was determined, and this item was added as a local threat to the CTC SPR list of threats and policies developed (LO-PIPE-1, LOC-G-1, and LOC-G-2) to ensure that Emergency Response Plans consider Source Water Protection data. No additional significant threats have been determined in the CTC SPR through the vulnerability-based approach, related to the 2018 addition of liquid hydrocarbon pipelines to the Provincial list of prescribed threats. This review has determined that hydrocarbon pipelines currently only pose a low threat in the CTC in HVAs, except where the threat is identified under IPZ-3 event-based studies.

It has also been established that there are already several Federal and Provincial instruments that currently address the fundamental concerns of source water protection through their provisions and emergency response plans that have been upgraded and include consideration of drinking water sources. Municipalities are also very well aware of Source Water Protection vulnerable areas and are the same agencies charged with emergency response on-the-ground action.

Sections 31 (1) and 40 (7) of O. Reg. 287/07 indicate that if the SPC concludes that where there is no existing significant threat and no reasonable prospect that the activity will ever be engaged in (O. Reg 206/18, s.2), the SPP may exclude a policy to address the prescribed threat. Per Section 40 (7), an explanation of the decision must be included in the Explanatory Document. The MECP has further clarified these requirements indicating that for threats related to water quality, if the Assessment Report indicates that any specific activity or condition cannot be a significant drinking water threat in an area based on the vulnerability, then policies are not required as the activity cannot become a significant threat now or in the future. This does not mean that a policy is not required for a prescribed activity just because

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<sup>6</sup> See the spill response webpage for the [City of Toronto](#) and the [City of Mississauga](#).

the SPC thinks the activity will not take place in the future. If the Assessment Report identifies areas where the activity is or would be a significant drinking water threat then a policy is required, regardless of whether or not someone would engage in the activity so that it triggers a circumstance and becomes a significant threat.

Considering that the CTC SPR is an area of growth with a growing population and with it a continued demand for liquid hydrocarbon products, that it is an area where pipelines currently exist and with many vulnerable source water protection areas, it is reasonable to assume that there will be modifications to existing pipelines and additional or larger pipelines may be constructed in the future. The current CTC pipeline policies were developed to address the specific event-based modelled threats regarding ruptures of the pipelines across tributaries leading into Lake Ontario but the vulnerability score-based circumstances in the updated 2018 Technical Rules are currently not addressed for future threats. It is recommended that similar to neighbouring SPRs, a few additional policies should be developed to address these potential future threats for this now established Provincially prescribed threat. These policies should also drive awareness and ensure that Risk Assessment, Emergency protocols and plans all include drinking water source mapping and data for special considerations.

It may be noted that the HHSPA's SPC supported the principle of relying upon the extensive regulatory regime already in place, to address this threat; given that the pipeline that was modelled to assess significance of the threat is federally regulated and because there are very limited tools available for policies regarding federally regulated facilities. Other neighbouring SPRs have similar conclusions. The HHSPA, however, developed 6 new policies to address the new prescribed threat and these policies replaced the original inaugural pipeline policies. CTC staff agree with this position and recommend similar updates to the CTC SPR pipeline policies.

## 4 Recommendations

It is recommended that the CTC SPC continues to rely on the existing Federal and Provincial oversight and legislative instruments in the management of this threat. Having said this, additional policies (6) to address the new provincially prescribed liquid hydrocarbons where they could become a significant threat are advised. In adjacent Source Protection Regions (HHSPA), their original pipeline policies were replaced with new policies similar to these recommended. While it is believed that these new draft policies are more overarching to address all potential pipeline related threats, the existing LO-PIPE-1 was developed by the CTC SPR to address event-based modelling supported significant threats and should be maintained with its specific requirements. The CTC should consider adding the CER and OEB as implementors to policy LO-PIPE-1.

LO-PIPE-1 as a whole and its individual clauses may need to be reviewed by policy analysts to check for redundancies or duplication with the newly proposed policies. The newly proposed policies are broader 'higher level' policies, respecting that oversight agencies maintain responsibilities but still requiring accountability through reporting.

New LO-G-5 and GEN-9 policies are recommended to encourage the Province and other parties to provide related spills data for support of localized technical analyses.

It is also recommended that current LO-G policies are expanded to improve awareness of sensitive drinking water areas and Source Water Protection policies for spill response planning. These proposed amendments to the LO-G policies are also from the *Consideration of Transportation of Dangerous Goods* discussion paper. Both discussion papers should be considered together to understand proposed policy changes.

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## Appendices

## Appendix A: Additional SPR Policies and Resources

### Lake Erie Lake Area Source Protection Region, 2011. Discussion Paper: The Conveyance of Oil by way of Underground Pipelines.

LESPR Town of Grand Valley DC-GV-NB-11.1, Melancthon DC-M-NB-17.1

City of Hamilton - CH-NB-15.1 Future Specify Action WHPA-A-v.10 Monitoring

To reduce the risk due to the conveyance of oil by way of underground pipes within the meaning of O. Reg. 210/01 under the Technical Safety and Standards Act or that is subject to the National Energy Board Act, where this activity would be a significant drinking water threat, the pipeline proponent, the National Energy Board and the Ontario Energy Board are encouraged to provide the Source Protection Authority and the City the location of any new proposed pipeline within the City and/or Source Protection Area. The Source Protection Authority shall document in the annual report the number of new pipelines proposed within vulnerable areas.

### LESPR for Amaranth and E Garafraxa

22. The Establishment and Operation of a Liquid Hydrocarbon Pipeline DC-AEG-NB-14.1 Future Specify Action WHPA-A v.10; WHPA-B v.10 Monitoring

To ensure this activity never becomes a significant drinking water threat, the conveyance of oil by way of underground pipeline within the meaning of O.Reg. 210/01 under the Technical Standards and Safety Authority Act or under the National Energy Board Act, the National Energy Board and Ontario Energy Board in their consideration of any pipelines within vulnerable areas where the activity would be a significant drinking water threat, are encouraged to ensure the applicant has complied with or included appropriate design standards and monitoring and maintenance practices, where applicable, to reduce the risk to drinking water sources. The Source Protection Authority shall document in the annual report the number of new pipelines proposed within vulnerable areas.

### ABMV

Policy C.10.4 Hydrocarbon Pipeline was added to the Clean Water Act as threat # 22, after the initial Source Protection Plans were approved in 2015. A pipeline crosses the southern tip of the Ausable Bayfield watershed but is outside any vulnerable areas. Therefore, it cannot be a significant threat. However, the Committee chose to include a policy to address potential future threats. The policy was added in 2023 and required the pipeline operators and regulating authorities to ensure that appropriate monitoring and maintenance practices are in place.

### LPSPR 2015

County of Oxford - OC-NB-1.13 Future Specify Action WHPA-A-v.10; WHPA-B-v.10 Monitoring

To ensure that the conveyance of oil by way of underground pipeline within the meaning of O. Reg. 210/01 under the Technical Safety and Standards Act or that is subject to the National Energy Board Act, never becomes a significant drinking water threat within a WHPA-A and WHPA-B with a vulnerability score of 10, the National Energy Board, Ontario Energy Board, and the pipeline proponent shall provide the Source Protection Authority and the County with the location of any new pipelines proposed within the Source Protection Region. The Source Protection Authority shall document in the annual report the number of new pipelines proposed within WHPAs, where they would be a significant drinking water threat.



## **Norfolk County - Local Threat**

The Conveyance of Oil by way of Underground Pipelines NC-NB-1.14 Future Specify Action WHPA-A-10; WHPA-B-10 Monitoring

To ensure that the conveyance of oil by way of underground pipeline within the meaning of Ontario Regulation 210/01 under the Technical Safety and Standards Act or that is subject to the National Energy Board Act, never becomes a significant drinking water threat, where this activity would be a significant drinking water threat, the pipeline proponent, the National Energy Board, and Ontario Energy Board are encouraged to provide the Source Protection Authority and the County the location of any new proposed pipeline within the County and/or Source Protection Area. The Source Protection Authority should document in the annual report the number of new pipelines proposed within vulnerable areas if a pipeline has been proposed and/or application has been received.

## **Elgin County, Bayham EC-NB-1.15 Future Specify Action WHPA-A-10 Monitoring**

To ensure that the conveyance of oil by way of underground pipeline within the meaning of Ontario Regulation 210/01 under the Technical Safety and Standards Act or is subject to the National Energy Board Act, never becomes a significant drinking water threat, where this activity would be a significant drinking water threat, the pipeline proponent, the National Energy Board and the Ontario Energy Board are encouraged to provide the Source Protection Authority and the Municipality the location of any new proposed pipeline within the Municipality and/or Source Protection Area. The Source Protection Authority should document in the annual report the number of new pipelines proposed within vulnerable areas if a pipeline has been proposed and/or application has been received.

## **Trent Conservation Coalition**

Trent – G - (6) A new sub-policy stating: “Pipeline owners should post sufficient and visibly noticeable liquid hydrocarbon pipeline identification signage for pipelines located in wellhead or intake protection areas. In addition, ‘do not anchor’ signs should be posted when there is a submerged pipeline in the area of a navigable waterway.” Policy G-6(7) was added a monitoring policy for G-6(6). Policy G-6(6) was a new policy added, related to signage for hydrocarbon pipelines. The policy requests that owners of pipelines place sufficient signage in locations of pipelines in Wellhead Protection Areas and Intake Protection Zones. The committee also thought it would be advisable to have “Do Not Anchor” signs in locations that are navigable waterways where pipelines are located on the bed of the waterway.

G-5 Added “r) Conveyance of a Liquid hydrocarbon by a pipeline” under the list of applicable activities. New hydrocarbon pipeline policies (HP) were added to the plan, see the HP section for more information.

As a result of the 2021 Technical Rule changes, the establishment and operation of hydrocarbon pipelines are now included as prescribed drinking water threats. The Committee had to develop a set of policies to address these significant threats, while also considering that the pipeline industry is already heavily regulated.

HP-1 to HP-5 are new strategic action policies, with the owner of the pipeline as the implementer (including regulators and approval authorities for HP-3). HP-1: sets out requirements for environmental protection programs, emergency management programs and emergency procedure manuals. HP-2: that recommended practices by the Canadian Energy Pipeline Association are met. HP-3: that source protection authorities be included in the consultation process and be given the opportunity to provide feedback for new pipelines, changes to a pipeline or change in material being transported in a pipeline. HP-4: that the applicable source protection authority is advised of any abandonment or change of use of any pipelines. HP-5: that watercourses in the Lower Trent Source Protection Area, within IPZ 1, IPZ 2

and IPZ 3 with a score of 9 or 10 are to be considered when deciding on valve or equipment placement.

HP-6 is a new strategic action policy with Conservation Authorities as the implementer. This policy is to ensure that CAs are to provide the pipeline owners with information on watershed characteristics, flood warnings and statements and other local data for the purposes of source protection.

HP-7 is a new strategic action policy with the hydrocarbon pipeline regulators as the implementer. It states that “drinking water threats are to be included in inspection programs where a liquid hydrocarbon pipeline or a potential release from a liquid hydrocarbon pipeline would be considered a significant drinking water threat.”

HP-8 is a new monitoring policy for Lower Trent and Ganaraska Conservation Authorities to request and report on information from the owner of the pipeline, pertaining to the results of the integrity inspections and significant pipeline maintenance that occurred within vulnerable areas.

New policy HP-9 is similar to HP-1 addressed above, however the applicable activities for this policy specifically address moderate and low threats, where HP-1 to HP-8 policies are for significant threats. This is the only moderate and low threat policy in the plan.