CTC Source Protection Region
Source Protection Committee

CTC Source Protection Committee Meeting #1/23

Chair: Nathan Hyde

Thursday, March 23, 2023

1:00 – 4:00 p.m.

Hybrid meeting[1] (Microsoft TEAMS and in-person):

Credit Valley Conservation Administration Office, Boardroom

1255 Old Derry Road, Mississauga, ON

Agenda

Page #

1. **Call to Order and Roll Call**
2. **Review of Agenda**
3. **Disclosure of Conflict of Interest**
4. **Minutes of Previous Meeting**
5. **Member Introductions**
6. **Chair's Remarks**
7. **Election of Acting Chair**
8. **Update**
   - 8.1. Update from the Ministry of Environment, Conservation and Parks Liaison Officer - Beth Forrest
   - 8.2. Update from Conservation Ontario Source Water Protection Manager – Debbie Balika
   - 8.3. Update from Conservation Authority Liaison – Quentin Hanchard, CAO of Credit Valley Conservation
9. **Presentations**
   - 9.1. CTC Risk Management Official update: RMP challenges and opportunities
10. **Committee Business**

10.1. Reports to Committee

a) CTC Program Update 3

b) CTC Source Protection Plan Annual Progress Report – 2022 91

c) Extension to Risk Management Plan Timeline for Impacted Municipalities 106

11. Correspondence

None

12. Next Meeting

May 3, 2023, 2023 1:00 p.m. (hybrid)

13. Adjourn

[1] CTC Source Protection Committee meetings are video recorded for the purpose of minute taking.

TO: Chair and Members of the Source Protection Committee Meeting #1/23, March 23, 2023

FROM: Behnam Doulatyari, Senior Manager, Watershed Plans and Source Water Protection

RE: CTC Program Update

KEY ISSUES

A CTC Source Protection Region program update.

RECOMMENDATION

THAT the CTC Source Protection Committee receive the staff report CTC Program Update for information

BACKGROUND

Membership update

CTC program staff have been continuing efforts to fill vacancies in the membership of the CTC Source Protection Committee (SPC). In early February 2023, Dave Kentner, formally resigned from the SPC. Program staff have subsequently reached out to clerks at Region of Halton, Wellington County, Town of Erin, Town of Halton Hills, Town of Milton, and Town of Oakville requesting a joint nomination by April 14, 2023 to represent the group on the SPC.

On February 27, 2023 the Ministry of Environment, Conservation and Parks (MECP) appointed Nathan Hyde, as the new SPC Chair for a 3-year term ending in February 2026. The Chair is the Chief Administrative Officer for the Town of Erin, and has extensive government experience at the municipal, provincial and federal level.

At its March 10, 2023 meeting, the Credit Valley Source Protection Authority endorsed the following members to 5-year terms.

- Cody Brown, as a citizen-at-large to represent the public interest, employed by the Municipality of Clarington, and with over ten years experience in GIS and spatial data analysis, as well as previous experience in source protection projects and municipal planning and development services.

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- Mark Heaton, as a public interest representative from an environmental non-government organization (ENGO), employed by Ontario Streams, with over 30 years of experience with the Ministry of Natural Resources focused on fish, wildlife, and wetlands management in GTA watersheds.

Next steps for staff include recruitment of a Public Health liaison, as well as reviewing the terms of appointment for Committee members ahead of the term expiries of 8 members in June 2024.

The current list of SPC members is included as **Attachment A**.

Working Group updates

The Amendments Working Group (AWG) met February 15, 2023, and selected Chris Gerrits as new AWG chair. The group discussed and endorsed alignment of Source Protection Plan policy OS-1 with the SPC endorsed proposed changes to DNAP-1 (Resolution #6/22, Meeting #1/22) as part of the forthcoming section 34 amendment. The proposed changes to both policies are included as **Attachment B**. The group also recommended to explore the possibility of merging the two policies, given the similarity in the type of threat and scope. MECP staff were supportive of the proposal citing other Source Protection Regions who have taken a similar approach. The policies will be merged as part of the upcoming Section 36 update to the CTC Source Protection Plan.

An overview of the upcoming Section 34 process and requirements for municipal council resolutions and support was discussed, as well as how this process could be streamlined in the future. Discussion was also held on possible FUEL policy revisions in consideration of the 2021 Director's Technical Rules changes, and on the CTC Section 36 work planning process.

The CTC Implementation Working Group (IWG) met February 27, 2023, where members provided feedback on the Electronic Annual Reporting (EAR) process. The upcoming deadline for Risk Management Plans for existing significant threats, and process to request a further extension were considered (see Committee Report 10.1a.) CTC staff provided an overview of a proposed methodology to analyze water quality trends and issues. Bill 23 impacts, education and outreach priorities for CVC Best Practices, and emergency planning were also discussed.

Schedule of upcoming amendments and consultations

Under section 34 of the *Clean Water Act, 2006*, changes to drinking water systems need to be incorporated into approved assessment reports for the source protection plan policies to apply.

Pre-consultation with implementing bodies has begun for proposed amendments to York's new Nobleton well; Peel Region's Palgrave, Caledon East, and Caledon Village systems; the City of Toronto's new Enwave intake and Ashbridges Bay WWTP outfall, and policy updates (endorsed at SPC Meeting #4/22, Agenda Item 8.1g). The pre-

consultation period is scheduled to conclude in late May. Written comments will be reviewed by the CTC Source Protection Committee's Amendments Working Group and if necessary, changes will be made to the proposed CTC Source Protection Plan. Municipal council endorsements are required from affected municipalities prior to the public consultation period, which is scheduled for June 5 to July 12, 2023.

The Town of Erin issued a Request for Proposal for source water protection technical work in February. CTC staff also recently provided feedback to the Town of Orangeville relating to proposed upcoming water quality and quantity technical work. More information on timing of associated CTC Source Protection Plan and Assessment Reports amendments will be shared with the Committee when it becomes available.

Section 36 update

As source protection plans across Ontario were initially approved, the Minister of the Environment, Conservation and Parks, was required to issue an order to specify which parts of Source Protection Plans (SPPs) and Assessment Reports (ARs) were to be reviewed under section 36 of the *Clean Water Act, 2006*. The correspondence from the Minister (**Appendix 1 of Attachment C**) confirming approval of the CTC Source Protection Plan, written in July 2015, specified that a workplan under section 36 of the *Clean Water Act, 2006*, should be submitted. The workplan, developed in consultation with the SPC, local source protection authorities (SPAs), municipalities, and the MECP, can be found in **Attachment C**. Based on this workplan, the Minister issued another order on July 22, 2019, specifying more detailed requirements governing the content and timeframes of this review (**Attachment D**). This order required submission of the proposed updated within six months after the completion of the required work and consultation.

The approval of a 2-year Transfer of Payment Agreement (TPA) for the CTC Source Protection Region, was finalized by MECP on April 29, 2022. The TPA, which was provided to the CTC SPC in the agenda package (Item 8.1) for Meeting #3/22, covers the period of April 1, 2022 – March 31, 2024. Schedule C – Section 3 of the TPA outlines deliverables, which among other things include locally initiated amendments to the SPP and AR under section 34 of *Clean Water Act, 2006*.

Table 1 below provides an overview of the CTC Section 36 workplan and estimated timelines. Where available, target consultation meeting dates have also been provided. In some cases, there is an overlap between tasks in the section 36 workplan and TPA. (e.g., TPA C.3.8 and s.36 Tasks 9 and 27 are both concerned with Transport Pathways). Where relevant, these have been included in the table.

Tasks have been prioritized based on the Minister's order, scope and timelines of the TPA, and availability of staff time and resources. Given the limitations on the latter, the estimated timelines will be adjusted as needed to meet the shifting priorities.

Table 1. CTC Section 36 and 2022-24 Transfer Payment Agreement Overview

Task	Description	Timeline
1	Review DNAP-1 and OS-1 policies to determine: i. whether future prohibition of DNAPLs and organic solvents is necessary or whether an RMP approach would achieve the desired result more efficiently; and ii. whether an exception for small quantities of DNAPLs and organic solvents should be added to the policies to exclude situations where the storage and handling of these materials are unlikely to result in a risk to sources of drinking water.	Complete. Approval expected fall 2023 as part of proposed s.34 amendment. Proposed merging of DNAP and OS policies to be done as part of the s.36 submission.
2	Review agricultural source material policies (ASM-2, ASM-4) for gaps related to allowing a risk management plan (RMP) when a Nutrient Management Plan (NMP)/Strategy (NMS) is required, but has expired, or when a NMP is voluntarily in place.	IWG: April 2023 AWG: May 2023 SPC: June 2023
3	Review policies ASM-1 and ASM-2, in particular duplication of requirements where NMP/NMS is in place on a property where a risk management plan (RMP) is also required (i.e., soil testing).	
4	Review the need for prohibiting the application of commercial fertilizer in wellhead protection area-A (WHPA-A) (FER-1, FER-2).	
10	Re-evaluate the appropriateness of a risk management plan approach for all agricultural policies currently requiring prohibition outside of the WHPA-A.	
C.3.11	Continuing the review and update of agricultural source material SPP policies (ASM-2 and ASM-4).	
33	Continuing the review and update of SPP policies (FER-1 and Fer-2) prohibiting the application of commercial fertilizer.	

Task	Description	Timeline
	DTR update for NASM and LIV will also be included in this package.	
33	Complete changes to the CTC SPP to conform with the current Director's Technical Rules. SAL & SNO SWG & WST PES	 IWG: June 2023 AWG: July 2023 SPC: Oct 2023 TBD TBD
28	The revised circumstances associated with the storage and handling of above grade fuel will be applied within the CTC SPR.	Circulation of revised text to AWG expected by April 2023
5 **C.3.11**	Consider addition to policy LO-NGS-1 requiring that Ontario Power Generation designate an appropriate lead for source protection considerations. Reviewing and updating requirements under SPP policy LO-NGS-1.	AWG: Q4 2023 SPC: Q4 2023 -Q1 2024
7 **C.3.11**	Create policy to require signage at boundaries of most vulnerable areas (i.e., WHPA-A). Assessing the need for developing SPP policies to require signage at vulnerable area boundaries and addressing transport pathways.	AWG: Q4 2023 SPC: Q4 2023 - Q1 2024
6 **9** **11**	Consider the transportation of substances as a local threat. If deemed a local threat, create a specify action policy to address the threat. Consider the need for additional policies to address issues identified in inaugural CTC SPP. Review need for new policies as a result of adding liquid hydrocarbon pipelines as a prescribed threat.	AWG: July 2023 SPC: Q4 2023
12	Review 'Nitrate Issue' designation at Acton Drinking Water System based on additional water quality monitoring data and research results.	AWG1: May 2023 AWG2: July 2023 SPC: Q4 2023

Task	Description	Timeline
13	Review 'Chloride Issue' designation at Georgetown Drinking Water System based on additional water quality monitoring data.	
14	Review 'Sodium and Chloride Issue' designations at Orangeville Drinking Water System based on additional water quality monitoring data.	
8	Consider the creation of a policy or policies to address transport pathways.	IWG: Q3 2023 AWG: Q4 2023 SPC: Q4 2023
C.3.8	Updating the process for municipal reporting of proposals to create or modify transport pathways to CTC SPAs.	
27	Identify new and existing transport pathways based on in-depth inventory in all three source protection areas.	Q4 2023 – Q1 2024
C.3.8	Engaging municipalities to determine the strategy for updating analyses for transport pathways for municipalities in Toronto and Region Source Protection Area.	
18	Incorporate updated conceptual and groundwater model (Durham Region) results from numerical modeling into Water Budget chapters.	Timing reliant on completion of municipal technical work.
19	Revise WHPA delineations for Uxville Drinking Water System as a result of model refinement and update.	
20	Incorporate updated modelling (Peel Region) results into Water Budget chapters (including conceptual model update, groundwater model, surface water model, and modelling scenarios).	Timing reliant on completion of municipal technical work.
21	Evaluate water quantity stress at subwatershed 13 and need for Tier 3 assessment.	
22	Revise WHPA delineations for Peel Region Drinking Water Systems as a result of model refinement and update.	

Task	Description	Timeline
23	Incorporate updated water budget and stress assessment (Halton Region) results into Water Budget chapters (including conceptual model update, groundwater model, surface water model, and modelling scenarios).	Timing reliant on completion of municipal technical work.
24	Revise WHPA delineations for Georgetown and Acton Drinking Water Systems in Chapter 4 as a result of model refinement and update.	
25	Incorporate updated water budget and stress assessment (Orangeville) results into Water Budget chapters (including conceptual model update, groundwater model, surface water model, and modelling scenarios)	Timing reliant on completion of municipal technical work.
26	Revise WHPA delineations for Orangeville Drinking Water System in Chapter 4 as a result of model refinement and update.	
5	Consider addition to policy LO-NGS-1 requiring that Ontario Power Generation designate an appropriate lead for source protection considerations.	AWG: Q4 2023 SPC: Q4 2023 -Q1 2024
C.3.11	Reviewing and updating requirements under SPP policy LO-NGS-1.	
7	Create policy to require signage at boundaries of most vulnerable areas (i.e., WHPA-A).	AWG: Q4 2023 SPC: Q4 2023 -Q1 2024
C.3.11	Assessing the need for developing SPP policies to require signage at vulnerable area boundaries and addressing transport pathways.	
17	Incorporation of climate change considerations based on direction from the Source Protection Programs Branch.	TBD
C.3.22	The Recipient will support and coordinate with interested municipalities within the CTC and the SPC the collection of information needed to address climate change risks to drinking water sources as outlined in the Director's Technical Rules.	

Task	Description	Timeline
29	Comparisons to original and updates to threat enumeration summaries.	TBD
30	Updates to content of Watershed Characterization chapters.	TBD
31	Assess effects of risk management measures on spill scenarios conducted through event-based modeling.	TBD. Follow up with Lake Ontario Collaborative Group.
32	Consideration of additional modeling scenarios (i.e., spill from a ship, consideration of extreme weather events) for inclusion in CTC SPP.	TBD. Follow up with Lake Ontario Collaborative Group.
34	Complete updated conditions assessment per the Director's Technical Rules	TBD
15	Group all significant groundwater recharge areas (SGRA) polygons previously scored 2,4 or 6 into one area with no score. Revise mapping in each assessment report to reflect update. This update will also include revising the assessment reports and source protection plan to remove all references to water quality threats in SGRAs	Technical work complete. Update of all Assessment Reports outstanding.
16	Update Assessment Reports to reflect the new prescribed significant threat, liquid hydrocarbon pipeline, per *Clean Water Act, 2006* (O. Reg. 287/07).	Technical work complete. Update of all Assessment Reports outstanding.

Figure 1 below outlines the prescribed process for revision of Source Protection Plans and Assessment Reports under sections 34 and 36 of the *Clean Water Act, 2006*. For the CTC Section 36 update, we are currently on step two of the amendment process. The work plan for the consultation component (steps 3-7) will be finalized once firm timelines for all deliverables have been established. If required, some policy updates may be brought forward as part of upcoming Section 34 amendments.

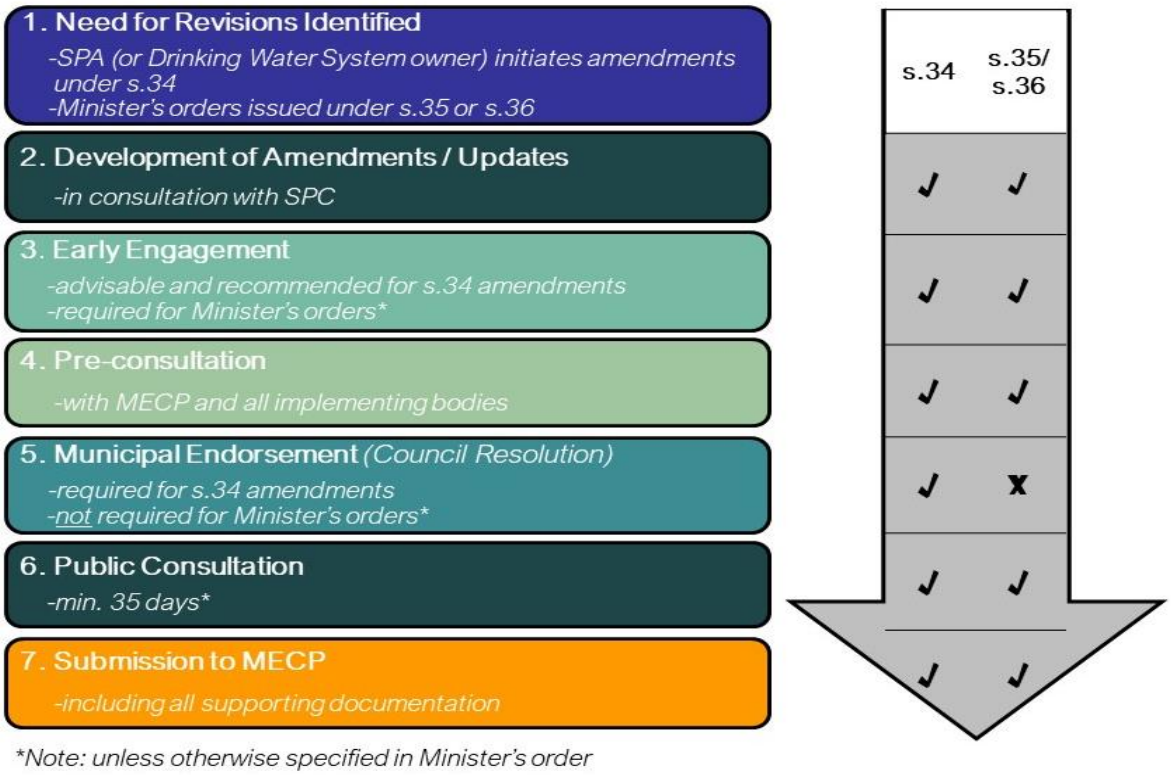

Figure 1. Assessment Report and Plan Revision Process under the Clean Water Act

Upcoming Meeting Schedule

CTC Source Protection Committee:

- May 3, 2023 1-4 p.m.
- June 20, 2023 1-4 p.m.
- October 25, 2023 1-4 p.m.
- December 6, 2023 1-4 p.m.
- In accordance with SPC direction provided at meeting #3/22, upcoming SPC meetings are scheduled as "hybrid" meetings, hosted at Credit Valley Conservation head office.

CTC Amendments Working Group (held virtually):

- May 31, 2023 9 a.m.-12 p.m.
- October 5, 2023 9 a.m.-12 p.m.

Report prepared by:

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Date: March 20, 2023

Attachments (4):

Attachment A: Source Protection Committee membership

Attachment B: Proposed CTC Source Protection Plan DNAP-1 and OS-1 Policies

Attachment C: Section 36 Workplan: CTC Source Protection Region (December 21, 2018)

Attachment D: MECP amended Section 36 Order (July 22, 2019)

CTC Source Protection Committee

Per Section 10 of Ontario Regulation 288/07, this summary serves as the **Notice of CTC SPC Member Appointments.**

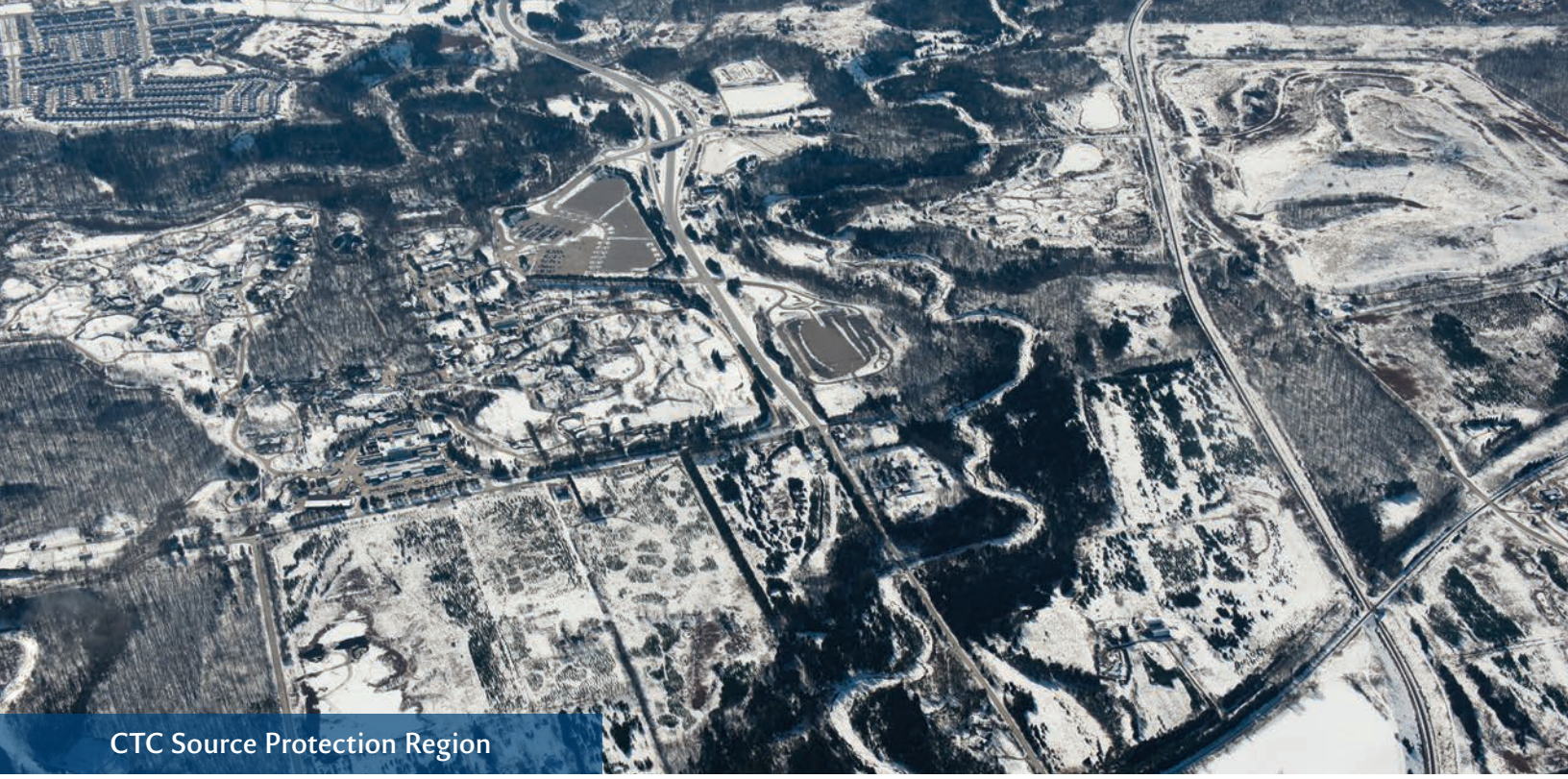
Chair: Nathan Hyde, Appointed by Minister of the Environment, Conservation and Parks (Term: Feb. 27, 2023- Feb. 26, 2026)

Municipal Representatives	**Municipalities Represented**	**Date of Appointment**	**Appointment Expiry**
Liza Ballantyne	City of Toronto	January 21, 2022	January 21, 2027
Chris Gerrits	Dufferin & Simcoe municipalities	September 23, 2021	September 23, 2026
Scott Lister	York municipalities	June 21, 2019	June 20, 2024
Elvis Oliveira	Peel municipalities	September 10, 2021	September 10, 2026
John Presta	Durham municipalities	June 21, 2019	June 20, 2024
Frank Quarisa	City of Toronto	June 21, 2019	June 20, 2024
Vacant	Halton & Wellington municipalities	-	-
Economic Representatives	**Sector**	**Date of Appointment**	**Appointment Expiry**
Dan Bunner	Chemical Sector	June 21, 2019	June 20, 2024
Colin Evans	Aggregate Sector	June 10, 2022	June 10, 2027
Louise Foster	Land Development Sector	June 21, 2019	June 20, 2024
Lee Gould	Road Salt Sector	September 23, 2021	September 23, 2026
Geoff Maltby	Agriculture Sector	September 23, 2021	September 23, 2026
Gary Mountain	Agriculture Sector	June 21, 2019	June 20, 2024
Ryan Wheeler	Petrochemical/Petroleum Sector	June 10, 2022	June 10, 2027
Public Interest Representatives	**Sector**	**Date of Appointment**	**Appointment Expiry**
Julie Abouchar	Citizen-At-Large	June 21, 2019	June 20, 2024
Cody Brown	Citizen-At-Large	March 10, 2023	March 10, 2028
Ken Dion	Citizen-At-Large	September 10, 2021	September 10, 2026
Mark Heaton	ENGO	March 10, 2023	March 10, 2028
Rosemary Keenan	ENGO	September 23, 2021	September 23, 2026
Jeff Light	Citizen-At-Large	September 10, 2021	September 10, 2026
Peter Miasek	Citizen-At-Large	June 21, 2019	June 20, 2024

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
DNAP-1	Handling and Storage of a Dense Non-Aqueous Phase Liquid	RMO	G	**Part IV, s.57, s.58** Where the handling and storage of a DNAPL is, or would be, a significant drinking water threat, the following actions shall be taken: 1~~)~~ a) The handling and storage of ~~a~~ DNAPLs of a total ~~in any~~ quantity of 250L or greater ~~(excluding incidental quantities for personal use)~~ is designated for the purpose of s.57 under the *Clean Water Act*, and is therefore prohibited where the threat would be significant in any of the following areas: ~~• WHPA-A (future); or~~ • WHPA-B (future); or • WHPA-C (future); or • WHPA-E (future).~~-~~ b) The handling and storage of DNAPLs of a total greater than 25L ~~but less than 250L~~, is designated for the purposes of s.57 under the *Clean Water Act*, and is therefore prohibited where the threats would be significant in any of the following areas: • WHPA-A (future)	See Maps 2.1 - 2.21	Future: Immediately (T-5)	GEN-1	MON-2
			H	2) a) The handling and storage of ~~a~~ DNAPLs of a total ~~in any~~ quantity of 25L or greater ~~(excluding incidental quantities for personal use)~~ is designated for the purpose of s.58 under the *Clean Water Act*, requiring risk management plans, where the threat is significant in any of the following areas: • WHPA-A (existing); or • WHPA-B (existing); or • WHPA-C (existing); or~~-~~ • WHPA-E (existing) b) The handling and storage of DNAPLs of a total quantity greater than 25L but less than 250L, is designated for the purpose of s.58 under the *Clean Water Act*, requiring risk management plans, where the threat would be significant in any of the following areas: • WHPA-B (future); or • WHPA-C (future); or • WHPA-E (future).		Existing: 1 year/ 5 years (T-6)	GEN-1 GEN-2	MON-2

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
OS-1	Handling and Storage of an Organic Solvent	RMO	G	**Part IV, s.57, s.58** Where the handling and storage of an organic solvent is, or would be, a significant drinking water threat, the following actions shall be taken: 1) a) The handling and storage of an organic solvent is designated for the purpose of s.57 under the *Clean Water Act*, and is therefore prohibited where the threat would be significant in ~~any of~~ the following area~~s~~: • WHPA-A (future)~~; or~~. ~~• WHPA-B (VS =10) (future).~~ b) The handling and storage of an organic solvent of a total quantity greater than 250L, is designated for the purposes of s.57 under the *Clean Water Act*, and is therefore prohibited where the threat would be significant in the following area: • WHPA-B (VS=10) (future)	See Maps 1.1 - 1.21	Future: Immediately (T-5)	GEN-1	MON-2
			H	2) a) The handling and storage of an organic solvent is designated for the purpose of s.58 under the *Clean Water Act*, requiring risk management plans, where the threat is significant in any of the following areas: • WHPA-A (existing); or • WHPA-B (VS=10) (existing). b) The handling and storage of an organic solvent of a total quantity greater than 25L but not more than 250 L, is designated for the purpose of s.58 under the *Clean Water Act*, requiring risk management plans, where the threat would be significant in the following area: • WHPA-B (VS=10) (future)		Existing: 1 year/ 5 years (T-6)	GEN-1 GEN-2	MON-2

Attachment C: Section 36 Workplan: CTC Source Protection Region (December 21, 2018)



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Section 36 Workplan:

CTC Source Protection Region

December 21, 2018

Section 36 Workplan:

CTC Source Protection Region

Ontario
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Credit Valley Conservation
inspired by nature

Central Lake Ontario Conservation

Toronto and Region Conservation Authority

Executive Summary

Drinking Water Source Protection in Ontario is about safeguarding the quality and quantity of municipal sources of drinking water. Assessment reports outline vulnerable areas for quality and quantity, and identify threats around municipal drinking water systems. Source protection plans prescribe actions to reduce or eliminate identified threats. The CTC Source Protection Plan came into effect on December 31, 2015.

Section 36 under the *Clean Water Act, 2006* provides the provision to comprehensively review and update source protection plans, including assessment reports. Periodically updating these documents ensures that all municipal drinking water systems are protected, and changing biophysical and social conditions are captured in future planning for source protection. 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 directed staff to consult with program partners to prepare and submit a workplan, to the Ministry by November 30, 2018. On November 16, 2018, the CTC SPR submitted a request to the Source Protection Programs Branch (SPPB) requesting an extension to the deadline specified in the order. This request was granted and the submission deadline was extended to 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 Credit Valley, Toronto and Region, and Central Lake Ontario Source Protection Authorities intend to submit a comprehensive update of the three assessment reports and the CTC Source Protection Plan in accordance with section 36 in December 2024. The objectives for this work are to address challenges to policy implementation and review the science supporting the CTC Source Protection Plan. **Table 1** summarizes the expected updates that will be required for the Source Protection Plan given extensive consultation with program partners, and knowledge of required technical work.

Table 1 Expected Updates to the CTC Source Protection Plan and Timelines (Section 34 & Section 36 Updates)

Update #	Description	Timeline
1	Review DNAP-1 and OS-1 policies to determine: i) whether future prohibition of DNAPLs and organic solvents is necessary or whether an RMP approach would achieve the desired result more efficiently; and ii) whether an exception for small quantities of DNAPLs and organic solvents should be added to the policies to exclude situations where the storage and handling of these materials are unlikely to result in a risk to sources of drinking water.	January 2021 – December 2023
2	Review agricultural source material policies (ASM-2, ASM-4) for gaps related to allowing a risk management plan (RMP) when a Nutrient Management Plan (NMP)/Strategy (NMS) is required, but has expired, or when a NMP is voluntarily in place.	
3	Review policies ASM-1 and ASM-2, in particular duplication of requirements where NMP/NMS is in place on a property where a risk management plan (RMP) is also required (i.e., soil testing).	
4	Review the need for prohibiting the application of commercial fertilizer in wellhead protection area-A (WHPA-A).	
5	Consider addition to policy LO-NGS-1 requiring that Ontario Power Generation designate an appropriate lead for source protection considerations.	
6	Consider the transportation of substances as a local threat. If deemed a local threat, create a specify action policy to address the threat.	
7	Create policy to require signage at boundaries of most vulnerable areas (i.e., WHPA-A).	
8	Consider the creation of a policy or policies to address transport pathways.	
9	Consider the need for additional policies to address issues identified in inaugural CTC SPP.	
10	Re-evaluate the appropriateness of a risk management plan approach for all agricultural policies currently requiring prohibition outside of the WHPA-A.	
11	Review need for new policies as a result of adding liquid hydrocarbon pipelines as a prescribed threat.	
12	Review 'Nitrate Issue' designation at Acton Drinking Water System based on additional water quality monitoring data and research results.	March – June 2024
13	Review 'Chloride Issue' designation at Georgetown Drinking Water System based on additional water quality monitoring data.	
14	Review 'Sodium and Chloride Issue' designations at Orangeville Drinking Water System based on additional water quality monitoring data.	
15	Group all significant groundwater recharge areas (SGRA) polygons previously scored 2,4 or 6 into one area with no score. Revise mapping in each assessment report to reflect update. This update will also include revising the assessment reports and source protection plan to remove all references to water quality threats in SGRAs.	April 2019- March 2020
16	Update Assessment Reports to reflect the new prescribed significant threat, liquid hydrocarbon pipeline, per *Clean Water Act, 2006 (*O. Reg. 287/07).	April 2020 – March 2022
17	Incorporation of climate change considerations based on direction from the Source Protection Programs Branch.	

18	Incorporate updated conceptual and groundwater model (Durham Region) results from numerical modeling into Water Budget chapters.	January 2019-March 2021
19	Revise WHPA delineations for Uxville Drinking Water System as a result of model refinement and update.	
20	Incorporate updated modelling (Peel Region) results into Water Budget chapters (including conceptual model update, groundwater model, surface water model, and modelling scenarios).	
21	Evaluate water quantity stress at subwatershed 13 and need for Tier 3 assessment.	
22	Revise WHPA delineations for Peel Region Drinking Water Systems as a result of model refinement and update.	
23	Incorporate updated water budget and stress assessment (Halton Region) results into Water Budget chapters (including conceptual model update, groundwater model, surface water model, and modelling scenarios).	January 2020 – December 2023
24	Revise WHPA delineations for Georgetown and Acton Drinking Water Systems in Chapter 4 as a result of model refinement and update.	
25	Incorporate updated water budget and stress assessment (Orangeville) results into Water Budget chapters (including conceptual model update, groundwater model, surface water model, and modelling scenarios).	September 2018 – June 2020
26	Revise WHPA delineations for Orangeville Drinking Water System in Chapter 4 as a result of model refinement and update.	
27	Identify new and existing transport pathways based on in-depth inventory in all three source protection areas.	January 2021-December 2023
28	The revised circumstances associated with the storage and handling of above grade fuel will be applied within the CTC SPR.	April 2019-March 2020
29	Comparisons to original and updates to threat enumeration summaries.	April 2019-March 2024
30	Updates to content of Watershed Characterization chapters.	
31	Assess effects of risk management measures on spill scenarios conducted through event-based modeling.	April 2021-March 2024
32	Consideration of additional modeling scenarios (i.e., spill from a ship, consideration of extreme weather events) for inclusion in CTC SPP.	
33	Complete changes to the CTC SPP to conform with the current *Director's Technical Rules.*	April 2019-March 2024
34	Complete updated conditions assessment per the *Director's Technical Rules.*	June 2022 – December 2023

Acknowledgments

The CTC Source Protection Region acknowledges the cooperation and support of municipal and conservation authority staff in the development of this workplan. The CTC Source Protection Committee, and Amendments Working Group provided a great deal of assistance in reviewing and offering suggestions to improve the content of this workplan. Collaboration with and encouragement from the Source Protection Programs Branch has ensured that this workplan is complete and satisfies the content required for an order to be issued by the Minister of Environment, Conservation, and Parks to update the CTC Source Protection Plan. Lastly, the coordination of this work could not have been completed without the ongoing financial support from the Government of Ontario.

Acronyms

AR	Assessment Report
AWG	Amendments Working Group
CFU	Colony Forming Units
CLOAR	Central Lake Ontario Assessment Report
CLOCA	Central Lake Ontario Conservation Authority
CLOSPA	Central Lake Ontario Source Protection Authority
CTC	Credit Valley – Toronto and Region – Central Lake Ontario
CVAR	Credit Valley Assessment Report
CVC	Credit Valley Conservation
CVSPA	Credit Valley Source Protection Authority
CWA	*Clean Water Act, 2006*
DWS	Drinking Water System
EBA	Event-Based Area
LOCG	Lake Ontario Collaborative Group
MECP	Ministry of the Environment, Conservation and Parks
ODWS	Ontario Drinking Water Standard
ORMGP	Oak Ridges Moraine Groundwater Program
RMI	Risk Management Inspector
RMO	Risk Management Official
RMP	Risk Management Plan
SGRA	Significant Groundwater Recharge Area
SPA	Source Protection Authority
SPC	Source Protection Committee
SPP	Source Protection Plan
SPPB	Source Protection Programs Branch
SPR	Source Protection Region
TRAR	Toronto and Region Assessment Report
TRCA	Toronto and Region Conservation Authority
TRSPA	Toronto and Region Source Protection Authority

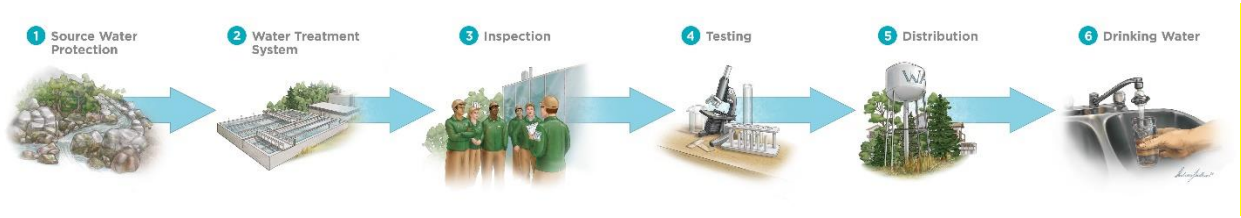
Contents

Background

The *Clean Water Act, 2006* was enacted as part of the response to recommendations from a public inquiry led by Justice Dennis O'Connor. The inquiry reviewed the events that culminated in a municipal drinking water well in Walkerton, Ontario being contaminated with *E. Coli* and *campylobacter* bacteria. Contaminated water continued to be distributed to the community through a series of human and mechanical failures in 2000 and resulted in seven deaths, and over 2,300 people falling ill, often with chronic effects. Following the Walkerton Inquiry, Justice O'Connor made 121 recommendations on a wide range of areas related to protecting drinking water. These recommendations are the building blocks of Ontario's drinking water protection framework.

The Province of Ontario has created a comprehensive safety net from source to tap, which puts in place a number of barriers to protect drinking water. The elements of this multi-barrier approach include strong legislation, stringent standards, regular and reliable testing, licensing of drinking water systems, regular inspections of drinking water systems and the laboratories that test drinking water, public reporting, and the comprehensive source protection program. Source protection is the first step in the multi-barrier approach to ensure safe drinking water is distributed in our communities (**Figure 1**).

Figure 1: Ontario's Multi-barrier Approach



Ontario's *Clean Water Act, 2006* and associated regulations aim to protect existing and future sources of drinking water as part of an overall commitment to safeguard human health and the environment. Sources of municipal drinking water are protected through a framework that encourages a watershed approach to collaboratively make evidence-based decisions. This process is meant to promote the shared responsibility of all stakeholders to protect local sources of drinking water from threats to both water quantity and water quality.

The *Clean Water Act, 2006* and *Regulation 284/07* created source protection regions and areas across Ontario, largely based on the watershed boundaries of Ontario's conservation authorities. There are 38 distinct source protection areas in the Province. Where appropriate, some of these source protection areas work collaboratively to create a source protection region. *Regulation 288/07* establishes the creation of local source protection committees in source protection regions and areas. These committees were responsible for the development of source protection plans and are tasked with evaluating the success of the policy implementation on an annual basis. All committees are required to have local municipal, economic, and public representation.

Assessment reports present detailed technical studies on vulnerable areas around and threats to municipal drinking water systems. These documents are expected to be updated and amended as new

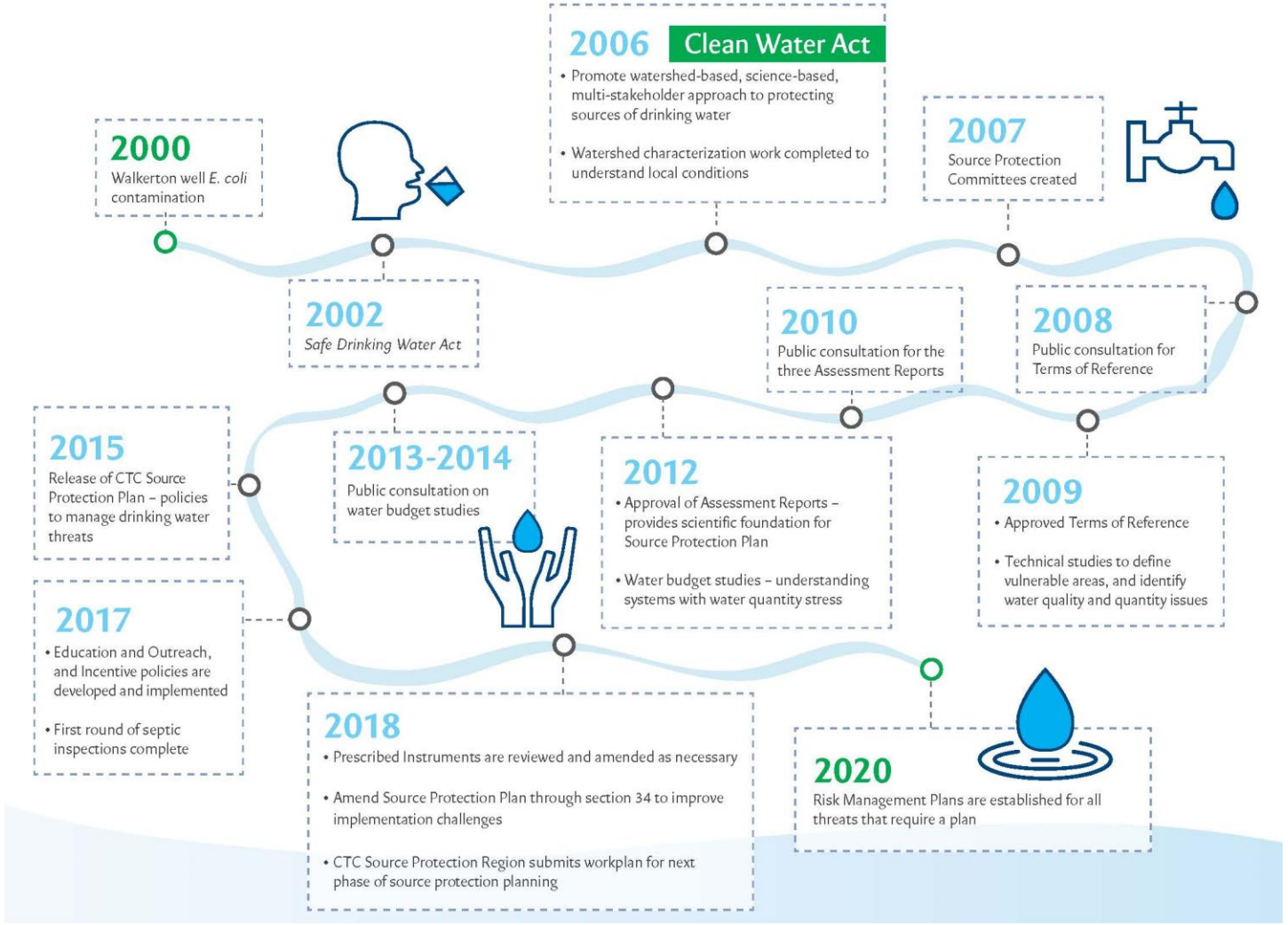
information becomes available or as is necessary to reflect the current situation at each municipal drinking water system.

Source protection plans articulate the policies made to protect drinking water based on the findings in the assessment report(s). These documents were approved by the Minister of the Environment, Conservation and Parks (formerly the Minister of the Environment and Climate Change). The CTC Source Protection Plan was written to achieve the objectives identified in the *General Regulation* 287/07 under the *Clean Water Act, 2006*. These objectives are as follows:

- Protect existing and future drinking water sources; and
- Ensure that, for every vulnerable area identified in an Assessment Report where an activity is or would be a significant drinking water threat:
    - The activity never becomes a significant drinking water threat; and
    - If the activity is occurring when the Source Protection Plan takes effect, the activity ceases to be a significant drinking water threat.

Figure 2 outlines the timeline of source protection related work accomplished in the CTC Source Protection Region (SPR).

Figure 2: Timeline of Source Protection in the CTC Source Protection Region



Introduction

At the time each of the source protection plans in the Province were approved, the Minister of the Environment, Conservation and Parks (MECP), was required to issue an order to specify which parts of the source protection plan and assessment report were to be reviewed under section 36 of the *Clean Water Act, 2006.* MECP staff recognized that the review needed to be informed by the first years of implementation. With this in mind, the Minister's order put in place a requirement for a workplan, developed in consultation with the local source protection committee (SPC), source protection authorities (SPAs), municipalities, and the MECP, that will set out what aspects of the assessment report and source protection plan should be reviewed. Based on this workplan, the Minister may then issue another order specifying more detailed requirements governing the content and timeframes of this review. The correspondence (**Appendix 1**) from the Minister confirming approval of the CTC Source Protection Plan, written in July 2015, specified that a workplan under section 36 of the *Clean Water Act, 2006*, should be submitted by November 30, 2018.

1.1 Objectives

The objectives of this workplan have been based on the direction outlined in the Minister's letter confirming the approval of the CTC Source Protection Plan issued in July 2015. The direction included:

- Propose the detailed steps for the review of the CTC Source Protection Plan;
- Identify which portion of the CTC Source Protection Plan are to be reviewed;
- The timelines for each step of the review;
- The consultation that would be undertaken as part of the review; and
- Rationale for each step of the review.

1.2 Scope of Work

In December 2016, the SPPB released guidance to assist source protection committees and authorities in directing the review of source protection plans and in preparing their workplan for submission to the Minister. The following factors were outlined as the foundation for this review:

- Results of environmental monitoring programs;
- Growth and infrastructure changes;
- Council resolutions;
- Policy effectiveness;
- Implementation challenges;
- Technical rule changes;
- Review of prohibition policies; and
- Local considerations.

Using the guidance released in December 2016, as well as supplemental direction issued in October 2017 (Municipal Engagement), March 2018 (Agricultural Prohibition), and August 2018 (Director's Technical Rules), this workplan sets out a number of tasks, each with their own completion date, ranging from April 2019 to June 2024. The Credit Valley, Toronto and Region, and Central Lake Ontario Source

Protection Authorities intend to submit a comprehensive update of the three assessment reports and the CTC Source Protection Plan in accordance with section 36 in December 2024.

1.3 Process Used to Review Source Protection Plan

The review of the CTC Source Protection Plan has been largely directed by an Amendments Working Group (AWG) created by the CTC Source Protection Committee in November 2016. This group has representation from all municipalities with municipal drinking water systems in the CTC Source Protection Region, five members of the CTC Source Protection Committee, and staff from all source protection authorities.

The review of the assessment reports and source protection plan is intended to be an evidence-based process to recommend necessary updates to the CTC Source Protection Plan (CTC SPP). The CTC SPC felt it necessary to have municipalities, as key stakeholders in the Drinking Water Source Protection Program, engaged in discussions pertaining to amending the source protection plan. **Appendix 2** documents participants on the AWG.

With guidance from the AWG, direction was sought from the CTC SPC to advance workplan preparation. A description of how information was gathered for the workplan, based on the content recommended in the December 2016 guidance from the SPPB, follows below (**Table 2**).

Table 2: Approach to Review the Source Protection Plan

Section 36 Review Content & Workplan Development	Approach
Results of Environmental Monitoring Programs	CTC Source Protection Plan policies GEN-7 and SAL-9 were used to initiate dialogue with municipalities with drinking water systems where municipal groundwater monitoring has historically shown increasing or decreasing trends and / or exceedances of the Ontario Drinking Water Standards. SPA and municipal staff discussed results of environmental monitoring at other municipal drinking water systems in the CTC SPR during one-on-one consultation sessions held in November 2017.
Growth and Infrastructure changes, Council Resolutions, Implementation Challenges	Discussions with municipalities responsible for the operation and maintenance of municipal drinking water systems took place during one-on-one consultation sessions held in November 2017.
Impacts of Prohibition Policies on the Agricultural Community	Staff summarized each policy requiring the prohibition of agricultural activities outside of WHPA-A. Through the Amendments Working Group, municipal representatives commented on the impact of these policies.
Other local considerations (i.e. Lake Ontario, Tier 3 Water Budgets)	The extent to which technical work completed on Lake Ontario and the policies written to address Lake Ontario threats needed review was directed to municipalities participating in the Lake Ontario Collaborative Group (Durham Region, City of Toronto, and Peel Region). During the one-on-one consultation sessions with municipalities in November 2017, the need to update Tier 2 and Tier 3 water budget work was discussed.
Policy Effectiveness	The Source Protection Committee evaluated whether the existing policies in the CTC SPP are addressing their intended purpose at their March and September 2018 meetings.
Technical Rule Changes	Following the release of guidance in August 2018, the Amendments Working Group discussed recommendations to address technical rule changes to bring before the CTC SPC at their September 2018 meeting.

1.4 Engagement and Consultation

Consultation has been integral to products developed under the *Clean Water Act, 2006.* The assessment reports, CTC Source Protection Plan, and amendments to the CTC SPP have all had a legislated requirement for public consultation. While the initial workplan content was developed by Toronto and Region Source Protection Authority as the lead SPA in the CTC SPR, effective engagement with key stakeholders was necessary for the creation of a comprehensive, local product. In addition to group meetings (**Table 3**), a number of one-on-one conversations with municipalities have led to the preparation of this workplan.

In November 2017, staff met independently with each of the municipalities responsible for municipal drinking water systems within the CTC SPR (**Table 4**). These discussions were primarily governed by the framework from the Provincial bulletin issued in December 2016. A summary of the feedback provided by municipal partners in available in **Table 5**.

Table 3: Record of Consultation Meetings and Activities

Date	Consultation Opportunity	Consultation Details
November 28, 2016	CTC SPC	Established a Working Group for consideration of amendments to the CTC SPP.
June 15, 2017	AWG	Discussed expectations for Section 36 Workplan.
September 6, 2017	AWG	Discussed proposed process to gather information to inform Section 36 Workplan development.
September 20, 2017	CTC SPC	Endorsement of proposed process to prepare Section 36 Workplan.
October 18, 2017	AWG	Discussion of policies which have resulted in implementation challenges.
November 2017	Municipalities	Municipality specific meetings to discuss updates to the CTC SPP (see **Table 4**)
January 10, 2018	AWG	Discussion of outcomes from one-on-one meetings with municipalities and next steps to acquire content for workplan.
February 21, 2018	AWG	Discussion of content to present to the CTC SPC.
March 21, 2018	CTC SPC	Discussion of outcomes from one-on-one meetings with municipalities, timelines to complete workplan, implementation progress, and effectiveness of policies.
May 2, 2018	AWG	Discussed timelines to complete workplan, proposed Table of Contents and necessary additional engagement.
June 27, 2018	CTC SPC	Endorsed timelines to complete update to CTC SPP and proposed Table of Contents.
September 5, 2018	AWG	Prepared recommended updates to CTC SPP for CTC SPC endorsement.
September 19, 2018	CTC SPC	Endorsement of Section 36 Workplan content and delegation of final workplan endorsement to the AWG.
November 19, 2018	CTC SPC, AWG, LOCG, MECP	Circulation of draft Section 36 Workplan to municipalities, the Source Protection Programs Branch, and the CTC SPC for feedback.
November 20, 2018	AWG	Review of workplan.
November 30, 2018	TRSPA	Endorsement for submission to the MECP.
December 14, 2018	CVSPA	Acceptance of workplan for submission to the MECP.
December 17, 2018	CTC SPC, AWG, LOCG, MECP	End of informal consultation period for comments and revisions to workplan prior to submission to the SPPB.
December 18, 2018	AWG	Discussion of comments and necessary revisions to workplan prior to submission to the SPPB.
December 21, 2018	MECP	Submission of workplan to the MECP.
January 15, 2019	CLOSPA	Acceptance of workplan following submission to the MECP.
January 2019	MECP	Confirmation of endorsement by source protection authorities, in writing, to the MECP.

MECP	Ministry of the Environment, Conservation and Parks
AWG	Amendments Working Group
CTC SPC	CTC Source Protection Committee
TRSPA	Toronto and Region Source Protection Authority
CVSPA	Credit Valley Source Protection Authority
CLOSPA	Central Lake Ontario Source Protection Authority
LOCG	Lake Ontario Collaborative Group

Table 4: Municipal Consultation Meetings

Municipality	Meeting Date
Town of Mono	November 2, 2017
Durham Region	November 6, 2017
Peel Region	November 8, 2017
Halton Region	November 10, 2017
Town of Orangeville	November 10, 2017
Townships of Amaranth, and East Garafraxa	November 16, 2017
Region of York	November 21, 2017
Town of Erin, and County of Wellington	November 29, 2017

Table 5: Summary of Municipal Consultation

Section 36 Review Content	Discussion Summary
Results of Environmental Monitoring Programs	The majority of municipalities expressed that their environmental monitoring did not indicate an increasing trend in particular water quality parameters. The Town of Orangeville and the Halton Region were required to establish enhanced monitoring programs to comply with policies GEN-7 and SAL-9 in the CTC SPP by December 31, 2017. The results of these efforts were discussed at CTC Source Protection Committee Meeting #2/18.
Growth and Infrastructure Changes	New drinking water systems are anticipated in Peel Region (2019), the Town of Orangeville (2020-2021), and the Town of Erin (2020-2021). These drinking water systems are expected to be incorporated into the CTC Source Protection Plan through a minimum of three section 34 amendments.
Council Resolutions	Only the Region of Peel has outstanding Council Resolutions to bring new drinking water systems on-line. Resolutions from the Town of Orangeville and the Town of Erin can be expected in the future once technical work is complete and the respective Section 34 amendments are initiated..
Implementation Challenges	All municipalities indicated that the majority of their implementation challenges have been addressed through the current section 34 amendment being prepared. However, some policies will need to be revised to align with changes made to the Tables of Circumstances and the Technical Rules under the *Clean Water Act, 2006.*
Other local considerations (i.e., Tier 3 Water Budgets)	Consideration of numerical modeling was of interest to a number of municipalities, specifically the results maintenance, and updates of the water budget tools created through the completion of the water quantity risk assessment incorporated into the CTC SPP, the Toronto and Region Assessment Report, and the Credit Valley Assessment Report.

2.0 CTC Source Protection Region

The three source protection areas which comprise the CTC Source Protection Region are, Credit Valley, Toronto and Region, and Central Lake Ontario (**Figure 3**).

Figure 3: CTC Source Protection Region

The Toronto and Region Source Protection Authority (TRSPA) leads the Drinking Water Source Protection Program in the CTC SPR. The CTC SPR contains 25 large and small watersheds and spans over 10,000 km^2 from the Oak Ridges Moraine in the north to Lake Ontario in the south. The CTC SPR contains portions of the Niagara Escarpment, Oak Ridges Moraine, Greenbelt, and Lake Ontario. It is the most densely populated region in Canada.

The region is complex and diverse in terms of geology, physiology, population, and development pressures, with many often conflicting water uses including drinking water supply, recreation, irrigation, agriculture, commercial and industrial uses, as well as ecosystem needs. There are differing stresses on water resources related to development pressure and population growth across the region. There is also tremendous variability in the nature and density of drinking water quality and quantity threats. In particular, the majority of significant drinking water threats exist in the Credit Valley Source Protection Area because of the issues contributing areas and wellhead protection areas for quantity (WHPA-Q) in Dufferin County and the Town of Halton Hills. At the other extreme, in the Central Lake Ontario Source Protection Area there are no municipal groundwater systems thereby reducing the number of significant drinking water threats.

2.1 Municipalities

The CTC SPR includes twenty-five (25) local municipalities and eight (8) single tier, regional or county municipalities. These municipalities are listed below in groups based on their single tier, regional, or county affiliations. The municipalities in **bold** are those responsible for providing water services.

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

2.2 Municipal Drinking Water Systems

In July 2015 when the CTC SPP was approved, there were 16 municipal surface water intakes obtaining drinking water to service residents from Lake Ontario (**Table 6**) and 66 municipal supply wells (**Table 7**) drawing groundwater for drinking water.

Table 6: Surface Drinking Water Systems

Source Protection Area	Upper Tier Municipality	Water System	Number of Intakes
Credit Valley	Peel Region	Lorne Park	1
		Lakeview	1
Toronto and Region	City of Toronto	R.C. Harris	2
		R.L. Clark	1
		F.J. Horgan	1
		Island	5
	Durham Region	Ajax	1
Central Lake Ontario	Durham Region	Oshawa	2
		Whitby	1
		Bowmanville	1
		TOTAL	**16**

Table 7: Groundwater Drinking Water Systems

Source Protection Area	Upper Tier Municipality	Lower Tier Municipality (Water System)	Well Count
Credit Valley	Dufferin County	Mono (Island Lake)	2
		Mono (Coles)	2
		Mono (Cardinal Woods)	3
		Amaranth (Amaranth-Pullen)	1
		Orangeville (Orangeville)	12
	Wellington County	Erin (Bel-Erin)	2
		Erin (Erin)	2
		Erin (Hillsburgh)	2
	Halton Region	Halton Hills (Acton)	5
		Halton Hills (Georgetown)	7
	Peel Region	Caledon (Caledon Village - Alton)	5
		Caledon (Cheltenham)	2
		Caledon (Inglewood)	2*
Toronto and Region	Peel Region	Caledon (Palgrave - Caledon East)	6
	York Region	Whitchurch-Stouffville	5
		King (King City)	2
		King (Nobleton)	3
		Vaughan (Kleinburg)	2
	Durham Region	Uxbridge (Uxville Well)	2
Central Lake Ontario	No municipal wells		
		TOTAL	**67**

* The CTC SPR is currently consulting on the addition of a new well to the Inglewood Drinking Water System through section 34 of the *Clean Water Act, 2006*. This table has not been updated to reflect this new well being incorporated into this drinking water system.

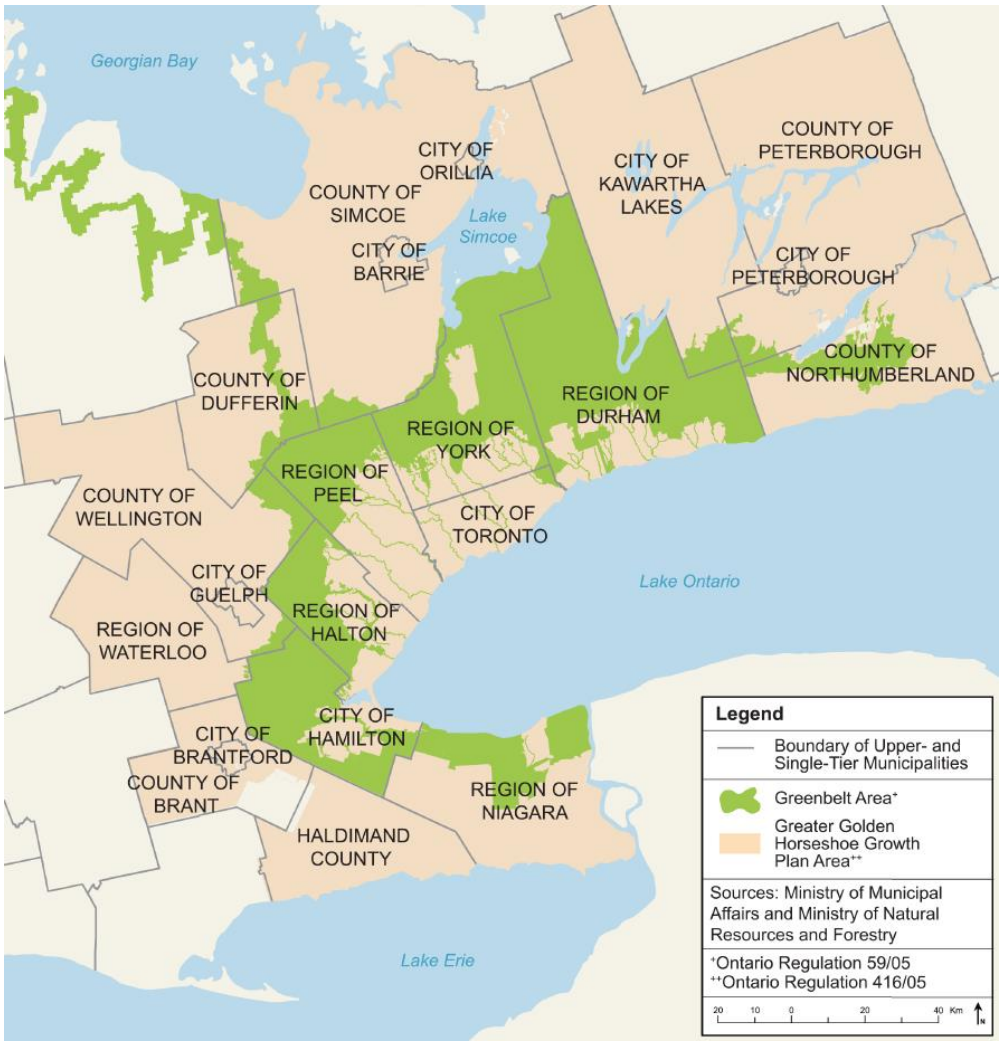
2.3 Growth and Infrastructure Changes

The *Growth Plan for the Greater Golden Horseshoe, 2017* (Growth Plan) was released in May 2017 and came into effect on July 1, 2017, replacing the *Growth Plan for the Greater Golden Horseshoe, 2006*. The 2017 Growth Plan is a long-term plan that works with the *Greenbelt Plan*, the *Oak Ridges Moraine Conservation Plan,* and the *Niagara Escarpment Plan* to provide a framework for growth management in the region (Province of Ontario, 2017). **Figure 4** outlines the Greater Golden Horseshoe Growth Plan Area.

The Growth Plan identifies that the Greater Golden Horseshoe is one of the fastest growing areas in North America with one of the world's most vibrant economies. The Growth Plan, together with the *Niagara Escarpment Plan*, the *Greenbelt Plan*, the *Oak Ridges Moraine Conservation Plan*, and the Provincial Policy Statement contribute to the land use planning framework to ensure the long-term maintenance of communities, the economy, and the environment in this area of the province. Within the Greater Golden Horseshoe, the Growth Plan provides for land use planning to the year 2041. Upper

tier municipalities are expected to review and update their Official Plans to conform with the Growth Plan by June 2022, while lower tier municipalities must complete this review by June 2023. Currently, municipalities in the CTC SPR are in the process of completing this conformity exercise. In one-on-one discussions with municipalities providing water services, six municipalities identified that there will be infrastructure changes at their drinking water systems within the anticipated timeframe for updating the CTC SPP as described in this workplan. These municipalities include the City of Toronto, Durham Region, Township of Amaranth, Township of East Garafraxa, Halton Region, and York Region.

Figure 4: Greater Golden Horseshoe Growth Plan Area (Province of Ontario, 2017).



The Region of Peel, the Town of Orangeville, and the Town of Erin have identified potential infrastructure changes in the next five years (2019 – 2024) (**Table 8**). These changes will be addressed through section 34 amendments to the CTC Source Protection Plan.

Table 8: Infrastructure Changes to Municipal Groundwater Drinking Water Systems in the CTC SPR (2019-2024)

Source Protection Area	Upper Tier Municipality	Location	Description
Credit Valley	Wellington County	Town of Erin	During municipal consultations with the Town of Erin and County of Wellington staff it was communicated that the Town is planning for up to seven new production wells. The new municipal drinking water wells are all under the umbrella of the Urban Centre Water Servicing Class EA, which was initiated in June 2015. The Erin Village and Hillsburgh Urban Centre Wastewater Servicing Class EA is for a municipal sewage collection and treatment system discharging to the West Credit River. The Servicing and Settlement Master Plan, which preceded the sewage Class EA, identified a potential population increase to 6,000 (current population is 4,500) for the urban areas. During the wastewater Class EA, it was determined that the assimilative capacity of the West Credit River would allow a population of 14,559 with very stringent effluent criteria for the sewage plant. As a result, the Town is evaluating the water requirements needed. Once new wells are identified, to meet the requirements of Ontario Regulation 205/18, wellhead protection areas will be delineated, and the vulnerability scoring and threats assessment will be completed. One or more section 34 amendment(s) might be necessary to incorporate the technical information for these new wells into the Credit Valley Assessment Report.
	Dufferin County	Orangeville DWS	The Town has recently retained a team of consultants to prepare a Schedule B Environmental Assessment for a new municipal supply well. The scope of this work will include the WHPA delineation and determination of vulnerability scoring for the new well. The timing for this work to be complete is Early-2020. This technical work, along with the threats assessment, will be incorporated into the Credit Valley Assessment Report shortly thereafter.
	Halton Region	Georgetown DWS	There are plans to bring Princess Anne Well 6B on-line as a back-up well in the first half of 2019. The approval necessary to make this well operational was acquired in 2017. Since the Region is planning to update the Halton Hills Tier 3 groundwater model for inclusion in the CTC SPP (December 2024), it is anticipated that the WHPA delineation, vulnerability scoring, and threats assessment work for this new well will be complete in 2021. Efforts will then be made to incorporate this new well and the technical material required under the *Clean Water Act, 2006* into the Credit Valley Assessment Report and CTC SPP.

Source Protection Area	Upper Tier Municipality	Location	Description
Credit Valley	Peel Region	Caledon Village – Alton DWS	Caledon Village Well 3B was constructed in 2009 at the Caledon Village 3 Well Field, approximately 30 m northwest of the existing production well to address inefficiencies. Well 3B was put into production in Fall 2014 and replaced production Well 3A. The WHPA delineation, vulnerability scoring, and threats assessment are expected to be completed in mid- 2019 after which the information will be incorporated into the Credit Valley Assessment Report.
			There are plans to bring Alton Well 4A on-line in mid-late 2019. The WHPA delineation, vulnerability scoring, and threats assessment are expected to be completed in mid-2019 after which the information will be incorporated into the Credit Valley Assessment Report.
		Inglewood DWS	Inglewood Well 4 was drilled in Fall 2015. A Schedule B Environmental Assessment Study was filed with the MECP in November 2016. Design for a connection to the existing Inglewood Well 3 treatment facility was finalized in December 2016. WHPA delineation, vulnerability scoring, and threats assessment for Inglewood Well 4 has been completed. This technical work has been incorporated into the Credit Valley Assessment Report. The submission of this section 34 amendment is anticipated in November 2018.
Toronto and Region		Palgrave – Caledon East DWS	Caledon East 4A was drilled during Fall 2013 and was connected to the Caledon East – Palgrave DWS during summer 2016. Well 4A was put into production in October 2017. WHPA delineation, vulnerability scoring, and threats assessment for Caledon East 4A has been completed. This technical work has been incorporated into the Toronto and Region Assessment Report. The submission of this section 34 amendment occurred in November 2018.

DWS = Drinking Water System

3.0 Implementing the CTC Source Protection Plan

The CTC Source Protection Plan was approved by the Minister on July 28, 2015 and came into effect on December 31, 2015. At Meeting #1/18, held on March 21, 2018, the CTC Source Protection Committee heard from municipalities on the extent of progress since the CTC SPP came into effect and implementation challenges. At this same meeting, the CTC SPR staff reviewed the status of implementing each policy in the CTC SPP. The general impression from the committee was that the implementation was progressing well and on-target.

3.1 Implementation Challenges

It became apparent soon after the CTC SPP became effective that policy REC-1 (a land use planning policy for protecting groundwater recharge) was going to be challenging to implement. As this was a land use planning policy, the Planning Approval Authority was charged with its implementation. In the York-Durham wellhead protection area for quantity (WHPA-Q) the City of Vaughan, City of Markham, and Town of Richmond Hill staff, in particular, voiced their concerns with implementing the policy. To address this challenge, the Amendments Working Group was tasked with assessing whether the implementation challenges would be able to wait until the CTC SPP was updated or if there was a need to pursue a section 34 amendment to this policy.

The AWG recommended to the CTC SPC at Meeting #2/17, held on September 20, 2017, that the TRSPA pursue amendments to several policies (10) in the CTC SPP through section 34 of the *Clean Water Act, 2006*. These amendments (**Table 9**) will be submitted to the Minister of the Environment, Conservation and Parks in Fall 2018.

3.1.1 Policy Challenges

Although a majority of the policies with implementation challenges have been addressed through the recent section 34 amendment, there are six policies or groups of policies, which as a result of discussions at Amendments Working Group Meeting #3/18 (May 2, 2018), and #4/18 (September 5, 2018) are proposed for review through section 36 (**Table 10**).

Table 9: Summary of Proposed Policy Changes to the CTC Source Protection Plan through Section 34 of the Clean Water Act, 2006.

Policy	Rationale for Amendment	Synopsis of Amendment
T-8	Challenge	Remove requirement for conformity in 5 years from the date the CTC Source Protection Plan became effective.
Transition	Clarity	Text to clarify when a threat is considered 'existing' for an in-progress development proposal in accordance with Policy REC-1. Additionally, text to specify that for transitioning applications that would result in an increase of impervious surface, a water balance assessment, or equivalent, is still generally required. However, based on the location and scale of development, the Planning Approval Authority has a certain level of flexibility regarding water balance requirements.
GEN-1	Flexibility	Establish a common site-specific exemption authority for Risk Management Officials.
SWG-3	Clarity	Revised policy text to ensure intent of policy is achieved.
SNO-1	Challenge	Change the approach to addressing potential future significant drinking water threats in the WHPA – B (VS = 10), WHPA – E (VS ≥ 9), and the remainder of the issues contributing area (Chloride, Sodium) from prohibition to management.
SAL-10	Gap	Address moderate and low drinking water threats as a result of the application of road salt in all vulnerable areas.
SAL-11		
SAL-12		
SAL-13		
REC-1	Clarity/Challenge	a) Revised policy text to ensure intent of policy is achieved; b) Exempting development on lands down-gradient of municipal wells within the Tier 3 Water Budget WHPA-Q2 Area from having to produce a water balance assessment demonstrating that predevelopment recharge will be maintained (less onerous recharge maintenance requirements); c) Adding "site alteration" to the types of applications requiring BMPs with the goal of maintaining predevelopment recharge; d) Removing the water balance exemption for single family dwellings that represent major development (500m² or greater), while still exempting the majority of single family dwellings (i.e., less than 500 m²) and now exempting applications for non-major development (less than 500 m²) that require site plan control (prevents minor site alterations with little to no increase in impervious cover that trigger site plan review from needing a water balance); e) Harmonizing the Explanatory Document with the policy to clarify whether associated implementing Official Plan or Zoning By-law Amendment applications must also comply with REC-1 policy 2; and f) Policy applicability for agricultural uses, agriculture-related uses, or on-farm diversified uses where the total impervious surface does not exceed 10 percent of the lot.

Gap – Describes a policy that, when approved by the Ministry, did not account for a particular situation.

Clarity – Describes a policy that municipalities found difficult to implement as a result of a lack of clarity as to the intent of the policy.

Challenge – Describes a policy that municipalities found difficult to implement due to practicality.

Flexibility – Describes a policy that municipalities found difficult to implement due to the lack of authority given the Risk Management Official to determine when site-specific land use is or is not subject to Section 59 under the *Clean Water Act, 2006.*

Table 10: Summary of Proposed Policy Revisions to the CTC Source Protection Plan through Section 36 of the Clean Water Act, 2006.

Policy	Suggested Action Through Update to CTC Source Protection Plan
DNAP-1 OS-1	Review policy to determine: iii) whether future prohibition of DNAPLs and organic solvents is necessary or whether an RMP approach would achieve the desired result more efficiently; and iv) whether an exception for small quantities of DNAPLs and organic solvents should be added to the policies to exclude situations where the storage and handling of these materials are unlikely to result in a risk to sources of drinking water.
ASM-2 ASM-4	Review of agricultural source material policies (ASM) for gaps related to allowing a risk management plan (RMP) when a Nutrient Management Plan (NMP)/Strategy (NMS) is required, but has expired, or when a Nutrient Management Plan is voluntarily in place.
ASM-1 ASM-2	Review of policies ASM-1 and ASM-2, in particular duplication of requirements where NMP/NMS is in place on a property where a risk management plan (RMP) is also required (i.e., soil testing).
FER-1 FER-2	Review of the need for prohibiting the application of commercial fertilizer in wellhead protection area-A (WHPA-A).
LO-NGS-1	Consider addition to policy requiring that Ontario Power Generation designate an appropriate lead for source protection considerations.

3.1.2 Financial Implications

When developing policies for the CTC Source Protection Plan, the CTC Source Protection Committee was very aware of the concerns of affected residents and implementing bodies with respect to the costs associated with the implementation of certain policies. In some cases, landowners or business owners might have to bear costs to comply with the policies in the source protection plan even if not serviced by municipal water. The committee addressed the potential financial implications to landowners in three ways:

- Policy GEN-4 requested that the Ministry of the Environment, Conservation and Parks continue to maintain and expand the Ontario Drinking Water Stewardship Program and / or fund other relevant programs to enable local delivery to implement risk management measures for certain activities where they are significant drinking water threats.

- Policy GEN-5 requested that where an activity is a signficant drinking water threat, the municipality should consider providing incentive programs to encourage actions to reduce the risks to source water.

- Wherever possible, the committee chose Prescribed Instruments as the main policy tool to address the existing or potential future significant drinking water threat. Having the Province responsible for implementing these policies through existing mechanisms and instruments, reduces requlatory duplication and costs directed to municipalities for the implementation of Risk Management Plans.

The Ontario Drinking Water Stewardship Program provided $24.5 million to landowners between 2010 and 2014 to assist landowners with the implementation of local risk management measures with the goal of protecting water supplies. This Program was highly successful and showed commitment on the

part of the Provincial government to assist landowners with the costs borne by implementing source protection plan policies. IA number of landowners impacted by the CTC Source Protection Plan were supported financially in meeting the requirements of the policies, despite the Program having come to a completion before the CTC SPP came into effect on December 31, 2015., The long-term implementation of the Drinking Water Source Protection Program would benefit from a commitment by the Province to support the costs of risk management measures being put in place by landowners to protect sources of drinking water, even if simply a first-come, first-serve fund.

In the CTC Source Protection Region, a number of municipalities have made the risk management measures required for Risk Management Plans eligible for shared funding through an already established or new incentive program (Table 11). Table 11 reflects any financial incentive program that was in effect for one or more years during Source Protection Plan implementation. Further, these incentives programs were created largely to not only benefit the DWSP, but water resources in general.

Table 11: Financial Incentive Programs Supported by Municipalities in the CTC Source Protection Region

Municipality	Incentive Program				
	Toilet Rebate	Rain Barrel	Well Decommissioning	Agricultural BMPs	Other RMMs
Wellington County					
Halton Region					
Town of Orangeville					
Peel Region					
Durham Region					
York Region					

RMMs = Risk Management Measures
BMPs = Best Management Measures

Municipalities in the CTC Source Protection Region have also been supported financially by the Source Protection Municipal Implementation Fund (SPMIF) established by the Province. Created in 2013, this fund gave an additional $13.5 million to over 180 small, rural municipalities to help with the start-up costs of source protection plan implementation. In the CTC Source Protection Region, 14 (fourteen) municipalities received a combined total of $572,809 to assist with getting ready for implementation or actually implementing policies in the source protection plan. This funding also gave municipalities additional funding where working collaboratively, which was the case in Dufferin County where the municipalities developed provisions of a Joint Municipal Water Supply Management Model. Other municipalities in the CTC Source Protection Region used this funding to complete the mandatory on-site septic system inspections, establish risk management plans, and satisfy policy T-8 to bring their Official Plan into conformity with the source protection plan. Another example of a working collaborative is the Wellington County model. All the municipalities in Wellington County responsible for the implementation of source protection plan policies use the same jointly appointed Risk Management Official and / or Inspectors. Although the County and its local municipalities have taken ownership of sustainably funding this shared services model, SPMIF funds were at one time used to financially support this arrangement.

3.2 Impact of Prohibition Policies

The prohibition of activities is considered to be a very strong approach to addressing significant drinking water threats. Prohibition of *existing* threats to reduce risks to source water can be very challenging – financially and politically. Stopping activities that are already taking place can be very costly and have a serious impact on the business and / or property owner affected. When source protection plan policies were first being developed across the province, the Ministry of the Environment, Conservation and Parks encouraged that, wherever possible, it would be preferable to use other available tools to adequately reduce the risk created by an existing threat. Choosing to manage, rather than prohibit a threat can help ensure that existing activities and businesses are not penalized unfairly.

Choosing prohibition as a policy approach for future threats may provide some advantages. If activities that would be significant drinking water threats are not existing, prohibition can be effective and efficient to prevent the activity from ever becoming established and prevent significant risks to local drinking water sources. Prohibition of specific future activities in highly vulnerable areas encourages hazardous activities to be located in less vulnerable areas.

3.2.1 Agricultural Policies

The Ontario Ministry of Agricultural, Food and Rural Affairs (OMAFRA) has long advocated that significant drinking water threat activities outside of wellhead protection area-A (WHPA-A) or Intake Protection Zone-1 (IPZ-1) can be effectively managed to reduce the risk to drinking water, without the need for prohibition. While OMAFRA recognizes prohibitions are guaranteed to be effective, they have commented that agricultural science and best practices have been proven to protect water resources while allowing farming activities to continue.

Source protection committees were encouraged to undertake a desktop assessment, prior to finalizing their policy approach, to evaluate the impact of prohibitions on each individual property. This assessment indicated that policies did not have significant impacts on agricultural operations when evaluated at the individual property level. However, OMAFRA has communicated that the cumulative impact of prohibition policies in source protection plans could impact the long-term viability of agriculture in some areas of the province.

As an element of the Section 36 Workplan, source protection authorities were asked to review the cumulative impact of their policies and assess whether or not these policies are having a notable impact, either through a negative impact on agricultural operations, or from a positive impact on water quality. Guidance was issued by the MECP in March 2018, which suggested an approach to this exercise.

There are eleven agricultural policies in the CTC Source Protection Plan that require prohibition of activities outside of the WHPA-A (**Table 12**). There are no drinking water intakes in the CTC Source Protection Region where agricultural activities are classified as significant drinking water threats. To carry out the assessment described in the guidance issued in March 2018, Risk Management Officials responsible for the implementation of prohibition policies in the CTC SPR were contacted and asked to provide data.

Preliminary discussions have identified four municipalities (York Region, Halton Region, Peel Region, and Wellington County) in the CTC Source Protection Region that have properties affected by the current agricultural prohibition policies. Risk Management Officials have communicated that, to date, there

have largely been limited negative repercussions on agricultural operations as a result of implementing these policies. For example, to date, no landowner was required to remove cropland from service or decrease the livestock at their operation. However, it can be argued that since most farmers function on a multiple year crop cycle and Risk Management Officials are still in the process of fully engaging the agricultural community, it is premature to make any conclusions regarding the extent to which the impact of prohibition policies in the CTC SPP have or could influence such operations.

The Amendments Working Group, at Meeting #4/18, on September 5th discussed whether the group should recommend to the CTC SPC that the policies requiring the prohibition of agricultural activities outside of the WHPA-A be reviewed as a component of updating the CTC Source Protection Plan. After considerable dialogue, members of the AWG felt that the risk management measures being put into place through an active risk management plan should be sufficient to address significant agricultural drinking water threats outside of the WHPA-A. In particular, members of the AWG felt it important to keep in mind that source protection is one of the barriers in the drinking water safety net the Province of Ontario has implemented. With this direction from the AWG, the CTC Source Protection Committee endorsed revisiting the policies that require prohibition of agricultural activities, through the section 36 update to the CTC Source Protection Plan, to determine whether they should remain in place.

3.2.2 Other Prohibition Policies in the CTC Source Protection Plan

Although the guidance from the MECP did not require reviewing other policies in the source protection plan that prohibited activities outside of the WHPA-A, the CTC Source Protection Committee felt that the workplan submitted to the Province should at least list these policies (**Table 13**). Prohibition policies outside of the WHPA-A exist for the following additional prescribed drinking water threats:

- The establishment, operation, or maintenance of a waste disposal site within the meaning of Part V of the *Environmental Protection Act.*
- The establishment, operation, or maintenance of a system that collects, stores, transmits, treats, or disposes of sewage.
- The handling and storage of road salt.
- The storage of snow.
- The handling and storage of fuel.
- The handling and storage of a dense non-aqueous phase liquid.
- The handling and storage of an organic solvent.

The CTC Source Protection Committee heard from Town of Orangeville staff at the Meeting #1/16 held on November 26, 2016 that there were challenges with the implementation of policy SNO-1 (Storage of Snow). Given the amount of the Town covered by the issues contributing areas for chloride and sodium, prohibiting future threats related to the storage of snow was a challenge. The current section 34 amendments being proposed by TRSPA recommends that the future prohibition of snow storage be restricted to the WHPA-A (**Table 9**).

Other than the prohibition policies identified elsewhere in this workplan (i.e., SNO-1, DNAP-1, OS-1, and the agricultural policies listed in **Table 12**, the CTC SPC does not intend to review the prohibition policies in **Table 13**. No concerns or negative feedback has been communicated to the committee or staff in regard to these policies since the CTC SPP became effective on December 31, 2015.

Table 12: CTC Source Protection Plan Policies Prohibiting Agricultural Activities Outside of the WHPA-A and the Number of Affected Properties

Policy	Description	Tool	Prohibition Area outside of WHPA-A	Properties Affected
ASM-1	Application of Agricultural Source Material to Land	Prescribed Instrument	• WHPA-B (VS = 10) in an ICA for Pathogens (future); or • WHPA-E in an ICA for Nitrates or Pathogens (future).	15
ASM-2		Part IV		18
ASM-3	Storage of Agricultural Source Material	Prescribed Instrument	• WHPA-B (VS = 10) in an ICA for Nitrates or Pathogens (future); or • WHPA-E in an ICA for Nitrates or Pathogens (future).	19
ASM-4		Part IV		19
ASM-5	Management of Agricultural Source Material (Aquaculture)	Prescribed Instrument	• An ICA for Pathogens (existing, future)	5
NASM-3	Application of Non-Agricultural Source Material to Land		• WHPA-B (VS = 10) (future); or • WHPA-E (VS ≥ 8) (future); or • The remainder of an ICA for Nitrates or Pathogens (future).	99
NASM-4	Handling and Storage of Non-Agricultural Source Material		• WHPA-B (VS = 10) (existing, future); or • WHPA-E (VS ≥ 8) (existing, future); or • The remainder of an ICA for Nitrates or Pathogens (existing, future).	99
LIV-2	The Use of Land as an Outdoor Confinement Area of a Farm-Animal Yard	Prescribed Instrument	• WHPA-B (VS = 10) in an ICA for Nitrates or Pathogens (future); or • WHPA-E in an ICA for Nitrates or Pathogens (future).	19
LIV-3		Part IV		19
FER-1	Application of Commercial Fertilizer to Land	Prescribed Instrument	• WHPA-E in an ICA for Nitrates (future)	9
FER-2		Part IV		9

Table 13: CTC Source Protection Plan Policies Prohibiting Activities Outside of the WHPA-A

Policy	Description	Tool	Prohibition Area outside of WHPA-A
WST-3	Application of Untreated Septage to Land	Prescribed Instrument	• WHPA-B (VS = 10) (future) • WHPA-E (VS ≥ 8) (future) • The remainder of an ICA for Nitrates or Pathogens (future)
WST-4 WST-5	• Storage, treatment, and discharge of tailings from mines; • Landfarming of petroleum refining waste; • Landfilling (hazardous waste); • Landfilling (municipal waste); • Landfilling (solid-non-hazardous industrial or commercial waste); • Liquid industrial waste injection into a well; • Storage of hazardous or liquid industrial waste (large facilities such as landfills and transfer stations); and • Storage of wastes described in clauses (p), (q), (r), (s), (t), or (u) of the definition of hazardous waste, or in clause (d) of the definition of liquid industrial waste (at large facilities such as landfills and transfer stations).	Prescribed Instrument Land Use Planning	• Where the activity would be a significant drinking water threat (future)
WST-6	PCB Waste Storage	Part IV	• WHPA-B (VS = 10) (future) • WHPA-E (VS = 10) (future)
SWG-15 SWG-16	Storage of Sewage	Prescribed Instrument Land Use Planning	• WHPA-E (VS ≥ 9) (future) • WHPA-E in an ICA for Nitrates or Pathogens (future)

Table 13: CTC Source Protection Plan Policies Prohibiting Activities Outside of the WHPA-A (continued)

Policy	Description	Tool	Prohibition Area outside of WHPA-A
SWG-17 SWG-18	• Combined Sewer Discharge from a Stormwater Outlet to Surface Water; • Sewage Treatment Plant (STP) Bypass Discharge to Surface Water; • Industrial Effluent Discharges; and • Sewage Treatment Plant Effluent Discharges (Includes Lagoons).	Prescribed Instrument Land Use Planning	Combined Sewer Discharge • Where the establishment, operation, and maintenance of sewage works would be a significant drinking water threat (future). STP Bypass Discharge • WHPA-E (VS ≥ 8) (future); or • WHPA-E in an ICA for Nitrates or Pathogens (future). Industrial Effluent Discharges • WHPA-E (VS ≥ 8) (future); or • WHPA-E in an ICA for Nitrates, Pathogens, or Chlorides (future). STP Effluent Discharges • WHPA-B (VS = 10) (future); • WHPA-E (VS ≥ 8) (future); or • WHPA-E in an ICA for Nitrates or Pathogens
SAL-7	Handling and Storage of Road Salt	Part IV	• WHPA-B (VS = 10) (future); • WHPA-E (VS ≥ 9) (future); or • The remainder of an ICA for Sodium or Chloride (future)
SNO-1	Storage of Snow	Part IV	• WHPA-B (VS = 10) (future); • WHPA-E (VS ≥ 9) (future); or • The remainder of an ICA for Sodium or Chloride (future).

Table 13: CTC Source Protection Plan Policies Prohibiting Activities Outside of the WHPA-A (continued)

Policy	Description	Tool	Prohibition Area outside of WHPA-A
FUEL-2	Handling and Storage of Fuel (Aggregate Extraction Sites)	Prescribed Instrument	• WHPA-B (VS = 10) (existing, future); or • WHPA-E (VS = 10) (existing, future).
FUEL-3	Handling and Storage of Fuel • Liquid Fuel and Fuel Oil in Non-Residential (Includes ICI, Farm); or • Multi-unit Residential and Small business in quantities ≥ 2500 litres above or below grade.	Part IV	• WHPA-B (VS = 10) (future); or • WHPA-E (VS = 10) (future).
DNAP-1	Handling and Storage of a Dense Non-Aqueous Phase Liquid	Part IV	• WHPA-B (future); • WHPA-C (future); or • WHPA-E (VS = 10) (future).
OS-1	Handling and Storage of an Organic Solvent	Part IV	• WHPA-B (VS = 10) (future); or • WHPA-E (VS = 10) (future).

3.3 Policy Effectiveness

Section 22 of Ontario Regulation 287/07 requires that a source protection plan contain the following objectives:

- Protect existing and future drinking water sources; and
- Ensure that activities identified as *significant drinking water threats* either never become a threat or, if the activity is already taking place, the activity ceases to be a *significant drinking water threat*. In having the threat cease to be significant, the policies in the source protection plan are managing the activity so that the risk is reduced, not necessarily eliminated.

Further, the four monitoring policies in the CTC Source Protection Plan require the implementing body responsible for a particular policy's implementation to report on the "information related to the *effectiveness* of the policies in ensuring a threat ceases to be, or does not become significant".

This section of the workplan discusses the effectiveness of the CTC Source Protection Plan in managing existing significant drinking water threats and eliminating future significant drinking water threats.

3.3.1 Annual Reporting

The CTC Source Protection Region submitted its first annual report to the Ministry of the Environment, Conservation and Parks in May 2018. In this first annual report, the CTC Source Protection Committee identified that 90% of the policies written to manage or eliminate significant drinking water threats have been implemented. The remaining 10% of these policies are either in the process of being implemented (9%), or no implementation progress had been made (1%) by the end of December 2017. The committee chose to submit the rating of "progressing well" in reporting to the Province.

A summary of the CTC Source Protection Plan implementation can be found in **Appendix 2**.

3.3.2 Measuring Effectiveness

In the MECP Source Protection Bulletin *Overview of Requirements for Assessment Report and Source Protection Plan Amendments under Section 36 of the Clean Water Act, 2006*, source protection authorities, municipalities, and source protection committees are asked to consider *policy effectiveness*. Similarly, all four of the monitoring policies in the CTC Source Protection Plan contain the terminology that "annual reporting shall include information related to the *effectiveness* of the policies in ensuring a threat ceases to be, or does not become significant*".* Methods proposed in the Bulletin to evaluate policy effectiveness included consideration of the source protection plan's implementation documented in the annual report, and to consider whether changes were necessary to address policy gaps or ineffective policies.

The CTC Source Protection Committee discussed the concept of *effectiveness* at its meetings held in March and September 2018. Members felt that source protection committees across the Province should consider effectiveness of policies in source protection plans from a broader scale and emphasized the value in applying a consistent approach to this evaluation.

The first step to evaluating the success of source protection plan implementation may be to determine the threat or group of threats that have resulted in direct impacts on the quality and quantity of

municipal drinking water sources. Every existing or potential future threat enumerated in assessment reports across the Province were required to have a policy to ensure that a particular threat ceased to be, or did not become significant. These policies could be used to determine where policies are effective in meeting the goals of the program. However, this approach could only be used after all source protection plan policies have been implemented for each existing or future significant drinking water threat enumerated.

In the CTC Source Protection Plan, the longest timeline for policy implementation is 5 years (T-6). This timeline is associated with completing risk management plans for existing activities designated for the purpose of section 58 under the *Clean Water Act, 2006*. Therefore, all existing significant drinking water threats requiring a risk management plan (RMP) shall have one established by December 31, 2020. At Meeting #1/18 held in March 2018, the CTC SPC heard from Risk Management Officials that meeting this 5-year timeline may be challenging for some municipalities, particularly when locally there is resistance from the regulated community and RMPs may need to be imposed. The committee did not feel the need at that time to consider a change to the policy implementation timeline for all RMPs, but it was recognized that when reviewing annual reporting this challenge may need to be revisited. In the event that this implementation timeline does need to be extended, it could be an additional number of years before all RMPs required to address existing and future significant drinking water threats (required since the CTC SPP became effective) are in fact established. For this reason, relying on the implementation of all policies in the source protection plan before evaluating *effectiveness* could take considerable time.

The AWG has also discussed potential options for evaluating the *effectiveness* of source protection plan policies including measuring prevention (i.e., how much road salt has not been applied as a result of policy implementation) and evaluating changes in behaviour (i.e., through surveys and focus groups). The working group has agreed that this particular discussion will need to continue in Year 4 of the CTC SPP's implementation. Further, there is support for a more extensive dialogue provincially between source protection regions/areas to agree on a common approach to evaluating how effective the Drinking Water Source Protection Planning Program has been as the first barrier in Ontario's drinking water safety net.

3.3.3 New Policies to Address "Gaps"

There are five policies or groups of policies which will be considered in the update of the CTC Source Protection Plan. Three policies or group of policies are considered gaps in the current source protection plan and relate to transportation corridors, signage, and transport pathways. One group of policies will address the addition of liquid hydrocarbon pipelines as a new prescribed threat. Lastly, an additional group of policies, those related to re-evaluation of the *issue* designation at drinking water systems in the Credit Valley Source Protection Area, are currently required to implement the current CTC SPP. The rationale for these new policies are described in **Table 14**.

Table 14: Summary of Proposed New Policies to the CTC Source Protection Plan through Section 36 of the Clean Water Act, 2006.

Topic	Rationale for Consideration Through Update to CTC Source Protection Plan
Transportation Corridors	Section 26.6 of Ontario Regulation 287/07 (General), specifies that a source protection plan may set out policies identifying the actions to be taken by persons or bodies to update spill prevention and spill contingency plans or emergency response plans for the purpose of protecting existing drinking water sources with respect to spills that occur within a wellhead protection area (WHPA) or surface water intake protection zone (IPZ) along highways, as defined in subsection 1(1) of the *Highway Traffic Act*, railway lines or shipping lanes. Under the current framework, a policy written to address transportation corridors would be classified as *specify action* and would not be legally-binding. However, given the number of major highways and railways that transverse wellhead protection areas in the CTC Source Protection Region, it has been determined that new policy(ies) to encourage municipal spill prevention, spill contingency planning, and emergency response planning to reduce the risk of spills along highways and railways should be considered in updating the source protection plan. Alternatively, the CTC SPC may choose to add the *transportation of substances* as a local threat. If this is the case, significant threat policies can be written to address the threat. The review to the CTC Source Protection Plan will evaluate which, if any, new policies need to be added to address transportation corridors.
Transport Pathways	Municipalities have limited authority to regulate transport pathways. Areas where municipal authority may extend include geothermal systems, as well as some control over grading (e.g., ditches, trenches). The Province has authority for Regulation 903 (Wells) under the *Ontario Water Resources Act* and oversight of wells is an important component in the protection of groundwater aquifers. The CTC SPC has discussed the establishment of a new policy or policies to complement Section 27(3) of *Ontario Regulation 287/07*, which requires municipalities to notify the SPA and SPC of any proposals to create new transport pathways within vulnerable areas.
Signage	Many source protection plans in the Province contain a signage policy. Such policies ensure that there are signs installed along main roads at locations where these roads enter vulnerable areas with high vulnerability scores. The purpose of this signage is to increase the awareness of the location of vulnerable areas. Many municipalities with jurisdiction in other source protection regions communicated the value in having signage as an education and outreach tool.
Address Sodium and Chloride Issues	Policy SAL-9 requires the Credit Valley Source Protection Authority, in partnership with affected municipalities, to determine whether new source protection plan policies are needed to prevent future drinking water issues. This policy has been implemented through the establishment of monthly sampling of sodium and chloride levels in raw water at affected wells. The review of these raw water results will be a component of the update to the CTC SPP.
Liquid hydrocarbon pipelines	With the addition of the establishment and operation of a liquid hydrocarbon pipeline as a prescribed threat, CTC Source Protection Plan policies will need to be reviewed and revised if necessary as text currently written refers to a local threat.

4.0 The Science Supporting the CTC Source Protection Plan

A key requirement of the *Clean Water Act, 2006* is the Assessment Report as it is the scientific backbone on which source protection plan policies rest. It includes information such as:

- The physical characteristics of the land in the watershed;
- Land use;
- The location of drinking water sources;
- A review of the amount of water being used and how much is available for future uses;
- Where vulnerable areas are located; and
- Potential threats that may compromise drinking water sources, whether through contamination or overuse.

The *Director's Technical Rules* stipulate the contents of the report and various methodologies that can be applied in drafting the Assessment Report, and allow for the consideration of local conditions.

4.1 Technical Rule Changes

The *Director's Technical Rules* were first released in 2008. Since that time, they have been updated a number of times. Most recently, in March 2017, the changes to the *Director's Technical Rules* provided clarity with respect to terminology, removed redundancies, incorporated flexibility and new scientific approaches, and updated the Tables of Drinking Water Threats. All technical work outlined in this workplan will meet the requirements of the Director's Technical Rules that are in effect at the time the updated assessment reports and source protection plan are finalized for submission.

In 2018, the Province amended Regulation 287/07 to include the *establishment and operation of a liquid hydrocarbon pipeline* as a prescribed drinking water threat. In the comprehensive update to all three assessment reports and the CTC SPP, all pipeline threats will be reassessed in accordance with the new threat circumstances. This exercise will indicate where a pipeline could be a low, moderate or significant risk. If there is a potential for pipelines to be a significant threat anywhere based on vulnerable area scores (i.e., IPZ 1, 2 or 3 and WHPA-E scores of 9 or 10; WHPA A-D scores of 10), the source protection committee will consider if future policies are warranted. If this risk assessment determines there is no reasonable prospect for pipelines in the applicable locations, the source protection authorities and the CTC SPC will document their reasons for drawing this conclusion in the updated Explanatory Document. Documentation of the process through which this conclusion was drawn will also be provided.

Since the CTC Source Protection Plan already included pipelines as a local threat and identified where they would be a significant risk, all references to the local threat approach will be removed in the updated assessment reports and the CTC SPP. However, the event based areas currently in the approved Credit Valley, Toronto and Region, and Central Lake Ontario Assessment Reports are expected to remain unchanged.

The *Director's Technical Rules* amended in 2017 made a number of changes to the circumstances associated with the storage and handling of above grade fuel. These changes were made not only to address significant drinking water risks, but also for low and moderate risks. When updating the CTC SPP and the three assessment reports, all mapping and tables will be reviewed to ensure that the

Director's Technical Rules have been captured correctly.In August 2018, the SPPB released a Bulletin to provide clarity on incorporating the 2017 and 2018 rule changes into workplans and plan amendments developed under section 36 of the *Clean Water Act, 2006*. The municipalities and source protection authorities in the CTC Source Protection Region, together with the CTC Source Protection Committee, have reviewed the most recent *Director's Technical Rules* to determine whether local circumstances will influence what changes to the CTC Source Protection Plan will be necessary to conform with the current *Director's Technical Rules* (**Table 15**).

The Ministry of the Environment, Conservation and Parks has been undertaking a review of the Drinking Water Source Protection Program over the past couple of years. This review has focused on the Program Framework, Policy Development and Implementation Framework, and the Technical Framework. The changes to the *Director's Technical Rules* in 2017 and 2018 have been related to this review, however, a number of other proposals for further changes continue to be in development. The comprehensive update to the CTC Source Protection Plan and its associated reference materials (i.e., Assessment Reports, Explanatory Document) will incorporate the most up-to-date legislation and *Director's Technical Rules*, at the time of submission.

Table 15: Technical Rule Changes Proposed for Inclusion in Updated CTC Source Protection Plan

Technical Rule	Technical Rule Change	Anticipated Workplan Task	
		Yes	No
Mandatory			
Rules 8(10, 13(5), 80, 81 (Part VII.2); Tables of Drinking Water Threats	Removal of Part VII.2 – Significant Groundwater Recharge Areas, including rules 80 and 81, removal of references to vulnerability scoring in SGRAs, including references to the Tables of Drinking Water Threats. This update will also include revising the assessment reports and source protection plan to remove all references to water quality threats in SGRAs.	√	
Rule 45	The rule explicitly lists the systems that are excluded from the SGRA delineation requirements (i.e. Great Lakes).	√	
Sewage / Septic Systems and Holding Tanks	Removal of sodium and chloride references from the circumstances (695-715) related to on-site sewage systems and holding tanks.		√
Handling and Storage of Fuel	The revised circumstances associated with the storage and handling of above grade fuel will be applied within the CTC SPR.	√	
Agriculture Threats / Application and Storage of NASM	Removal of the term "dairy producer" from circumstances 1965-1967.	√	
Liquid Hydrocarbon Pipeline	Introduced new threat circumstances (1972 – 1979) for pipelines regulated under Ontario Regulation 210/01 of the *Technical Standards and Safety Act* or that is subject to the *National Energy Board Act* where the pipeline is above or below ground or is above or underneath a water body. All potential pipeline threats will be reassessed in accordance with the new threat circumstances.	√	
Enabling Provisions			
Rule 1(1)	The addition of a transport pathway definition for surface water intakes.	√	
Rule 1(1)	The definition of "soil, groundwater, and sediment standards" were amended to explicitly refer to the drinking water component (i.e., GW1 or S-GW-1). The previous definition in the *Director's Technical Rules* did not specify what component of the standards should be used when assessing the presence of a contaminant in a vulnerable area.	√	
Rule 1(4)	The addition of a high water mark definition and alignment with the method described in the document entitled "Fish Habitat and Determining the High Water Mark on Lakes"; published by the Department of Fisheries and Oceans, 2005.	√	
Rules 62(2), 65(1b), 68(2b), and 70(2b)	Amendment of the *Director's Technical Rules* to allow the setback from a water body to be reduced based on local conditions without approval from the Director.	√	
Rule 72	Addition of "and Natural Surface Water Features" to the Part VI.6 title.	√	
Rule 95.1	Creation of an exemption to the standard rules related to vulnerability scores for drinking water systems in large water bodies, including the Great Lakes or connecting channels. This exemption allows higher vulnerability scores to be assigned to protection areas around drinking water systems in larger water bodies where local circumstances and information indicate the intake is vulnerable to contamination.		√

Technical Rule	Technical Rule Change	Anticipated Workplan Task	
		Yes	No
Enabling Provisions			
Rule 114 and other rules where the term "monitoring well" was mentioned in previous versions of the technical rules	Replacing the term "monitoring well" with "monitoring location".		√
Rule 126(5)	Addition of "in an intake protection zone" to the rule identifying sediment based contamination as a risk to surface water.		√
Rule 126(6)	Allowing the identification of groundwater based contaminated sites in surface water based vulnerable areas.		√
Rules 139(1) and 141(4)	Addition of a requirement around when a condition site can be identified as a significant drinking water threat under any approach. The amendment limits this to sites where the condition has already contaminated, or has the potential to contaminate, a source of drinking water.		√
Tables of Drinking Water Threats	Aligning the non-legal wording ("short names") with the legal description.		√

4.2 Environmental Monitoring

The CTC Source Protection Plan contains three policies which require monitoring of water quality associated with *issues* identified under the *Clean Water Act, 2006* or the potential for increasing water quality trends (**Table 16**). There will be four potential updates to the CTC Source Protection Plan related to environmental monitoring. These updates are discussed in **Section 4.2.1.5**.

Table 16: Policies in the CTC Source Protection Plan Related to Environmental Monitoring

Policy	Municipalities Impacted	Policy Requirements
GEN-7	Halton Region, Town of Orangeville, Peel Region	Municipalities with groundwater systems showing increasing or decreasing trends or exceedances of Ontario Drinking Water Standards shall investigate these trends.
SAL-9	Halton Region, Town of Orangeville	Credit Valley Source Protection Authority will work with impacted municipalities to assess the monthly sampling results of sodium and chloride levels in raw water for any increasing trends.
SAL-13	Town of Mono, Town of Orangeville, City of Toronto, York Region, Peel Region, Halton Region, Durham Region	Municipalities conducting sodium and chloride monitoring under the *Safe Drinking Water Act, 2002* are requested to provide these results to the appropriate source protection authority.

4.2.1 Water Quality Monitoring associated with the Identification of an *Issue*

During the November 2017 meetings with CTC SPR municipalities responsible for the treatment and distribution of drinking water (**Table 4**), each municipality was asked to identify any increasing or decreasing trends in any parameters monitored under the *Safe Drinking Water Act, 2002.* As indicated earlier in this document, the majority of municipalities confirmed that their environmental monitoring did not indicate an increasing trend in particular water quality parameters.

Therefore, except at drinking water systems where an issue has already been defined under *Director's Technical Rule 114*, no water quality parameter listed in Schedules 1, 2, or 3 of the Ontario Drinking Water Standards or Table 4 of the Technical Support Document of the Ontario Drinking Water Standards, Objectives, and Guidelines is:

a) Present at a concentration that may result in the deterioration of the quality of the water for use as a source of drinking water; or
b) Shows a trend of increasing concentrations at the surface water intake, well, or monitoring location and a continuation of that trend would result in the deterioration of the quality of the water for use as a source of drinking water.

4.2.1.1 The Designation of an *Issue* at Municipal Drinking Water Systems in the CTC Source Protection Region

During the development of the *Approved Updated Assessment Report: Credit Valley Source Protection Area, 2015* (CVAR), raw water quality data for municipal wells were collated and analyzed. The data review spanned a period extending from the installment of each municipal well to the end of 2012.

The dataset for each well was plotted to assess the change in parameter concentration over time. The data were then subject to linear regression analyses and trend projection, where the point of irreversible water quality deterioration was assessed as being the year that the projected concentration trend line intercepted the Ontario Drinking Water Standard (ODWS) for the parameter of concern.

In conjunction with the *Director's Technical Rules*, the following local criteria were applied in the designation of an *issue:*

- 30-year time horizon for interception of the trend line with the ODWS;
- Frequency with which a parameter exceeds half of its maximum allowable concentration (1/2 MAC) under the ODWS; and
- Specific vulnerability concerns relating to the municipal well.

Four drinking water systems in the CTC Source Protection Region have an *issue*, as defined by *Director's Technical Rule 114* (**Table 17**). All four drinking water systems are located in the Credit Valley Source Protection Area.

Table 17: Drinking Water Systems in the CTC SPR with an issue designation per Director's Technical Rule 114.

Drinking Water System	Drinking Water Well	Parameter of Concern	Description of Issue
Orangeville	Wells 6, 9A, 9B	sodium, chloride	At the time the Credit Valley Assessment Report was prepared, trend plots showed a distinctive upward change. Concentrations were below the aesthetic objective specified in the Ontario Drinking Water Standards (ODWS) at that time for both sodium (200 mg/L) and chloride (250 mg/L), but based on projections they are anticipated to exceed the ODWS within the next 30 years if the trends were to continue.
	Wells 10, 11	chloride	
Inglewood	Well 2	pathogens	At the time the Credit Valley Assessment Report was prepared, Peel Region reported exhibited periodic hits of total coliforms since 2002. Measured concentrations of total coliforms were often recorded following large storm events. Given these observations, it was assumed that these occurrences may be associated with a stormwater management pond located in close proximity to the well. Due to the shallow and unconfined nature of the aquifer supplying Well 2, there is a strong possibility that a direct connection or a very short flow path exists between the surface water and the supply aquifer.
Davidson (Acton)	Wells 1, 2	nitrates	Nitrate concentrations in raw water samples collected at the Davidson Wellfield have shown a great deal of variability since 1985. Statistical analyses completed for the Credit Valley Assessment Report showed that the ODWS could be met as early as 2061 at Well 1 and 2072 at Well 2. Further, data for both wells exhibited repeated spikes that exceeded the ½ maximum acceptable concentration (MAC) between 2000 and 2009.
Cedarvale (Georgetown)	Wells 1A, 4, 4A	chloride	Statistical analyses completed at the time the Credit Valley Assessment Report was being prepared showed that between 1986 and 2009, these wells showed marked increases in chloride concentrations.

4.2.1.2 Water Quality Monitoring – Orangeville

Per the requirements of policy SAL-9, Credit Valley Source Protection Authority worked collaboratively with the Town of Orangeville staff to assess the water quality data collected at the Town's municipal wells. The methodology used to assess the raw water quality data was the same as that used in the initial *issue* assessment.

- The full dataset for each well was plotted to assess the change in parameter concentration over time.
- The data were then subject to linear regression analyses and trend projection up to the time (year) that the projected (concentration) trend line intercepted the ODWS for the parameter of concern.

- Once the trend analyses were completed, the ODWS interception point for the parameter of concern was recorded and compared with those inferred using the original CVAR dataset.
- Any differences in the skew of the trend projection and/or point of interception with the ODWS was reviewed in terms of potential impact of the implementation of SPP policies GEN-7 and/or SAL-9 on the raw water quality of the wells.

Sodium

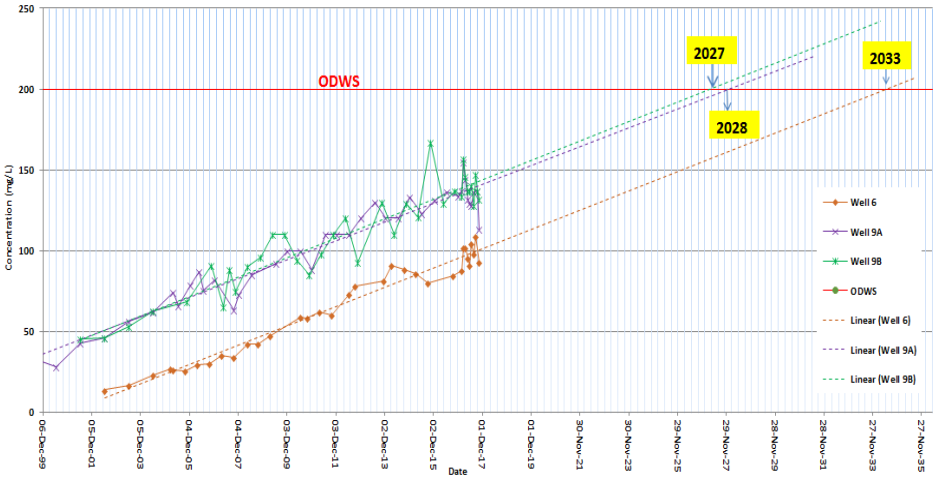
The variation in sodium concentrations of the raw water from Wells 6, 9A and 9B, was assessed for the period 1999-2017. These results and trend projections are presented in **Figure 5**. The analyses conclude that with the extended dataset to 2017, the overall parameter trend and interception points with the ODWS remain relatively unchanged for the three wells, when compared to the analyses informing the CVAR. The comparisons are presented in **Table 18**.

Table 18: Town of Orangeville (Wells 6, 9A, and 9B) – Summary of Projected Exceedances for Sodium

Review Period	Projected Exceedance of ODWS for Sodium	Review Period	Projected Exceedance of ODWS for Sodium
Well 6		**Well 9B**	
2002 – 2012*	2034	2001-2012*	2026
2002 - 2017	2033	2001-2017	2027
Well 9A			
1999 – 2012*	2025		
1999 – 2017	2028		

**Based on analyses completed for Credit Valley Assessment Report Foundation Report "Issues Analyses, Town of Orangeville Wells, September 2013".*

Figure 5: Town of Orangeville Wells – Sodium Concentrations, 1999-2017



Chloride

The variation in chloride concentrations of the raw water from Wells 6, 9A, 9B, 10 and 11 was assessed for the period 1999-2017. These results and trend projections are presented in **Figure 6**, **Figure 7**, and **Figure 8**, respectively. The analyses conclude that with the extended dataset to 2017, the overall timeline for interception with the ODWS has decreased for Wells 9A, 9B and 11 (when compared to projections informing the conclusions of the approved CVAR), increased for Well 10, and remains relatively unchanged for well 6. These results suggest an increase in chloride concentrations in the raw water quality for Wells 9A, 9B, and 11. The comparisons are presented in **Table 19**.

Table 19: Town of Orangeville (Wells 6, 9A, 9B, 10, and 11) – Summary of Projected Exceedances for Chloride

Review Period	Projected Exceedance of ODWS for Chloride	Review Period	Projected Exceedance of ODWS for Chloride
Well 6		**Well 10**	
2002 – 2012*	2019 (2043*)[1]	2001-2012*	2033
2002 - 2017	2018	2001-2017	2038
Well 9A		**Well 11**	
1999 – 2012*	2018	2002-2012*	2041
1999 – 2017	2014[2]	2002-2017	2026[3]
Well 9B			
2001-2012*	2018		
2001-2017	2014[2]		

* Based on analyses completed for Credit Valley Assessment Report Foundation Report "Issues Analyses, Town of Orangeville Wells; September 2013"

1. The raw water quality dataset used in the preparation of the CVAR was from 1983 through 2012. This dataset had an interruption in the trend line in 2002, which correlated with the completion of a major commercial and retail development in the capture zone of the municipal well. As such, a decision was made to shorten the data record to include the assessment of only post-2002 data when making predictions for future sodium and chloride trends given that the application of road salt would likely change with the new land use. This decision was implemented in the assessment of future sodium concentrations, but was erroneously omitted for chloride in the CVAR Foundation Report, and by extension, in the CVAR itself. By restricting the dataset to post -2002 and expanding the dataset by five years to include 2013 through 2017 data, projected exceedance of the ODWS exceedance could occur as early as 2018. In reviewing the expanded dataset, chloride concentration in the raw water exceeded the ODWS in three instances in 2017. This municipal well has shown consistent exceedances of the ½ ODWS since 2010.

2. The dataset analyzed and incorporated into the CVAR projected an exceedance of chloride in the year 2018. The data provided by the Town of Orangeville for 2013 through 2017 shows that chloride concentrations at both wells has exceeded the allowable ODWS for chloride since the fall of 2014. These wells have exhibited continuous exceedance of the ½ ODWS since 2004.

3. The extended dataset shows that a change in the gradient of the trend line likely started as early as 2010. There were likely not enough data points to December 2012 to be able to skew the projected trend line closer to the year 2026 timeline, which is the result of including the additional data through December 2017.

Figure 6: Town of Orangeville Wells 6 and 11 – Chloride Concentrations, 1999-2017

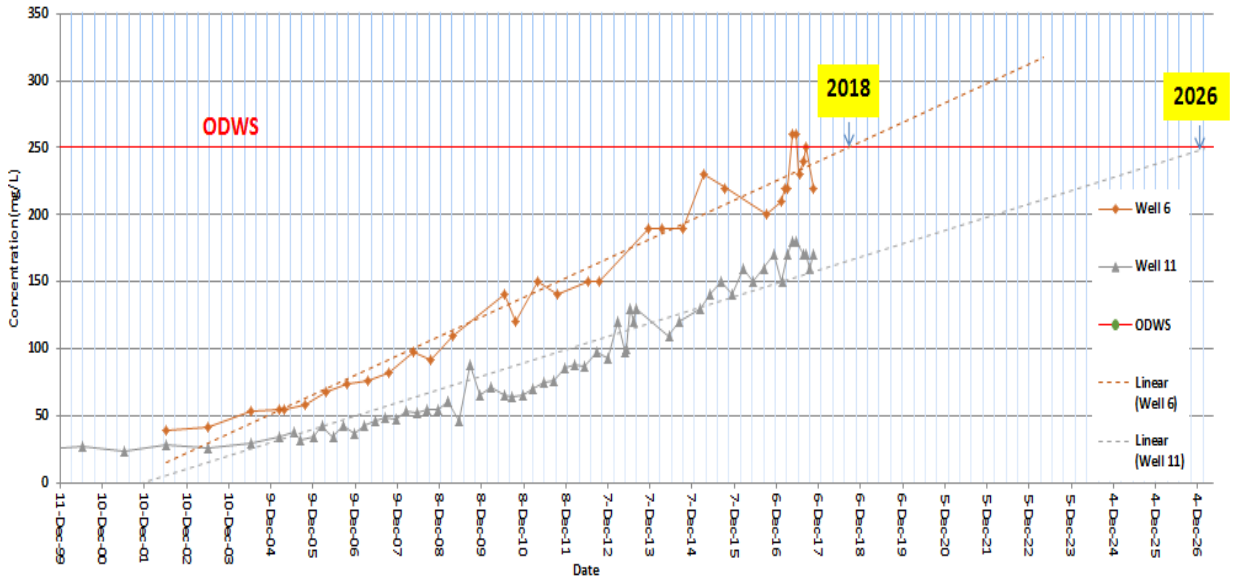


Figure 7: Town of Orangeville Wells 9A and 9B – Chloride Concentrations, 1999-2017

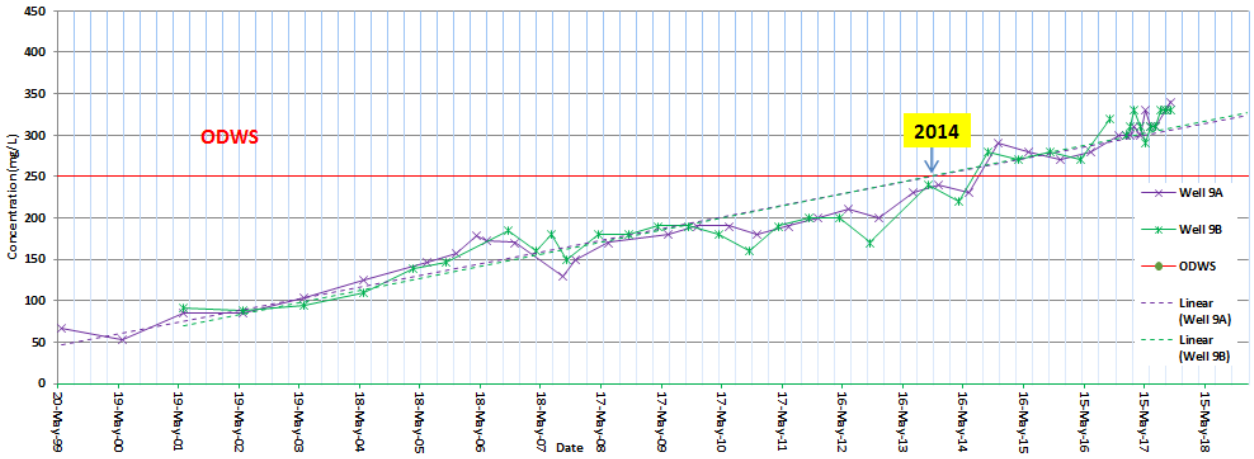
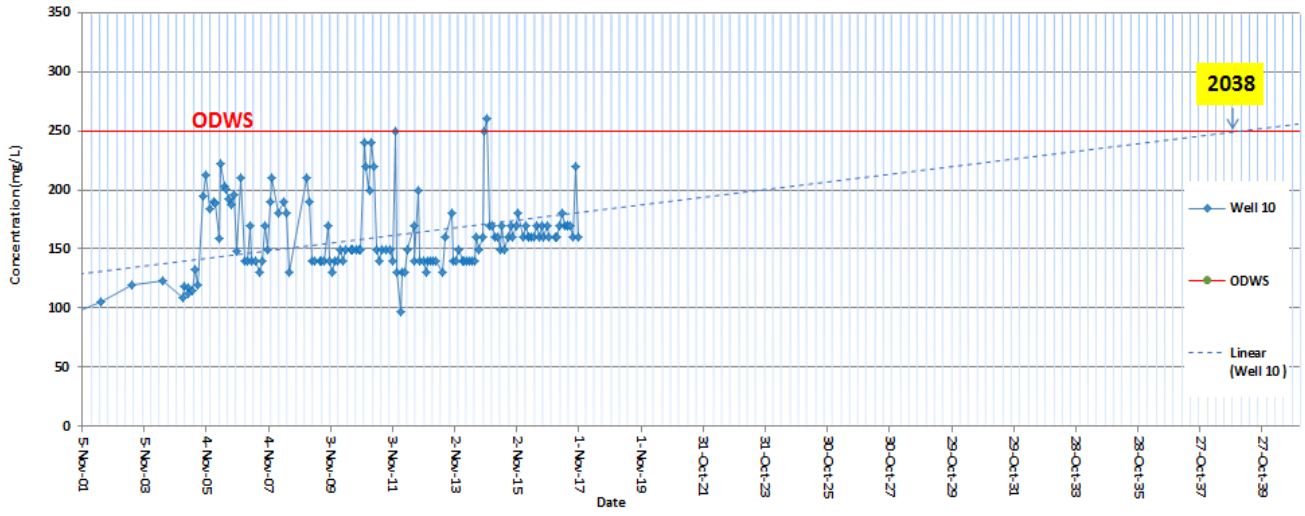


Figure 8: Town of Orangeville Well 10– Chloride Concentrations, 1999-2017



4.2.1.3 Water Quality Monitoring – Halton Region

Per the requirements of policies SAL-9 and GEN-7, Halton Region undertook an extensive review of raw water quality data at the affected wells where an *issue* has been identified. Two reports were submitted to the Credit Valley Source Protection Authority (CVSPA) in May 2018. CVSPA staff undertook an independent review of the data shared with the source protection authority to review and confirm the conclusions outlined in both reports. This review resulted in findings consistent with those reported by Halton Region. The methodology used to assess the raw water quality data was the same as that used in the initial *issue* assessment and is described briefly in **Section 4.2.1.2**.

Nitrate

Nitrate concentrations in raw water from Davidson Wells 1 and 2 were assessed for the period 1985-2017. These results and trend projections are presented in **Figure 9** and **Figure 10**. With the inclusion of the extended dataset to the end of 2017, the timeline for interception with the ODWS has increased for both wells, when compared to the results reported in the CVAR (**Table 20**).

Table 20: Halton Region (Davidson Wells 1 and 2) – Summary of Projected Exceedances for Nitrate

Review Period	Projected Exceedance of ODWS for Nitrate - Davidson 1	Projected Exceedance of ODWS for Nitrate - Davidson 2
1985 – 2012*	2061	2072
1985 – 2017	2153	2209

**Based on analyses completed for CVAR Foundation Report "Issues Analyses, Halton Region Wells, September 2013"*

Historical water quality data for this wellfield has shown a great deal of variability in nitrate concentrations since 1985. Using the extended dataset to December 2017, nitrate concentrations may meet or exceed the ODWS by 2153 at Well 1 and by 2209 for Well 2. Between 2009 and 2017, a decrease in nitrate concentrations was observed. Given the fluctuations (seasonal and year-to-year) of nitrate concentrations, as well as some exceedances of ½ the maximum acceptable concentration

(MAC), it is difficult to draw concrete conclusions about nitrate concentrations trends based on the available information.

Halton Region is currently working on a study at the Davidson Wellfield with the G360 Institute for Groundwater Research at the University of Guelph to refine the understanding of groundwater flow and potential nitrate sources in this area. The investigation was initiated with the drilling of a new monitoring well adjacent to the Davidson wellhouse in December 2016. Bedrock and groundwater samples collected at varying depths during drilling were analyzed for nitrate concentrations. Downhole geophysical surveys were completed to support the delineation of hydrogeological units and provide a better understanding of groundwater flow through the bedrock aquifer. A multi-level sampling system was designed based on the results of the detailed *in-situ* testing and analysis, and installed in May 2018. It is intended that this in-depth geological and groundwater assessment will help characterize the variability in nitrate concentrations at Davidson Wells 1 and 2.

Figure 9: Halton Region – Davidson Wells 1 and 2 – Nitrate Concentrations, 1985-2017 (Halton Region, 2018a)

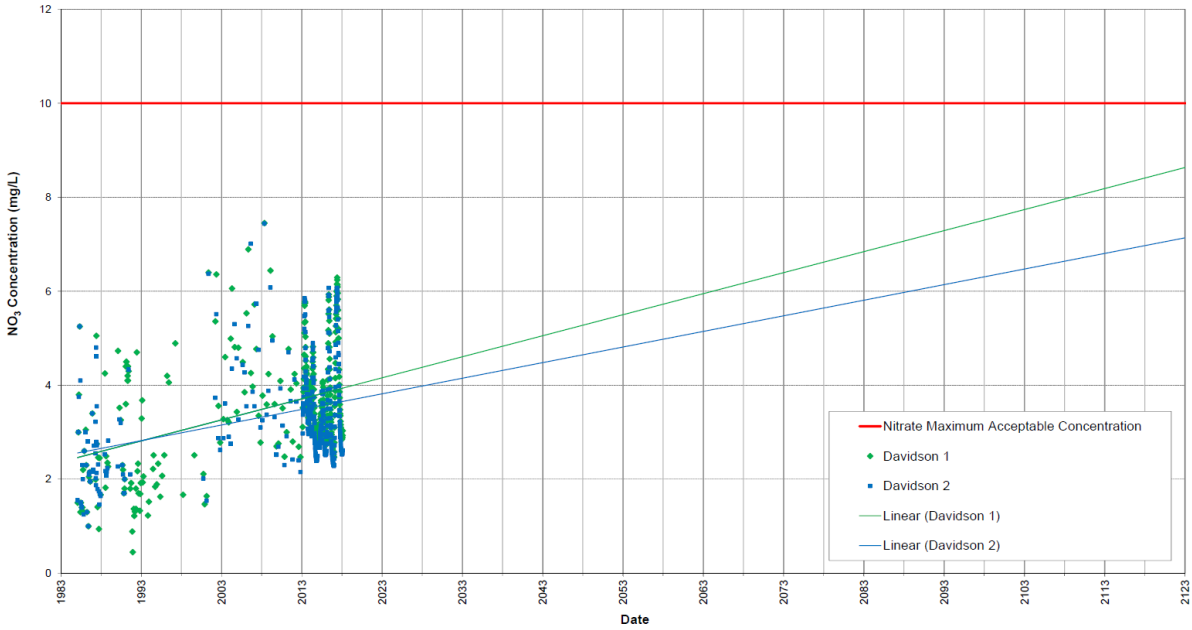
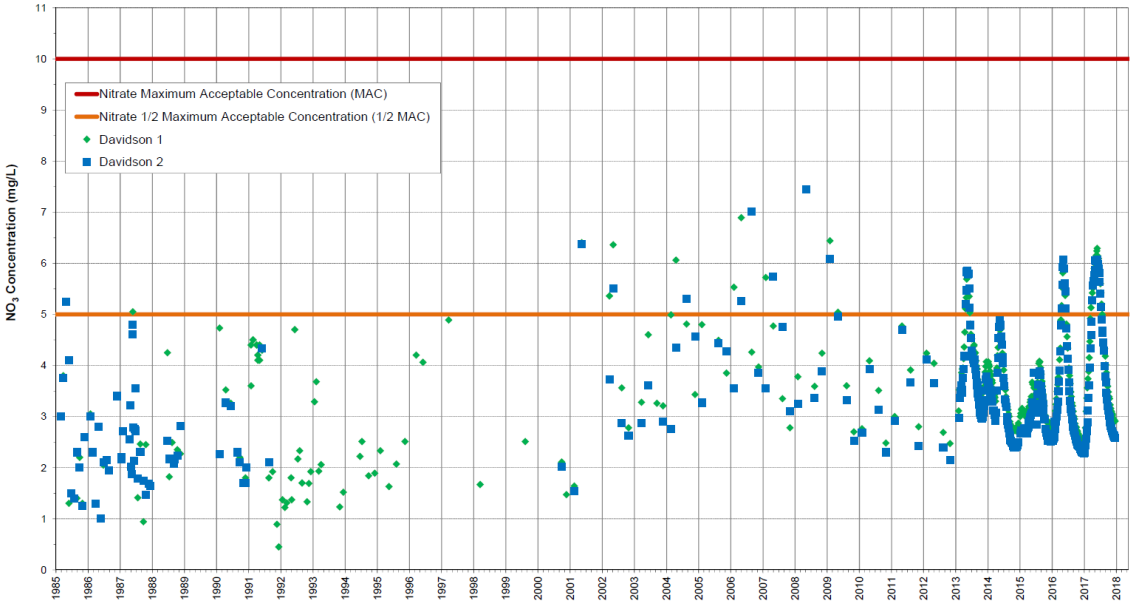


Figure 10: Halton Region – Davidson Wells 1 and 2 – Nitrate Concentrations, 1985-2017 (Halton Region, 2018a)



Chloride

Chloride concentrations in raw water from Cedarvale Wells 1A, 4 and 4A were assessed for the period 1986-2017. These results and trend projections are presented in **Figure 11** and **Figure 12**. With the inclusion of the extended dataset to 2017, the timeline for the projected exceedance of the ODWS at Cedarvale 1A has increased from the year 2037 to 2055. For the other two municipal wells, the projected date for exceedance of the ODWS has been delayed by six (6) or eight (8) years (**Table 21**).

Table 21: Halton Region (Cedarvale 1A, 4, and 4A) – Summary of Projected Exceedances for Chloride

Review Period	Projected Exceedance of ODWS for Chloride – Cedarvale 1A	Projected Exceedance of ODWS for Chloride – Cedarvale 4	Projected Exceedance of ODWS for Chloride – Cedarvale 4A
1986 – 2012*	2037	2045	2027
1986 - 2017	2055	2051	2035

**Based on analyses completed for CVAR Foundation Report "Issues Analyses, Halton Region Wells, September 2013"*

Figure 11: Halton Region – Cedarvale Wells 1A, 4 and 4A – Chloride Concentrations, 1986-2017 (Halton Region, 2018b)

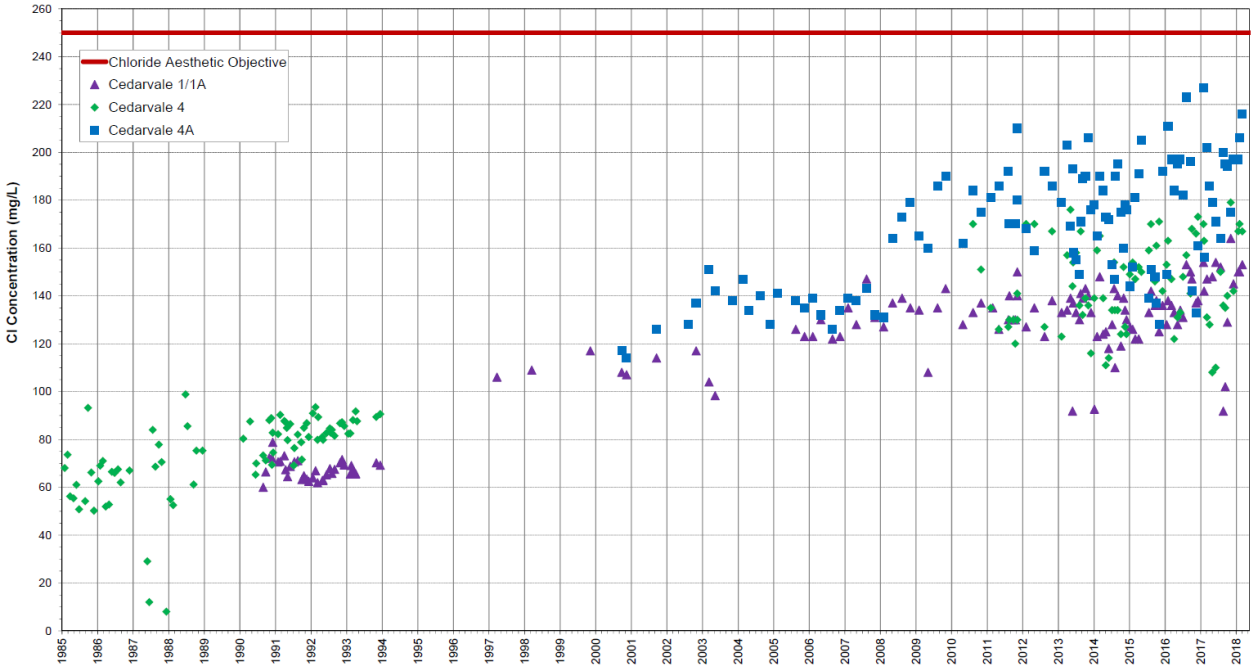
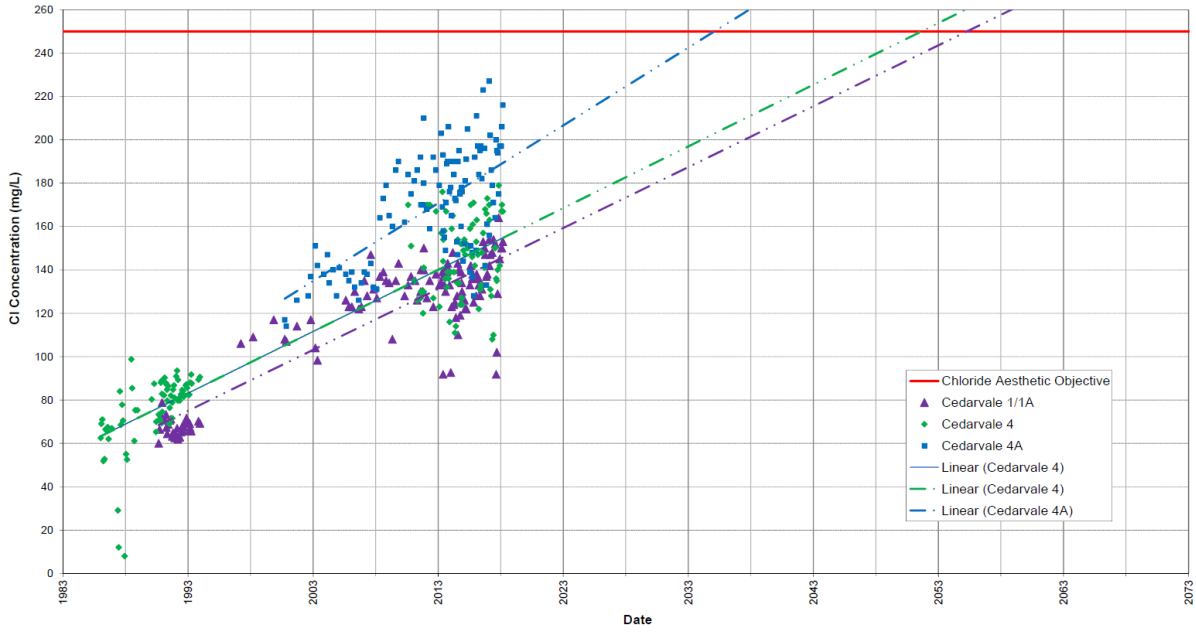


Figure 12: Halton Region – Cedarvale Wells 1A, 4 and 4A – Chloride Concentrations, 1986-2017 (Halton Region, 2018b)

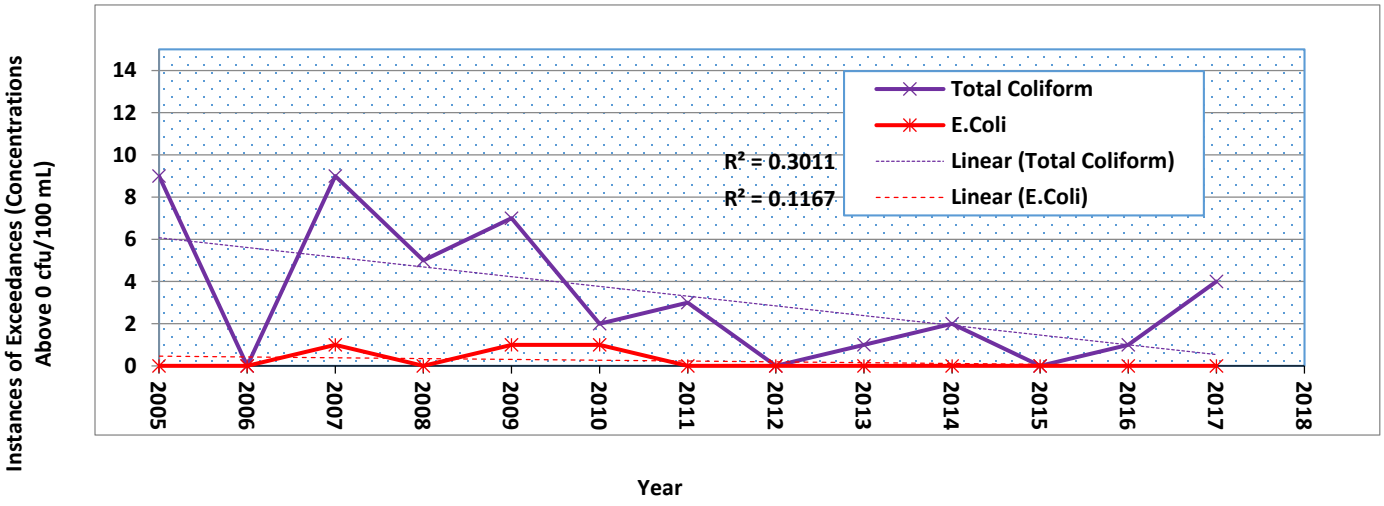


4.2.1.4 Water Quality Monitoring – Peel Region

During the November 2017 meeting with Peel Region it was communicated by the municipality the intention to remove Inglewood Well 2 from operation. The municipality drilled a new well in Fall 2015 and plans to bring the well (Inglewood Well 4) on-line in early 2019, once amendments to the CTC Source Protection Plan have been approved by the Ministry of the Environment, Conservation and Parks. Once Inglewood Well 4 is operational as a production well for the community of Inglewood, the municipality intends to use Inglewood Well 2 as a back-up source of drinking water for a period of one year. After that time, Inglewood Well 2 will be disconnected from the municipal drinking water system and transferred to private ownership.

To comply with the requirements of policy GEN-7, Peel Region provided total coliform and *E. coli* data to the Credit Valley Source Protection Authority to assess trends in these parameters since the *issue* designation was assigned to Inglewood Well 2. **Figure 13** is a linear graph which shows the cumulative number of exceedances of total coliforms and *E. coli* recorded between 2005 and the end of 2017. Trend analysis of this data was also completed. Based on the analysis, it is apparent that for both parameters, there has been a notable reduction in the instances of exceedance since 2009, although there have been some exceedances in total coliforms in 2017.

Figure 13: Peel Region – Inglewood Well 2 – Pathogen Concentrations, 2005-2017



* cfu = colony forming units

Note: Provincial guideline for Total Coliforms and *E. coli* is 0 cfu/100 mL

4.2.1.5 Potential Updates to the CTC Source Protection Plan

Although the results of additional water quality data analyses described above indicate somewhat different water quality trends relative to those identified in the Credit Valley Assessment Report, it was the CTC Source Protection Committee's opinion that it is likely premature to determine whether CTC SPP policies have had any impact on nitrate, sodium, pathogen, and chloride concentrations at municipal wells where an *issue* has been identified. Water quality trends have less uncertainty when longer data records are available for analysis, and therefore, it was agreed by the committee to delay

making any conclusions regarding the effectiveness of policies in the CTC SPP until such time as longer continuous water quality records are available.

Further, as the CTC SPP has only been in effect for two years, policies requiring actions to manage existing significant drinking water threats have not been completely implemented. In particular, as indicated above, RMPs for existing agricultural and road salt related threats do not have to be in place until December 31, 2020. It was agreed by municipal and source protection authority staff, as well as committee members, that mitigation actions will take time to implement and improvements will not occur immediately. Therefore, the CTC Source Protection Committee agreed that the consideration of whether current source protection plan policies are having a measureable impact on the issues identified at specific drinking water systems and whether additional policies are warranted to address these issues (**Table 22**) should be included in the workplan submitted to review and update the CTC Source Protection Plan.

Table 22: Potential Updates to CTC Source Protection Plan – Environmental Monitoring

Municipality	Potential Update
Town of Orangeville	Review of 'Sodium and Chloride Issue' designations at Orangeville Drinking Water System based on additional water quality monitoring data.
	Consideration of making a formal request to the Director pursuant to section 119 of the Director's Technical Rules to designate the Town's Water Pollution Control Plant (WPCP) outfall as a local threat, pending the outcome of research undertaken by the Town to determine the extent to which sodium and chlording loading from the Town's WPCP outfall into the WHPA-E influences rising chloride concentrations at Well 10 .
Halton Region	Review of 'Nitrate Issue' designation at Acton Drinking Water System based on additional water quality monitoring data and research results.
	Review of 'Chloride Issue' designation at Georgetown Drinking Water System based on additional water quality monitoring data.

4.2.2 Sodium and Chloride Monitoring (Moderate/Low Threats Related to Road Salt)

The CTC Source Protection Committee chose to include a number of Specify Action policies in the CTC SPP where the application of road salt is or could potentially be a low or moderate drinking water threat. These policies were included because the application of road salt is carried out throughout the source protection region and chloride and sodium are mobile chemicals that move easily and rapidly into and through aquifers.

Policy SAL-13 is one of these Specify Action policies and is directed at municipalities responsible for the treatment and distribution of municipal drinking water. The policy is non-legally binding. Each implementer must have regard for the policy in making decisions, but also has the flexibility to determine what actions will be taken in implementing the policy. In discussions held among stakeholders at the CTC SPR Implementation Working Group meeting held in May 2018, it was confirmed that through responsibilities under the *Safe Drinking Water Act, 2002* municipalities spent considerable effort looking at trends in several water quality parameters. Some municipalities acquired support from the private sector to summarize water quality results and make recommendations where exceedances are recorded. For this reason, it was decided that for policy SAL-13 municipalities would

have the option of forwarding these existing water quality results or the summaries of water quality analyses to the CTC SPR.

Increasing concentrations of sodium and chloride in surface waterways, lakes, and groundwater aquifers has been a prevalent concern in recent years. The environmental impact of road salt use in Canada has been documented in several studies demonstrating the adverse effects to aquatic life, terrestrial vegetation, and drinking water. The CTC Source Protection Committee has expressed their concerns for increasing sodium and chloride trends in the raw water supplying municipal drinking water systems. At CTC SPC Meeting #3/18 held on September 19, 2018, it was decided that a small working group of committee members, as well as municipal and conservation authority staff would be created to discuss whether any additional efforts can be made by the CTC SPC to support implementation of the road salt policies in the CTC Source Protection Plan. This working group is expected to begin its discussions in 2019.

4.3 Protecting Water Quantity – Review of Tier 3 Water Budget

A water budget reviews each part of a watershed's hydrologic system, and uses data to describe the pathways that water takes through the watershed. This information helps determine how much water is available for human use while ensuring enough is left for natural processes. The *Directors Technical Rules* guide the completion of tiered water budgets designed as a screening mechanism for gaining a progressive understanding of watershed characteristics, surface-groundwater interactions, and the impacts of water takings on municipal drinking water supplies.

The Water Quantity Risk Assessment framework under the *Clean Water Act, 2006* consists of four tiers of analysis (Conceptual, Tier 1, Tier 2, and Tier 3). The level of investigation in the tiered approach depends on the severity of local water quantity issues. That is, Tier 2 analysis is required only in watersheds with potential stress to water quantity and municipal drinking water systems. The Tier 3 analysis is then only conducted where the Tier 2 results confirm moderate or significant stress. All of the existing and potential future significant drinking water quantity threats identified in the CTC Source Protection Region are threats to groundwater-sourced municipal drinking water supplies. The extent to which water budget analyses were carried out across the CTC Source Protection Region varied (**Table 23**).

Table 23: Summary of Water Budget Work Completed Through the Drinking Water Source Protection Program

Source Protection Area	Water Budget Work
Central Lake Ontario	Conceptual and Tier 1 Water Budgets (PRMS, MODFLOW) York Tier 3 Integrated Water Budget (GSFLOW)
Toronto and Region	Conceptual, Tier 1 / Tier 2 Water Budgets (PRMS, MODFLOW) York Tier 3 Integrated Water Budget (GSFLOW)
Credit Valley	Integrated Tier 2 Water Budget (HSP-F; FEFLOW) Orangeville-Mono-Amaranth Tier 3 Water Budget (HSP-F, MODFLOW) Halton Hills Tier 3 Water Budget (MIKE SHE, FEFLOW)

Precipitation-Runoff Modeling System (PRMS)
Modular Flow (MODFLOW)
Coupled Groundwater and Surface Water Flow (GSFLOW)
Hydrological Simulation Program – Fortran (HSP-F)
Finite Element Flow (FEFLOW)

Numerical models, such as the tools used in the completion of the water budget analyses, are continuously evolving and must be kept current. In recognition of this need for long-term numerical model maintenance, the CTC Source Protection Committee included policy DEM-8 in the CTC Source Protection Plan. This policy encourages the Ministry of the Environment, Conservation and Parks to maintain partnerships with source protection authorities, municipalities, and other partners to undertake this maintenance. The Ministry has provided financial support to the CTC Source Protection Region to review the usability of the models generated through the tiered water budget work, recommend best management practices to maintain such models, and harmonize certain facets of the models for use by practitioners.

The CTC Source Protection Region has chosen to rely on the Oak Ridges Moraine Groundwater Program (ORMGP) as custodians for the numerical models in the CTC SPR. The ORMGP is a coalition of thirteen (13) agencies working together to better understand and manage water resources. The Credit Valley, Toronto and Region, and Central Lake Ontario conservation authorities are members of this partnership. The ORMGP provides for a multi-agency, collaborative approach to collecting, analyzing, and disseminating water resource knowledge as a basis for effective stewardship of water resources. Through the ORMGP Model Custodianship Program, numerical models are maintained as active tools and are kept up-to-date. In the *Guide for Actively Managing Watershed-Scale Numerical Models in Ontario* (August 2017) prepared by the ORMGP, it is encouraged that agencies commissioning modelling studies put in place practices to effectively manage these numerical models and their associated data sets to facilitate continued application and improvement of the models.

Through discussions with municipalities in the CTC SPR in 2017 and 2018, a number of updates are anticipated to numerical models in the next four to five years. Each of these anticipated updates are outlined in **Table 24**.

Table 24: Numerical Model Updates in the CTC Source Protection Region (2019-2023)

Municipality	Expected
Halton Region	Halton Region is considering an update to the Halton Hills Tier 3 models using the monitoring, testing, and pumping rate data collected since the models were originally completed (2013). Discussions with the Region suggest that the timeline for modelling, peer review, mapping, and reporting would run between 2020 and 2023. Updated delineations for wellhead protection areas (WHPA), revisions to vulnerability scoring, and a water quantity stress assessment would be major components of this work.
Town of Orangeville	In 2004, the Town completed a Long-Term Servicing Strategy (LTSS) to plan for the management of its water supply and sewage treatment needs into the future. The LTSS identified that the existing water supply capacity is insufficient to meet future water supply demands associated with growth expectations. This concern was corroborated in the water budget work completed in the preparation of the Credit Valley Assessment Report. The Town has recently retained a team of consultants to verify additional drinking water supply capacity requirements to service planned growth, complete the necessary environmental assessment required for a new municipal supply well, and run existing numerical models (taking into consideration the new supply well) to acquire updated mapping of vulnerable areas.
Peel Region	The Region of Peel has plans to build a regional-scale numerical model of the groundwater flow system. This work is intended to advance the understanding of groundwater flow in the Region and provide a foundation through which site specific studies can be completed. The work is expected to take place in 2019 through to the first half of 2020. The objectives of this work include updating the WHPAs for existing wells and for the planned well Alton 4A, assessing aquifer vulnerability, and vulnerability scoring.
Durham Region	The "Durham Model" was completed in 2010 and was the first numerical model to cover Durham Region in its entirety. Since the Durham Model was completed, a number of groundwater and surface water models have been created, expanded, and modified. The majority of models were affiliated with the technical work required to complete the Assessment Reports under the *Clean Water Act, 2006.* The Durham Model (2010) was capable of being used to refine the Region's wellhead protection areas, although this task was never completed as it was not within the scope of the original study. The Region decided to update the Durham Model (2010) in order to have a more up-to-date Regional Groundwater Model (Durham Model 2019). The objectives of this work include updating the WHPAs for existing wells, assessing aquifer vulnerability, and vulnerability scoring.

4.4 Changes in Vulnerable Area Delineations and Vulnerability Scoring

As indicated in **Section 4.3**, a number of groundwater models will be revised and updated across the CTC Source Protection Region over the next several years. It is expected that this may at a minimum impact the WHPAs associated with a number of municipal groundwater systems. (However, additional WHPAs may be impacted by a Transport Pathway Pilot Project currently underway in the Credit Valley Source Protection Area.

When the Central Lake Ontario, Credit Valley, and Toronto and Region Assessment Reports were approved by the Minister of the Environment, Conservation and Parks, the there was an information gap related to the *Director's Technical Rules 39 to 41.* These rules reference where groundwater vulnerability scores may be increased as a result of man-made pathways that serve to increase the speed by which a contaminant might reach a source of drinking water. Although some preliminary work to develop a standard methodology to effectively and consistently assess various anthropogenic pathways was completed prior to submitting the Assessment Reports to the Ministry for final approval, additional work was necessary.

The CTC SPR has initiated a Pilot Project aimed at further assessing transport pathways in the CVSPA. The end goal of this exercise is to provide municipalities with criteria and parameters through which they can evaluate a potential transport pathway. Each municipality in the CTC SPR would then be using standardized criteria to report to the source protection authority and source protection committee per the requirements under Ontario Regulation 287/07.

It is acknowledged that even with this more in-depth assessment, there will continue to be gaps in the final analysis, particularly since well records and engineering drawings are not readily available for all transport pathways across the CVSPA. Municipalities and provincial stakeholders were asked for GIS files (polygon, polyline, and point) identifying the location of existing transport pathways. These data sets varied across the source protection area. The analysis was performed only as a desktop exercise and field verification was not within the scope of the study.

The Oak Ridges Moraine Groundwater Program has provided support to this project by identifying the locations and depths of the aquifers supplying municipal groundwater systems in the CVSPA. Using the modeling files generated through the Tier 2 and 3 water budget activities, the transport pathways with the potential to directly impact the aquifers supplying water to a municipal drinking water system will be identified.

Once the methodology and results for the CVSPA have been endorsed by the CTC SPR municipalities and the CTC Source Protection Committee, the project will move to the Central Lake Ontario and Toronto and Region source protection areas.

4.5 Climate Change Considerations

The *Director's Technical Rules* allow for the consideration of climate change impacts, however, there is currently no clear direction on how to complete this assessment. The MECP, Conservation Ontario, and the Ontario Climate Consortium have initiated a collaboration to develop scientifically-based guidance on how to incorporate climate change into the drinking water quality risk assessment outlined in the *Director's Technical Rules*. Part of this initiative is to develop a practical assessment tool, which will accompany the guidance. The results of this project may lead to amendments being made to the *Director's Technical Rules,* which would then allow source protection authorities and municipalities to consistently evaluate the impact of climate change at municipal drinking water systems while taking local conditions under consideration.

4.6 Lake Ontario Science

The *Director's Technical Rules* provided for the use of an event-based modelling approach as a tool to identify activities that could be significant threats to drinking water supplies drawing water from the Great Lakes. Any modelled activity which exceeds the threshold established by the local source protection committee is deemed to be a significant threat. Each modelled threat activity deemed as significant has its own event-based area (EBA) on land and is associated with one or more drinking water intakes. In the CTC Source Protection Region, spills from petrochemical pipelines, wastewater treatment plants, sewage pipes, bulk fuel storage, and nuclear power stations were all evaluated as potential significant drinking water threats using event-based modelling. There are policies in the CTC Source Protection Plan to address these significant drinking water threats from existing and future threat activities within these EBAs.

When the event-based modeling of potential spills was carried out under the Lake Ontario Collaborative a number of criteria were put in place including that:

- Data was modified from actual events to be applicable to Lake Ontario;
- Extreme weather events were not used, but rather, regular climatic conditions were assumed; and
- No risk management measures were considered to be in place.

Policy LO-G-2 encourages the Ministry of the Environment, Conservation and Parks to work in partnership with Environment and Climate Change Canada and the municipalities responsible for providing water from systems with intakes in the western basin of Lake Ontario to establish a Lake Ontario Collaborative Group (LOCG). The LOCG was established in March 2017 with a formal Terms of Reference defining roles, tasks, and responsibilities of the various partners. The main purpose of creating the LOCG is to undertake actions to support the implementation of policies in the CTC Source Protection Plan, which have been put in place to protect Lake Ontario.

Although the workplan for the LOCG has yet to be finalized, clause 3 of policy LO-G-2 specifies the use of either the 3-Dimensional Hydrodynamic Circulation Model (developed by the Lake Ontario Collaborative) or more advanced models, as appropriate, to further assess potential drinking water threats. In particular, these potential drinking water threats could include new proposed activities, activities for which spill scenario modelling has not yet been completed, and those created as a result of climate change. Therefore, a proposed CTC Source Protection Plan update is carrying out additional modeling scenarios (i.e., spill from a ship, consideration of extreme weather events).

Recent changes to the *Director's Technical Rules* allow for source protection authorities and committees to consider a number of *enabling provisions*. The CTC SPR expects to incorporate updated Technical Rules 1(1) (transport pathway in IPZs) and 1(4) (high water mark). These updates may result in changes to the vulnerability and delineation of IPZs around the drinking water systems drawing water from Lake Ontario.

5.0 Proposed Review and Updates to CTC Source Protection Plan

Consultation with municipal stakeholders and preliminary assessment following the guidance released by the SPPB, suggests a number of updates to the CTC Source Protection Plan will be necessary or should be considered. The rationale, timeframe, anticipated consultation, whether the update will affect the assessment report or the source protection plan, and financial considerations for each task is outlined in **Table 25** and **Table 26**.

Table 25: Proposed Review and Updates to CTC Source Protection Plan – Policy Related

Update	Description of Proposed Review and Update	Applicable Document	Timeline	Consultation	Financial Responsibility for Update
1	Review DNAP-1 and OS-1 policies to determine: i) whether future prohibition of DNAPLs and organic solvents is necessary or whether an RMP approach would achieve the desired result more efficiently; and ii) whether an exception for small quantities of DNAPLs and organic solvents should be added to the policies to exclude situations where the storage and handling of these materials are unlikely to result in a risk to sources of drinking water.	CTC SPP, ED	January 2021-December 2023	Implementing Bodies (municipalities, Risk Management Official, MECP, OMAFRA, pipeline owners), CTC SPC Anticipated pre-consultation on potential policy implications, 35-day public consultation period	CTC SPR through Program Maintenance Funding
2	Review agricultural source material policies ASM-2 and ASM-4 for gaps related to allowing a risk management plan (RMP) when a Nutrient Management Plan (NMP)/Strategy (NMS) is required, but has expired, or when a NMP is voluntarily in place.				
3	Review of policies ASM-1 and ASM-2 in particular duplication of requirements where NMP/NMS are in place on a property where a risk management plan (RMP) is also required (i.e., soil testing).				
4	Review of the need for prohibiting the application of commercial fertilizer in wellhead protection area-A (WHPA-A).				
6	Consider addition to policy LO-NGS-1 requiring that the Ontario Power Generation designate an appropriate lead for source protection considerations.				
7	Consider the transportation of substances as a local threat. If deemed a local threat, create a specify action policy to address the threat.	CVAR, TRAR, CLOAR, CTC SPP, ED			

Update	Description of Proposed Review and Update	Applicable Document	Timeline	Consultation	Financial Responsibility for Update
8	Create policy to require signage at boundaries of most vulnerable areas that cross major transportation thruways (i.e., WHPA-A).	SPP, ED	January 2021-December 2023	Implementing Bodies (municipalities, Risk Management Official, MECP, OMAFRA, pipeline owners), CTC SPC Anticipated pre-consultation on potential policy implications, 35-day public consultation period	
9	Consider the creation of a policy or policies to address transport pathways.				
10	Consider the need for additional policies to address issues identified in inaugural CTC SPP.				CTC SPR through Program Maintenance Funding
11	Re-evaluate the appropriateness of a risk management plan approach for all agricultural policies currently requiring prohibition outside of the WHPA-A.				
12	Review need for new policies as a result of adding liquid hydrocarbon pipelines as a prescribed threat.				

Table 26: Proposed Review and Updates to CTC Source Protection Plan – Technical Related

Update	Description of Proposed Review and Update	Applicable Document	Timeline	Consultation*	Financial Responsibility for Update
13	Review 'Nitrate Issue' designation at Acton Drinking Water System based on additional water quality monitoring data and research results.	CVAR	March – June 2024	Halton Region, CVSPA, CTC SPC, MECP	Halton Region, Town of Erin, Wellington County
14	Review 'Chloride Issue' designation at Georgetown Drinking Water System based on additional water quality monitoring data.	CVAR			Halton Region
15	Review 'Sodium and Chloride Issue' designations at Orangeville Drinking Water System based on additional water quality monitoring data.	CVAR		Town of Orangeville, CVSPA, CTC SPC, MECP	Town of Orangeville
16	Group all significant groundwater recharge areas (SGRA) polygons previously scored 2,4,6 into one area with no score. Revise mapping in each assessment report to reflect update. This update will also include revising the assessment reports and source protection plan to remove all references to water quality threats in SGRAs.	CVAR, TRAR, CLOAR	April 2019- March 2020	Municipalities, SPAs, CTC SPC, MECP	CTC SPR through Program Maintenance Funding
17	Update Assessment Reports to reflect the new prescribed significant threat – liquid hydrocarbon pipeline – per *Clean Water Act, 2006 (*O. Reg. 287/07).		April 2020 – March 2022	Pipeline Owners, Municipalities, CTC SPC, MECP	
18	Incorporation of climate change considerations based on direction from the Source Protection Programs Branch.			Municipalities, MECP, SPAs, CTC SPC	
19	Incorporate updated conceptual and groundwater model (Durham Region) results from numerical modeling into Water Budget chapters.	CLOAR, TRAR	January 2019- March 2021	Durham Region, Township of Uxbridge, MECP, SPAs, CTC SPC, landowners	Durham Region
20	Revise WHPA delineations for Uxville Drinking Water System as a result of model refinement and update.	TRAR			
21	Incorporate updated modelling (Peel Region) results into Water Budget chapters (including conceptual model update, groundwater model, surface water model, and modelling scenarios).	CVAR, TRAR		Peel Region, Town of Caledon, MECP,	Peel Region

22	Evaluate water quantity stress at Subwatershed 13 and the need for a Tier 3 assessment.	CVAR		SPAs, CTC SPC, landowners	
23	Revise WHPA delineations for Peel Region Drinking Water Systems as a result of model refinement and update.	TRAR, CVAR			
24	Incorporate updated water budget and stress assessment (Halton Region) results into Water Budget chapters (including conceptual model update, groundwater model, surface water model, and modelling scenarios).	CVAR	January 2020 – December 2023	Halton Region, Town of Halton Hills, MECP, SPAs, CTC SPC, landowners	Halton Region, Town of Erin, Wellington County
25	Revise WHPA delineations for Georgetown and Acton Drinking Water Systems in Chapter 4 as a result of model refinement and update.	CVAR			
26	Incorporate updated water budget and stress assessment (Orangeville) results into Water Budget chapters (including conceptual model update, groundwater model, surface water model, and modelling scenarios).	CVAR	September 2018 – June 2020	Town of Orangeville, MECP, SPAs, CTC SPC, landowners	Town of Orangeville
27	Revise WHPA delineations for Orangeville Drinking Water System in Chapter 4 as a result of model refinement and update.	CVAR			
28	The revised circumstances associated with the storage and handling of above grade fuel will be applied within the CTC SPR.	CVAR, TRAR, CLOAR	April 2019 – March 2020	Municipalities, CTC SPC, MECP	CTC SPR through Program Maintenance Funding
29	Identify new and existing transport pathways based on in-depth inventory in all three source protection areas.	CVAR, TRAR, CLOAR	January 2021-December 2023	Municipalities, SPAs, CTC SPC, MECP	
30	Comparisons to original and updates to threat enumeration summaries.		April 2019-March 2024		
31	Update content of Watershed Characterization chapters.				
32	Assess effects of risk management measures on spill scenarios conducted through event-based modeling.		April 2021-March 2024		Durham Region, City of Toronto, Peel Region
33	Consideration of additional modeling scenarios (i.e., spill from a ship, consideration of extreme weather events) for inclusion in CTC SPP.				
34	Complete changes to the CTC SPP to conform with the current *Director's Technical Rules.*		April 2019-March 2024		CTC SPR through Program Maintenance Funding
35	Complete updated conditions assessment per the *Director's Technical Rules.*		June 2022 – December 2023		

* Anticipated pre-consultation on potential technical amendments, 35-day public consultation period.

6.0 Project Management and MECP Support for Updates

The Ministry of the Environment, Conservation and Parks has provided financial support, as well as technical and policy expertise, in the completion of the CTC Source Protection Plan. Core staff representing the CTC Source Protection Region will manage and coordinate the updates outlined in **Section 5.0** including ensuring that the appropriate municipalities, provincial ministries, landowners, and other implementing bodies are consulted on amendments. Credit Valley, Toronto and Region, and Central Lake Ontario conservation authority staff will provide local expertise and support the work of CTC SPR staff. It is anticipated that current staffing (i.e., 2018-2019 fiscal year) levels can manage the work proposed in this workplan.

The proposed updates to this workplan will be contingent on continued financial support from the MECP and access to expertise within the SPPB through December 2024.

7.0 References

Ministry of the Environment, Conservation, and Parks. 2016. Source Protection Plan Bulletin – Overview of Requirements for Assessment Report and Source Protection Plan Amendments under Section 36 of the *Clean Water Act, 2006.*

Ministry of the Environment, Conservation, and Parks. 2017. Source Protection Plan Bulletin – Overview of Requirements for Assessment Report and Source Protection Plan Amendments under Section 36 of the *Clean Water Act, 2006* (Supplementary Information – Municipal Engagement).

Ministry of the Environment, Conservation, and Parks. 2018. Source Protection Plan Bulletin – Overview of Requirements for Assessment Report and Source Protection Plan Amendments under Section 36 of the *Clean Water Act, 2006* (Supplementary Information – Prohibition of Agricultural Activities Outside WHPA-A or IPZ-1).

Ministry of the Environment, Conservation, and Parks. 2018. Source Protection Plan Bulletin – Overview of Requirements for Assessment Report and Source Protection Plan Amendments under Section 36 of the *Clean Water Act, 2006* (Updates to Director's Technical Rules and Tables of Drinking Water Threats).

Ministry of Municipal Affairs. 2017. Growth Plan for the Greater Golden Horseshoe. Accessed at: http://placestogrow.ca/images/pdfs/ggh2017/en/growth%20plan%20%282017%29.pdf

Regional Municipality of Halton. 2018a. Davidson Wellfield Nitrate Concentration Data Review. 15 pages.

Regional Municipality of Halton. 2018b. Cedarvale Wellfield Chloride Concentration Data Review. 14 pages.

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Ontario

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JUL 28 2015

Mr. Nando Iannicca
Credit Valley SPA Chair
1255 Old Derry Rd.
Mississauga, Ontario
L5N 6R4

Ms. Maria Augimeri
Toronto and Region SPA Chair
5 Shoreham Drive
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Ms. Susan Self
CTC Source Protection Committee Chair
42 Balsam Street N.
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L9P 1B3

Mr. Don Mitchell
Central Lake Ontario SPA Chair
100 Whiting Avenue
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L1H 3T3

Dear Mr. Iannicca, Ms. Augimeri, Mr. Mitchell, and Ms. Self:

It is a pleasure to inform you that the review of the source protection plans, developed under the Clean Water Act, 2006, for the Central Lake Ontario, Toronto Region and Credit Valley source protection areas within the CTC source protection region has been completed. Pursuant to section 29 of the Clean Water Act, I approve the plans for the Central Lake Ontario, Toronto Region and Credit Valley source protection areas.

I appreciate the efforts undertaken by the CTC source protection committee and authority and all stakeholders to assess and develop plans to protect drinking water sources in your community. Thank you for all your hard work, leadership and commitment.

Your community is to be commended on the achievement of this important milestone. This is an example of the local, inclusive, community-based approach to protecting source water envisioned by the Clean Water Act. The province has been pleased to support the development of the Central Lake Ontario, Toronto Region and Credit Valley source protection plans with an investment of $24,653,954 since 2004. An additional $1,300,020 was provided within the CTC source protection region for various projects under the Ontario Drinking Water Stewardship Program to landowners, municipalities and the conservation authority to take action to protect drinking water.

.. 2

Following today's approval of the plans, in order to allow time to prepare for implementation, the Central Lake Ontario, Toronto Region and Credit Valley source protection plans will take effect on December 31, 2015. Please ensure that this date is clearly stated in the plans.

Under section 36 of the Clean Water Act, when a source protection plan is approved, an order must also be given that governs the review of the plan. Pursuant to clauses 36 (1) (c) and (d), and as an initial step in the development of detailed requirements that will govern the plans' review, the Toronto and Region source protection authority shall prepare and submit a workplan to the ministry. The workplan shall propose the detailed steps for the review of the plans, including which portions of the plans are to be reviewed, the timeframes for each step of the review and the consultation that would be undertaken as part of the review, and rationale for each step. A summary of how the workplan was developed shall also be included. The workplan shall be developed in consultation with the CTC source protection committee, participating municipalities of the CTC source protection region, and the Ministry of Environment and Climate Change.

The development of the workplan must take into consideration any experience that has been gained from implementing the source protection plans and information from the first annual progress reports on plan implementation (due May 2018). Accordingly, the workplan shall be submitted to the ministry no later than November 30, 2018. Once the workplan is submitted and reviewed by the ministry, and following any further consultation that the ministry considers advisable, a further order can be issued under section 36 that specifies more detailed requirements outlining the content and timeframes that will govern the review of the plans for the Central Lake Ontario, Toronto Region and Credit Valley source protection areas.

The committee has included a number of policies in the plans that request the province create or modify programs, or introduce new legislation. The ministry very much appreciates the advice of the source protection committee on how it may protect drinking water sources. The ministry will conduct an analysis on how to best achieve the policy objectives. The results of this analysis will be communicated to the Toronto and Region source protection authority when the ministry reports on its implementation of policies in the plans.

The plan includes a comprehensive set of policies to address activities that contribute to elevated sodium and chloride in the groundwater in Orangeville and Georgetown. In addition to on-the-ground actions such as the establishment of risk management plans, there is a policy asking the province to implement a provincial licensing and accreditation program for those applying road salt. There is also a policy that directs municipalities and the source protection authority to investigate the sources of sodium and chloride that contribute to the drinking water issue and to sample the raw water supply of the affected drinking water systems monthly.

I look forward to seeing the progress made towards addressing the local sodium and chloride issues in your first annual progress report in 2018, and the opportunity to continue working with you and other groups to strengthen our actions in reducing sodium and chloride impacts from the application of road salt. Before the province considers a new licensing and accreditation program for road salt application, we would like to see whether the implementation of the other policies reduces the concentrations of sodium and chloride in the aquifers in Orangeville and Georgetown.

I would also like to acknowledge the committee's supplementary recommendations on the future of the program, submitted December 19, 2014. These recommendations, along with annual reports on the implementation of source protection plans, will help us plan the path forward for drinking water source protection. With your commitment, significant progress has been made in source protection and the Province looks forward to continuing to work with you and all stakeholders to protect drinking water.

Once again, thank you for your work to protect Ontario's source waters, and please accept my best wishes.

Sincerely,

Glen Murray
Minister

c: Sue Lo, Assistant Deputy Minister, DWMD, Ministry of the Environment and Climate Change
Ling Mark, Director, SPPB, Ministry of the Environment and Climate Change
Beverley Thorpe, Project Manager, CTC Source Protection Region

CTC Source Protection Plan Policy Implementation - January 2016 - December 2017	Policy ID	Description	Implementing Body #1	Implementing Body #2	Existing -Timeline	Future - Timeline	Other Timeline
GENERAL POLICIES							
10 Policies	GEN-1	s.59 Restricted Land Uses	Municipality	RMO	5 yrs + 3 yrs	Immediately	
	GEN-2	Specify Action - Prioritization	Municipality		N/A	N/A	Once every 5 yrs
	GEN-3	Specify Action - Prioritization	Provincial Ministry		N/A	N/A	3 yrs (new/amended instrument); 5 years after
	GEN-4	Incentive	MOECC		2 yrs	N/A	
	GEN-5	Incentive	Municipality		2 yrs	N/A	
	GEN-6	Specify Action - Funding - Local Research	MOECC		2 yrs	N/A	
	GEN-7	Specify Action - Share Data	Municipality		2 yrs	N/A	
	GEN-8	Specify Action - E & O - M/L Threats	Municipality		2 yrs	N/A	
	GEN-9	Specify Action - Incorporate SPP	Niagara Escarpment Commission		2 yrs	N/A	
WASTE POLICIES							
12 Policies	WST-1	Part IV - Storage of Hazardous or Liquid Industrial Wastes (RMPs)	RMO		1 yr + 5 yrs	Immediately	
	WST-2	E & O - Storage of wastes - (p), (q), (r), (s), (t), or (u)	Municipality	MOECC	2 yrs		
	WST-3	PI - Application of Untreated Septage to Land	MOECC		Upon Expiry; 5 yrs	Immediately	
	WST-4	PI - Handling and Storage of various wastes	MOECC		3 yrs	Immediately	
	WST-5	LUP - Handling and Storage of various wastes	Planning Approval Authority		N/A	Immediately	
	WST-6	Part IV - PCB Waste Storage (s. 57, s. 58)	RMO		1 yr + 5 yrs	Immediately	
	WST-7	PI - PCB Waste Storage	MOECC		3 yrs	Immediately	
SEWAGE POLICIES							
24 Policies	SWG-1	Specify Action - Septic Systems - Inspection Program	Municipality		Jan. 2017	N/A	
	SWG-2	E & O - Septic Systems	MOECC	Municipality	2 yrs		
	SWG-3	LUP - Vacant Lots of Record - Septic Systems	Planning Approval Authority		N/A	Immediately	
	SWG-4	LUP - New Lots - Septic Systems	Planning Approval Authority		N/A	Immediately	
	SWG-5	Specify Action - Amend Building Code Act	MMAH		N/A	Immediately	
	SWG-6	Specify Action - Municipal Sanitary Sewer By-Law	Municipality		2 yrs		
	SWG-7	Specify Action - E & O - OWRA Septic Systems	Municipality	SPA	2 yrs	N/A	
	SWG-8	PI - Septic Systems - OWRA	MOECC		3 yrs	Immediately	
	SWG-9	LUP - Septic Systems - OWRA	Planning Approval Authority		N/A	Immediately	
	SWG-10	Specify Action - Septic Systems - OWRA - Guidelines	MOECC		2 yrs		
	SWG-11	PI - Stormwater Management Facility	MOECC		3 yrs	Immediately	
	SWG-12	LUP - Stormwater Management Facility	Planning Approval Authority		N/A	Immediately	
	SWG-13	PI - Sanitary Sewers and Related Pipes	MOECC		3 yrs	Immediately	
	SWG-14	LUP - Sanitary Sewers and Related Pipes	Planning Approval Authority		N/A	Immediately	
	SWG-15	PI - Storage of Sewage	MOECC		3 yrs	Immediately	
	SWG-16	LUP - Storage of Sewage	Planning Approval Authority		N/A	Immediately	
	SWG-17	PI - CSO, STP By-Pass, Industrial Effluent Discharge, STP Effluent Discharge	MOECC		3 yrs	Immediately	
	SWG-18	LUP - CSO, STP By-Pass, Industrial Effluent Discharge, STP Effluent Discharge	Planning Approval Authority		N/A	Immediately	
	SWG-19	Research	Town of Orangeville	CVSPA	2 yrs	N/A	
APPLICATION, MANAGEMENT, STORAGE & HANDLING OF AGRICULTURAL STORAGE MATERIAL							
12 Policies	ASM-1	PI - Application of ASM to Land	OMAFRA		Upon Expiry or within 5 yrs, 3 yrs	Immediately	
	ASM-2	Part IV - Prohibition - WHPA-A, WHPA-B (VS=10) in an ICA, WHPA- E (ICA)	RMO		180 Days	Immediately	
		Part IV - RMP	RMO		1 yr/5 yrs	Immediately	
	ASM-3	PI - Storage of ASM	OMAFRA		3 yrs	Immediately	
	ASM-4	Part IV - RMP, Prohibition	RMO		1 yr/5 yrs	Immediately	
	ASM-5	PI - Mgmt of ASM (Aquaculture)	MOECC		Upon Expiry or within 5 yrs	Immediately	
APPLICATION, STORAGE & HANDLING OF NON-AGRICULTURAL STORAGE MATERIAL							
12 Policies	NASM-1	Application - Part IV - Prohibition - WHPA-A	RMO		180 days	Immediately	
		Application - Part IV - RMP - WHPA - B, WHPA-E, ICA (nitrates)	RMO		1 yr/ 5 yrs	Immediately	
	NASM-2	S & H - Part IV - Prohibition - WHPA-A	RMO		N/A	Immediately	
		S & H - Part IV - RMP - WHPA - B, WHPA-E, ICA (nitrates)	RMO		1 yr/ 5 yrs	Immediately	
	NASM-3	Application - PI - Prohibited in future, existing until expiry	OMAFRA	MOECC	Upon Expiry, Within 5 years	Immediately	
	NASM-4	S & H - PI - Prohibited in future, existing until expiry	OMAFRA	MOECC	Upon Expiry, Within 5 years	Immediately	
	NASM-5	Application, S & H - E & O	OMAFRA	MOECC	2 yrs		
LIVESTOCK GRAZING, PASTURING, AND OUTDOOR CONFINEMENT							
10 Policies	LIV-1	Part IV - Prohibition - WHPA-A	RMO		180 days	Immediately	
		Part IV - Management - RMP - WHPA-A (not in ICA for N or P, WHPA-A, B,E, rest of ICA	RMO		1 yr / 5 yrs	Immediately	
	LIV-2	PI - Prohibit - WHPA A, WHPA - B (ICA), WHPA-E (ICA)	OMAFRA		N/A	Immediately	
		PI - Manage - WHPA-A, WHPA-B, WHPA-E, rest of ICA	OMAFRA		3 years	Immediately	
	LIV-3	Part IV - Prohibition - WHPA-A, WHPA-B (ICA), WHPA-E (ICA)	RMO		N/A	Immediately	
		Part IV - Management - WHPA - A, WHPA-B, WHPA-E	RMO		1 yr / 5 yrs	Immediately	
APPLICATION, STORAGE & HANDLING OF COMMERCIAL FERTILIZER							
12 Policies	FER-1	PI - Prohibit - WHPA A, WHPA-E (ICA)	OMAFRA		Upon Expiry, Within 5 years	Immediately	
		PI - Manage - WHPA-A, WHPA-B, WHPA-E, rest of ICA	OMAFRA		3 years	Immediately	
	FER-2	Part IV - Prohibition - WHPA-A, WHPA-E (ICA)	RMO		180 Days	Immediately	
		Part IV - Management - WHPA-B, WHPA-E, rest of ICA	RMO		1 yr/5 yrs	Immediately	
	FER-3	Part IV - Prohibition - WHPA-A	RMO		N/A	Immediately	
		Part IV - Management - WHPA-A, WHPA-B, WHPA-E, rest of ICA	RMO		1 yr/5 yrs	Immediately	
	FER-4	Education and Outreach	Municipality	MOECC	2 yrs		

All Policies			
	Implemented	143	87%
	In Progress	21	13%
	No Progress	1	1%

TOTAL 165 Policies

Moderate/Low Threat Policies			
	Implemented	1	17%
	In Progress	5	83%
	No Progress	0	0%

TOTAL 6 Policies

Significant Threat Policies			
	Implemented	134	90%
	In Progress	14	9%
	No Progress	1	1%

TOTAL 149 Policies

General Policies			
	Implemented	8	80%
	In Progress	2	20%
	No Progress	0	0%

TOTAL 10 Policies

APPLICATION, STORAGE & HANDLING OF PESTICIDE							
7 Policies	PES-1	Part IV - Management - WHPA-A, WHPA-B, WHPA-E	RMO		1 yr/5 yrs	Immediately	
	PES-2	Part IV - Prohibition - WHPA - A	RMO		N/A	Immediately	
		Part IV - Management - WHPA - A, WHPA-B, WHPA-E	RMO		1 yr/5 yrs	Immediately	
	PES-3	Education and Outreach	MOECC		2 yrs		
	PES-4	Incentive	Municipality		2 yrs		
APPLICATION, STORAGE & HANDLING OF ROAD SALT							
17 Policies	SAL-1	Application - Part IV - Management - WHPA-A, B, E, ICA - Parking Lots, Unassumed Roads	RMO		1 yr/5 yrs	Immediately	
	SAL-2	Application - Part IV - Management - WHPA-A, B, E, ICA - Public Roads	RMO		1 yr/5 yrs	Immediately	
	SAL-3	Application - LUP	Planning Approval Authority		N/A	Immediately	
	SAL-4	Application - Specify Action - Promote BMPs	MOECC		2 yrs		
	SAL-5	Application - Specify Action - Licensing and Accreditation Program	MOECC		2 yrs		
	SAL-6	Application - Specify Action - Update SMP, alternative products, etc.	MTO		2 yrs		
	SAL-7	H & S - Part IV - Prohibition - WHPA - A, B, E, ICA	RMO		N/A	Immediately	
		H & S - Part IV - Management - WHPA - A, B, E, ICA	RMO		1 yr/5 yrs	Immediately	
	SAL-8	Application / H & S - Education & Outreach	Municipality	MOECC	2 yrs		
	SAL-9	Water Quality Monitoring	SPA	Municipality	2 yrs		
	SAL-10	Application - LUP - Moderate/Low Threats	Planning Approval Authority		N/A	Immediately	
	SAL-11	Application - Specify Action - Moderate/Low Threats - Promote Best Management Practices	MOECC		2 yrs		
	SAL-12	Application - Specify Action - Moderate/Low Threats - Salt Management Plan	Municipality		2 yrs		
	SAL-13	Application / H & S - Moderate/Low Threats - Monitoring under SDWA	SPA	Municipality	2 yrs		
STORAGE OF SNOW							
3 Policies	SNO-1	Part IV - Prohibit - WHPA-A, B, E, rest of ICA	RMO		180 Days	Immediately	
		Part IV - Manage - WHPA-B, E, rest of ICA	RMO		1 yr/5 yrs	N/A	
HANDLING AND STORAGE OF FUEL							
9 Policies	FUEL-1	PI - Drinking Water Licences at Municipal Wellheads - WHPA - A, B, E	MOECC		3 yrs	Immediately	
	FUEL-2	PI - H & S - Aggregate Extraction Site - WHPA - A, B, E	MNRF		N/A	Immediately	
		PI - H & S - Aggregate Extraction Site - WHPA - A, B, E	MNRF		3 yrs	N/A	
	FUEL - 3	Part IV - Prohibition - non-residential properties, small businesses, etc. - WHPA - A, B, E	RMO		N/A	Immediately	
		Part IV - Management - non-residential properties, small businesses, etc. - WHPA - A, B, E	RMO		1 yr/5 yrs	N/A	
		Acquire Inspection Reports, Share with RMO, Inform TSSA of Leaks	SPA		180 days	N/A	
	FUEL - 4	Education and Outreach - WHPA-A, B, E	Municipality	MOECC, TSSA	2 yrs		
		Education and Outreach - Spill Info, Fuel Suppliers, Colleges	MOECC	TSSA, MGCS	2 yrs		
HANDLING AND STORAGE OF DENSE NON-AQUEOUS PHASE LIQUIDS							
4 Policies	DNAP-1	Part IV - Prohibition - WHPA - A, B, C, E	RMO		N/A	Immediately	
		Part IV - Management - WHPA - A, B, C, E	RMO		1 yr/5 yrs	N/A	
	DNAP-2	Education and Outreach - Personal Use, ICI - BMPs, Pollution Prevention	Municipality	MOECC	2 yrs		
	DNAP-3	Specify Action - Moderate/Low Threats - WHPA-D, E; HVA, SGRAs	Municipality		2 yrs		
HANDLING AND STORAGE OF ORGANIC SOLVENTS							
4 Policies	OS-1	Part IV - Prohibition - WHPA - A, B, E	RMO		N/A	Immediately	
		Part IV - Management - WHPA - A, B, E	RMO		1 yr/5 yrs	N/A	
	OS-2	Education and Outreach - Personal Use, ICI - BMPs, Pollution Prevention	Municipality	MOECC	2 yrs		
	OS-3	Specify Action - Moderate/Low Threats - WHPA-B, C, D, E; HVA, SGRAs	Municipality		2 yrs		
MANAGEMENT OF RUNOFF THAT CONTAINS CHEMICALS USED IN THE DE-ICING OF AIRCRAFT							
3 Policies	DI-1	Part IV - Management - WHPA-A, B, E	RMO		1 yr/5 yrs	Immediately	
	DI-2	Specify Action - Location of Airports	Municipality		N/A	Immediately	
ALL LAKE ONTARIO THREATS							
4 Policies	LO-G-1	Specify Action - Spill Prevention, Contingency Plans, Emergency Plans	MOECC		2 yrs		
	LO-G-2	Specify Action - Lake Ontario Collaborative Group	MOECC		2 yrs		
	LO-G-3	Specify Action - Lake Ontario Collaborative Group	Municipality (Peel, Durham, TO)		2 yrs		
	LO-G-4	Education and Outreach - Collaboration with other stakeholders	MOECC		2 yrs		
LAKE ONTARIO - SPILL OF TRITIUM FROM NUCLEAR GENERATING STATION							
1 Policy	LO-NGS-1	Specify Action - Risk Management Plan / Risk Reduction Plan	MOECC		2 yrs		
LAKE ONTARIO - ESTABLISHMENT, OPERATION, OR MAINTENANCE OF A SYSTEM THAT COLLECTS, STORES, TRANSMITS, TREATS, OR DISPOSES OF SEWAGE							
2 Policies	LO-SEW-1	PI - Spill Prevention and Contingency Plans	MOECC		3 yrs	Immediately	
LAKE ONTARIO - SPILL FROM A SANITARY TRUNK SEWER BREAK							
2 Policies	LO-SEW-2	PI - Spill Prevention and Contingency Plans	MOECC		3 yrs	Immediately	
LAKE ONTARIO - ALL THREATS THAT ARE LINKED TO STORM SEWERS							
1 Policy	LO-SEW-3	Specify Action - Enact necessary regulation / instrument - Spill Prevention Plans	MOECC		2 yrs		
LAKE ONTARIO - PIPELINES TRANSPORTING PETROLEUM PRODUCT (CONTAINING BENZENE) CROSSING TRIBUTARIES OF LAKE ONTARIO							
1 Policy	LO-PIPE-1	Specify Action - Spill Prevention, Contingency Plans, Emergency Plans	MOECC		2 yrs		
LAKE ONTARIO - HANDLING AND STORAGE OF FUEL (PETROLEUM TANK FARM SPILL)							
2 Policies	LO-FUEL-1	Specify Action - Spill Prevention and Contingency Plans	MOECC		2 yrs		
	LO-FUEL-2	Education and Outreach - Investigate spill and contingency plans, BMPs	MOECC		2 yrs		
AN ACTIVITY THAT TAKES WATER FROM AN AQUIFER WITHOUT RETURNING THE WATER TAKEN TO THE SAME AQUIFER							
11 Policies	DEM-1	PI - Permits to Take Water - WHPA-Q1	MOECC		3 yrs	Immediately	
	DEM-2	LUP - Linked to Permits to Take Water - WHPA-Q1	Planning Approval Authority		N/A	Immediately	
	DEM-3	Specify Action - Growth Management	MMA	MOECC	2 yrs		
	DEM-4	Specify Action - Municipal Water Conservation Plans	Municipality		2 yrs		
	DEM-5	Education and Outreach - Water Conservation Efforts	Municipality	MOECC	2 yrs		

11 Policies	DEM-6	Specify Action - Joint Municipal Water Management Model	Municipaltity		1 yr/3 yrs		
	DEM-7	Specify Action - Province to Support Join Municipal Water Management Model	MOECC	MMAH	1 yr/3 yrs		
	DEM-8	Specify Action - Fund Maintenance of the Tier 3 Water Budget Model	MOECC		2 yrs		
	DEM-9	Specify Action - Identifying Additional Water Supplies	Municipality		3 yrs		
	DEM-10	Specify Action - Drought Management Plan	York Region		Immediately		
AN ACTIVITY THAT REDUCES RECHARGE TO AN AQUIFER							
3 Policies	REC-1	LUP - Best Management Practices, Water Balance Assessments	Planning Approval Authority		N/A	Immediately	
	REC-2	Part IV - Management - WHPA-Q2 - Building Permit	RMO		N/A	Immediately	
	REC-3	Specify Action - Education & Outreach, By-Law, LID	Municipality		2 yrs		

Attachment D: MECP amended Section 36 Order (July 22, 2019)

Ministry of the Environment, Conservation and Parks

Office of the Minister

777 Bay Street, 5th Floor
Toronto ON M7A 2J3
Tel.: 416-314-6790

Ministère de l'Environnement, de la Protection de la nature et des Parcs

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Ontario

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ENV283MC-2012-3028

Bob Chapman, Chair
Central Lake Ontario Source Protection Authority
100 Whiting Ave
Oshawa ON L1H 3T3

Jennifer Innis, Chair
Toronto and Region Source Protection Authority
101 Exchange Ave
Vaughan ON L4K 5R6

Karen Ras, Chair
Credit Valley Source Protection Authority
1255 Old Derry Road
Mississauga ON L5N 6R4

Douglas Wright, Chair
CTC Source Protection Committee
125 Stratford Crescent
Toronto ON M4N 1C9

Dear Mr. Chapman, Ms. Ras, Ms. Innis, and Mr. Wright:

I am following up on your proposed workplan for the review and update of the assessment reports and source protection plan for CTC source protection region. The workplan, dated December 21, 2018, was submitted in compliance with the order dated July 28, 2015, issued under section 36 of the *Clean Water Act*.

I am pleased to note that your workplan confirms that implementation of the source protection plan is going well, and I appreciate the level of effort you put into your analysis of your assessment reports and plan.

Pursuant to subsection 36 (1) of the *Clean Water Act*, I am amending the order dated July 28, 2015, to establish requirements governing the content and timeframes of the review and the process to be followed for any updates to your assessment reports and plan. The source protection committee shall update the assessment reports and source protection plan to address the workplan items identified in the attachment to this order and ensure those changes comply with the recent amendments to the General Regulation (O. Reg. 287/07) and Director's Technical Rules.

I would also like to thank you for your proposed local interest updates which I noticed through my review. While not specifically required, I would encourage you to work with both your community and your municipalities to find cooperative ways to move forward with items that are consistent with the Act, its regulations and Technical Rules that are in effect at the time of the updates. Staff in the Ministry's drinking water source protection

program are also available to provide you advice on this. You may contact Debbie Scanlon, Manager Approvals Section (416-212-8839) if you have any questions.

When undertaking any updates, the source protection committee and lead source protection authority must follow the amendment process and consultation requirements set out in the attachment to this letter. All updates carried out under section 36 of the *Clean Water Act* are to be submitted to the Ministry within six (6) months after the completion of the required updates and consultation.

Thank you for the continued efforts of the source protection authorities, committee and local communities to ensure sources of drinking water are protected. Significant progress has been made in source protection and the province looks forward to continuing to work with you and all stakeholders to protect sources of drinking water.

Sincerely,

Jeff Yurek
Minister

Enclosure

C: Jennifer Stephens, Project Manager, CTC Source Protection Committee
Alyssa Roth, Coordinator, Toronto and Region Source Protection Authority
Susan Ecclestone, Director, Source Protection Programs Branch, MECP
Debbie Scanlon, Approvals Manager, Source Protection Programs Branch, MECP
Angelune Des Lauriers, Program Analyst, MECP
Beth Forrest, Liaison Officer, MECP

Attachment: CTC Updates under Section 36 of the *Clean Water Act*

Mandatory Updates to the Assessment Reports and Source Protection Plan

The **CTC** source protection committee shall ensure that the review includes updates to the assessment reports and source protection plan to:

- Comply with the amendments made to the Director's Technical Rules, published on the Environmental Registry in March 2017 under posting number 012-8507 and the 2018 amendments to the Rules and General Regulation (O. Reg. 287/07). For your source protection area this includes:
    - updating liquid hydrocarbon pipeline references in the current assessment reports and plans from a local threat to a prescribed drinking water threat of provincial interest and ensuring policies apply to all relevant protection zones;
    - assessing locations where the above-grade handling and storage of fuel, pose a significant, moderate and low risk, and ensuring policies apply to all relevant protection zones;
    - updating the significant groundwater recharge areas and any associated policies in the plan to align with the amended Rules; and
    - updating the assessment reports and source protection plan to revise references to circumstances, chemicals of concern or thresholds that may have changed as a result of changes to the Technical Rules.
- Include technical work completed by municipalities within the timeframe of the review, such as Durham Region's updated conceptual and groundwater model results in the relevant assessment report and make corresponding revisions to wellhead protection area and intake protection zone delineations.
- Revise policies to address implementation challenges where the committee, authority and affected municipalities determine it is necessary for the handling of dense non-aqueous phase liquids and organic solvents, as well as policies for agricultural activities that impose prohibitions outside of a WHPA-A and those that address nutrients.

Amendment Process for Updates including Consultation:

The rules that source protection committees and source protection authorities were required to follow under the *Clean Water Act* in preparing, consulting on and submitting assessment reports and source protection plan to the Ministry will generally apply when making updates as part of the review. However, as with locally initiated amendments, any proposed updates to an assessment report and plan are to be consulted on concurrently and submitted together as one package to the Ministry by the source protection authority.

Only those provisions of the *Clean Water Act* and the General Regulation (O.Reg. 287/07) referred to below apply to the update of your assessment reports and source protection plan. For example, as no terms of reference is being required for the review

and update of the assessment reports and plan, subsection 36 (3) of the *Clean Water Act* does not apply.

Accordingly, for the updates to the assessment reports and source protection plan, the following provisions apply:

- Assessment report content outlined in section 15 of the *Clean Water Act* and sections 11 to 14 of the General Regulation.
- Source protection plan content outlined in subsections 22 (2) to (15) of the *Clean Water Act* and sections 20 to 34 of the General Regulation.

Updates to the assessment reports and source protection plan shall be made in consultation with affected municipalities, the Ministry, and any other bodies responsible for implementing a policy that may be revised by as part of the updates. Consultation shall include the following minimum requirements:

- Early consultation on any draft updates to the assessment reports and plan with the Source Protection Programs Branch prior to carrying out pre-consultation with other bodies.
- Pre-consultation with all implementing bodies as well as persons and businesses engaged in significant drinking water threats in the geographic areas affected by the updates in accordance with sections 35 to 39 of the General Regulation.
- Consultation for a minimum of 35 days, as outlined below.

The Explanatory Document that accompanies the plan (section 40, General Regulation) shall also be updated to reflect the proposed changes to the plan and made available for consultation.

While consulting on the proposed updates to the assessment reports and source protection plan in accordance with the requirements set out above, comments received shall be documented, considered and addressed prior to advancing to the next consultation stage or finalizing the proposed updates to the assessment reports and plan.

Notification and publication of the proposed updates shall follow the provisions included in the General Regulation for assessment reports and plans as described below. This includes making the proposed updates available on the Internet and in locations that are accessible to give the public and other interested parties an opportunity to inspect and comment on the updates. Specifically, consultation on the proposed updates to the assessment reports and plan shall occur concurrently and sections 23 to 25 of the *Clean Water Act* and section 41 of the General Regulation apply with the modifications noted below:

- References to a draft or proposed source protection plan shall be read as references to the proposed updates to the assessment reports and source protection plan that result from the review carried out under section 36 of the Clean Water Act.
- Notices shall be provided to the clerk of each municipality and all other persons and bodies listed in section 41 that are affected by the proposed updates.
- A public meeting referred to in clause (c) of subsection 41 (3) and in subsection 41 (7) is optional as determined by the source protection committee in consideration of the nature and scope of the proposed updates.

TO: Chair and Members of the Source Protection Committee Meeting #1/23, March 23, 2023

FROM: Behnam Doulatyari, Senior Manager, Watershed Plans and Source Water Protection

RE: CTC Source Protection Plan Annual Progress Report 2022

KEY ISSUES

To review and seek the Source Protection Committee's opinion on progress towards achieving the CTC Source Protection Plan's objectives.

RECOMENDATIONS

THAT the CTC Source Protection Committee receive the staff report CTC Source Protection Plan Annual Progress Report 2022 for information.

AND THAT in the opinion of the CTC Source Protection Committee, implementation of the Source Protection Plan has progressed well but is short of target in achieving the plan's objectives.

AND THAT CTC staff be directed to present the CTC Source Protection Committee's comments along with the Annual Progress Report 2022 to the Credit Valley, Toronto and Region, and Central Lake Ontario Source Protection Authorities for submission to the Ministry of the Environment, Conservation and Parks.

Background

The CTC Source Protection Plan (the Plan) came into effect December 31, 2015, providing a framework of policies to protect the quality and quantity of the source waters for municipal drinking water systems located in the CTC Source Protection Region. The objectives of the Plan are:

1. to protect existing and future drinking water sources in the CTC Source Protection Region
2. to ensure that existing activities cease to be, or do not become, significant drinking water threats, and that new activities never become significant drinking water threats.

Source Protection Authorities (SPAs) are required to submit annual reports on implementation progress to the Ministry of the Environment, Conservation and Parks

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(MECP) under section 46 of the *Clean Water Act, 2006* (CWA). The 2022 report on implementation progress will be the sixth such report since the Plan came into effect.

Annual progress reports are prepared using data provided by municipalities, provincial ministries, and other implementing bodies as required by the monitoring policies in the Plan and in accordance with section 81 of the CWA and section 65 of Ontario Regulation 287/07. Municipal and provincial reports are required to be submitted to SPAs annually by February 1st and reflect implementation efforts from the previous calendar year, January 1 to December 31, 2022.

Staff aggregate and evaluate implementation data to populate two reporting templates provided by the MECP: 1) a summary-level annual progress report and 2) a more detailed supplemental form. Annual reports must be shared with the Source Protection Committee (the Committee) at least 30 days before being submitted to the Director, Conservation and Source Protection Branch, of the MECP.

To streamline collating and assessing reported data from implementing bodies, in 2022 the reporting process was fully migrated from customized document templates to an on-line Electronic Annual Reporting (EAR) platform across CTC.

The Committee is required to review the annual progress report and provide written comments to the SPAs about the extent to which, in the opinion of the Committee, the objectives set out in the plan are being achieved by the measures described in the report.

The MECP has clarified that notwithstanding the reference to "in this reporting period", the intent of this question is to reflect progress made in plan implementation since it came into effect (2015), and not just in the previous year. Three response options are provided by the MECP:

- Progressing well/on-target – The majority of the source protection plan policies have been implemented and/or are progressing.
- Satisfactory – Some of the source protection plan policies have been implemented and/or are progressing.
- Limited progress – A few source protection plan policies have been implemented and/or are progressing.

The plain-language draft annual progress report (**Attachment 1**) includes a summary of Plan implementation, highlighting municipal progress in aligning Official Plans with the source protection plan, septic system inspections, and risk management plans, provincial implementation progress, and water quality monitoring results.

The supplemental form includes two questions that require Committee input.

1. In the opinion of the Source Protection Committee, to what extent have the objectives of the source protection plan been achieved in this reporting period? (Question ID 350)

2. Please provide comments to explain how the Source Protection Committee arrived at its opinion. Include a summary of any discussions that might have been had amongst the Source Protection Committee members, especially where no consensus was reached. (Question ID 351)

Staff recommend the response included in Section II of Attachment 1 and described more fulsomely below.

Highlights

Source Protection Plan Policies

As of the end of 2022, 88% of legally binding policies that address significant drinking water threats have been implemented. This number was reported as 96% in the 2021 annual report. The reason for the change is the previously mentioned transition to the Electronic Annual Reporting platform, which has allowed for more refinement in the breakdown of policy implementation reporting for existing versus future significant drinking water threats.

Similarly, as of the end of 2022, 78% of non-legally binding policies that address significant drinking water threats have been implemented, and the rest are in progress, or have been considered and do not require further action. 74% of policies addressing Moderate and Low threats have been implemented and the remainder are in progress.

Furthermore, approximately 97% of existing significant drinking water threats have been addressed through policy implementation or removed through threats verification.

Septic Inspections

The Ontario Building Code requires that small sewage systems be inspected every five years through a mandatory program. Within the CTC Region, 295 septic systems are currently identified as requiring inspections every 5 years to satisfy the requirements of the Ontario Building Code.

In 2022, 37 inspections were completed, representing 13% of the total inspections required over the 5-year cycle. **Table 1** below shows the number of completed and outstanding inspections across the CTC SPR.

In the town of Erin, the first inspection cycle was completed in 2015 and 2016. The septic inspection program was delayed in 2020 and 2021 due to COVID-19 pandemic. In 2022, a contract was established with a consultant to conduct the septic inspection program starting in 2023.

Similarly, in York Region, lower tier municipalities have initiated inspections programs but experienced delays due to COVID-19 restrictions. In 2022, 22 inspections were completed in Whitchurch-Stouffville and 3 were completed in Vaughan; with the

remainder of required inspections across York region expected to be completed in 2023.

Table 1. Septic system maintenance inspections across CTC (2018-2022)

Municipality	Completed Inspections					Outstanding Inspections (5-year cycle)
	2018	2019	2020	2021	2022	
Dufferin (Amaranth, East Garafraxa, Mono)	0	12	0	0	0	0
Orangeville	0	0	0	2	0	0
Erin	0	0	0	0	0	144
Caledon	0	0	0	8	7	0
Halton Hills	2	1	1	50	5	0
York	0	0	0	0	25	31
Uxbridge	0	0	0	4	0	0

Risk Management Plans

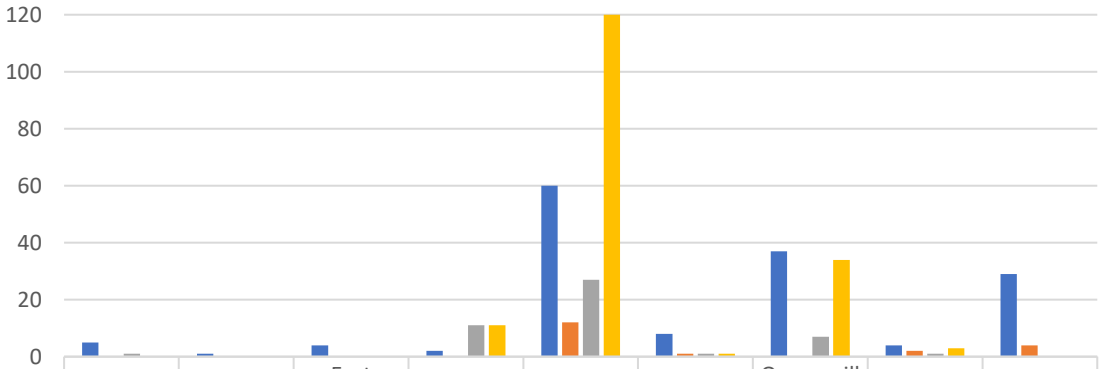
An estimated 301 significant threats remain to be addressed, down from 329 at the end of 2021. Of these 301 threats, 260 are considered "existing" and are identified as requiring Risk Management Plans to manage them. Outstanding threats are predominantly associated with application and storage of road salt, snow storage, application and storage of agricultural source materials and pesticides, and handling and storage of dense non-aqueous phase liquids. The distribution of existing SDWTs still requiring management, as of December 2022, was as follows:

- Town of Orangeville – 78 threats
- Town of Erin – 29 threats
- Region of Halton – 147 threats
- Region of Peel – 4 threats
- Town of Mono - 2 threats

The remaining municipalities within the CTC region have no outstanding significant drinking water threats.

Most of the outstanding significant threats will be addressed through risk management plans (RMPs) negotiated with property owners and businesses by municipal Risk Management Officials (RMOs). There are 150 RMPs currently in place across CTC. 19

RMPs were signed in 2022, and an estimated 165 RMPs remain to be negotiated for existing significant threats. Figure 1 illustrates the number of RMPs currently in place, finalized or in-progress, and still required at the end of 2022.



	Amaranth	Durham	East Garafraxa	Erin	Halton	Mono	Orangeville	Peel	York
In place	5	1	4	2	60	8	37	4	29
New in 2022	0	0	0	0	12	1	0	2	4
In-progress	1	0	0	11	27	1	7	1	0
Still required	0	0	0	11	120	1	34	3	0

Figure 1. Number of risk management plans in place, newly created in 2022, in-progress in 2022, and still required to address significant drinking water threats as of December 31, 2022. As no significant threats requiring RMPs were originally identified for the City of Toronto, the city does not appear in the figure.

Following a request by the Committee in 2020, the MECP approved a 3-year extension to the December 31, 2020, deadline to complete RMPs for existing significant threats identified at the time of the initial Source Protection Plan approval in 2015. Of the 169 RMPs still to be completed, 163 require completion by Dec. 31, 2023. There has been 6 new RMPs signed in 2023 so far, and a new extension request will be submitted on behalf of Halton Region, and the Towns of Orangeville and Erin for completion of remaining RMPs to address existing threats. For details on implementation challenges identified by RMOs and proposed extension, please refer to item 10.1.c of the agenda package.

100% compliance was reported from 118 inspections carried out by Risk Management Inspectors for prohibited or regulated activities.

Source Water Quality

Thirteen drinking water issues have been identified at wells in three drinking water systems in our Source Protection Region.

In the Orangeville Drinking Water System (DWS), five wells have been identified with chloride issues and three wells with sodium issues. While chloride concentrations in three of the wells continue to rise (9A, 10, 11), they appear to have stabilized in two

wells (6, 9B). Sodium concentrations in the affected wells continue to increase (6, 9A, 9B).

In the Acton DWS, Davidson 1 and 2 wells have been identified with nitrate issues though concentrations appear to have stabilized and may be potentially decreasing.

In the Georgetown DWS, Cedarvale 1A, 4 and 4A wells have been identified with chloride issues and concentrations show an increasing trend.

As part of the comprehensive review of the CTC Source Protection Plan under section 36 of the *Clean Water Act, 2006*, the already identified water quality issues will be reassessed and need for new policies to address the issues will be considered. Staff will also review water quality data from other DWSs in CTC to identify any new potential issues, and additional monitoring requirements.

Discussion

Results presented above show good overall progress in implementation of the plan, with RMP and septic inspection metrics below targets in a few municipalities. Recognizing, among other things, the extent of COVID-19 pandemic challenges associated with in person inspections and negotiation and limited RMO resources compared to program demands, staff recommend an overall assessment of "**progressing well, but short of target**" for 2022. This is consistent with the modified language used in the 2019 through 2021 annual reports.

Next Steps

The annual progress report and the Committee's comments will be presented to the Credit Valley, Central Lake Ontario, and Toronto and Region Source Protection Authorities (SPAs) for endorsement at meetings in April 2023. Following SPA approval, staff will submit the annual progress report and supplementary form to MECP by May 1, 2023. Following submission to the province, annual progress reports are posted to the CTC website (ctcswp.ca).

Report prepared by:

Behnam Doulatyari, Senior Manager, Watershed Plans and Source Water Protection, Credit Valley Conservation

T: 905-670-1615, ext. 329

Email: behnam.doulatyari@cvc.ca

Date: March 20, 2023

Attachments (1):

Attachment 1: CTC Source Protection Annual Progress Report 2022

CTC Source Protection Region 2022 Annual Progress Report

I. Introduction

Source protection plans are created under the *Clean Water Act, 2006*. This annual report summarizes the progress made by December 31, 2022 in implementing the source protection plan for municipal drinking water systems in the Credit Valley, Toronto and Region, and Central Lake Ontario (CTC) Source Protection Region.

Protecting the sources of our drinking water is the first step in a multi-barrier approach to safeguard the quality and quantity of our water supplies. The source protection plan is the culmination of extensive science-based assessment, research, consultation, and collaboration with local stakeholders and the provincial government. When policies in the plan are implemented it ensures that activities carried out near municipal wells and lake-based intakes will not pose significant risk to drinking water supplies.

We acknowledge and recognize the efforts made by municipalities, stakeholders and the CTC Source Protection Committee in the development and implementation of the Source Protection Plan.

II. A message from your local Source Protection Committee

This is the sixth Annual Report on implementation of the CTC Source Protection Plan (Plan) since it took effect on December 31, 2015. All stakeholders responsible for Plan policy implementation reported on their progress in 2022.

Most of the legally binding policies (88%) that address significant drinking water threats are implemented in the CTC Region. All municipalities have established processes to ensure that land use planning decisions conform to the Plan.

At the time the Plan came into effect in 2015, over 10,000 significant drinking water threats were identified in the CTC Region. Since then, field verification has reduced that number to 6,159 significant threats. Only 301 significant drinking water threats remain to be addressed, all of these within the Credit River Watershed. Furthermore, approximately 97% of existing significant drinking water threats have been addressed through policy implementation or removed through threats verification.

Fewer than half of the required risk management plans (RMPs) have been established to address significant threats and several municipalities will not achieve the 2023 deadline for completion of RMPs. The COVID-19 pandemic has constrained the ability of municipalities to engage property and business owners, conduct site visits and septic system inspections.

Further, water quality analysis suggests increasing sodium and chloride concentrations in the raw water from most of the municipal wells with identified issues in the drinking water systems for Orangeville and Georgetown.

As a result, the Committee concludes that implementation of the Plan is _____.

The Committee will continue to work with source protection authority and municipal staff to review source protection plan policies requiring RMPs and identify ways to advancer RMP completion.

III. Our Watershed

To learn more, please read our assessment report(s) and source protection plan(s)

The CTC Source Protection Region contains over 25 large and small watersheds and spans over 3,800 km2 of land, from the Oak Ridges Moraine in the north to Lake Ontario in the south. The region contains portions of the Niagara Escarpment, Oak Ridges Moraine, Greenbelt, Lake Ontario, and the most densely populated area of Canada. The CTC Source Protection Region includes 25 local municipalities and eight single tier, regional or county municipalities, 67 municipal supply wells, and 16 municipal surface water intakes in Lake Ontario. The region is complex and diverse in terms of geology, physiography, population, and development pressures. There are many, often conflicting, water uses including, drinking water supply, recreation, irrigation, agriculture, commercial and industrial uses, and ecosystem needs.

The Credit Valley Source Protection Area is formed by one main watercourse, the Credit River, and a number of smaller Lake Ontario tributaries. Nearly 1500 km of streams and creeks empty into the Credit River including Black Creek, Silver Creek, West Credit River, Shaw's Creek, East Credit River, Fletchers Creek, Caledon Creek, and several others. There are thirteen municipal water systems operating in the source protection area, two are surface water based – accessing Lake Ontario as the source; the remainder are groundwater-based. There are no municipal drinking water sources taking from the Credit River. About 1 million people make the Credit watershed their home.

The Toronto and Region Source Protection Area comprises numerous watersheds, plus their collective Lake Ontario waterfront shorelines, to incorporate portions of six upper-tier and 15 lower-tier municipalities. The nine major watersheds are Carruthers, Duffins, Etobicoke, Highland, Mimico, and Petticoat Creeks, and also the Don, Humber and Rouge Rivers. More than 5 million people live within the source protection area with the population expected to grow significantly in the years to come. There are ten municipal water systems operating in the source protection area, five are surface water based – accessing Lake Ontario as the source; the remainder are groundwater-based.

The Central Lake Ontario Source Protection Area is fully contained within the Regional Municipality of Durham. There are numerous watersheds within its boundaries, with the five major watersheds originating at the Oak Ridges Moraine. These major watersheds are Lynde, Oshawa, Farewell, Bowmanville, and Soper Creeks. There are no municipal wells within the source protection area; all municipal drinking water comes from Lake Ontario. There are three municipal drinking water systems: Whitby, Oshawa, and Bowmanville.

IV. At a Glance: Progress on Source Protection Plan Implementation

1. Source Protection Plan Policies

P : Progressing Well/On Target

There are 129 policies in the CTC Source Protection Plan. The policies address: 21 types of threats prescribed in regulation and 2 types of local drinking water threats, other actions considered necessary to protect drinking water sources, and implementation monitoring. Some policies are implemented by a single stakeholder, others by multiple stakeholders.

As of the end of 2022, 88% of legally binding policies and 78% of non-legally binding policies that address significant drinking water threats have been implemented, and the rest are in process, or have been considered and did not require further action. 74% of policies addressing Moderate and Low threats have been implemented and rest in progress. Furthermore, approximately 97% of existing significant drinking water threats have been addressed (i.e., eliminated or managed).

2. Municipal Progress: Addressing Risks on the Ground

P : Progressing Well/On Target

It is a requirement that municipalities ensure their Official Plan (OP), and where appropriate Zoning by-law, conforms with the local source protection plan. As of December 2022, out of 33 municipalities in CTC Source Protection Region, 31 municipalities have completed or are in the process of completing their OP conformity exercise. With regards to Zoning by-law, 12 municipalities have completed or are in the process of completing their conformity exercise.

3. Septic Inspections

S: Satisfactory (inspection progress varies across the CTC)

Within the CTC Region, 295 septic systems are expected to be inspected every 5 years to satisfy the requirements of the Ontario Building Code. In 2022, 37 inspections were completed, representing 13% of the total inspections required over the 5-year cycle.

Municipal septic inspection programs experiences delay in recent years because of the COVID-19 pandemic and resource limitations. One hundred and seventy-two inspections are now overdue in Town of Erin and across the Regional Municipality of York. Both municipalities are prioritizing the outstanding inspections in 2023. Of the systems inspected in 2022, 95% did not require any maintenance work, while 5% required minor maintenance. None required major maintenance.

4. Risk Management Plans

S: Satisfactory (progress varies across CTC)

The CTC Source Protection Plan contains policies that require the development of Risk Management Plans (RMPs) to manage some drinking water threats. 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.

Overall, 150 RMPs are in place within the CTC. 19 of these RMPs were established in 2022, with an additional 48 RMPs in the process of being completed as of the end of the year. In 2022 efforts continued to be affected by pandemic related restrictions, lengthy negotiations, and other source protection related demands on limited staff time. There are 169 RMPs that remain to be negotiated to address significant threats, with 163 required to be in place by the end of 2023 in Halton Region, and Towns of Orangeville and Erin. Despite good progress in the first quarter of 2023, it is not likely the 2023 deadline can be met, and therefore the affected municipalities will be requesting an extension for completion of remaining RMPs.

There were 118 inspections carried out in 2022 by Risk Management Inspectors for prohibited or regulated activities; the most inspections completed in any year to date. There was 100% compliance with RMPs and prohibited activities that were inspected.

5. Provincial Progress: Addressing Risks on the Ground

P : Progressing Well/On Target

Ontario ministries review applications for new or amended provincial approvals (i.e., Prescribed Instruments, such as Environmental Compliance Approvals under the Environmental Protection Act) where they have been identified as a tool in our plan to address activities that pose a significant risk to sources of drinking water. Where necessary, conditions are added to approvals to ensure that the activity does not pose a significant threat to sources of drinking water.

For CTC Source Protection Region, the ministries have reported 100% completion of previously issued provincial approvals in our source protection region. MECP conducted detailed review of 9 new applications: 7 Fuel Handling/Storage and 2 Wastewater/Sewage Works. The 2 Wastewater/Sewage Works Environmental Compliance Approval applications were determined to be significant drinking water threats to be managed through Prescribed Instrument conditions. However, these Prescribed Instruments were not issued in 2022.

Provincial ministries also consider source protection vulnerability when prioritizing sites for planned or proactive inspections. Ministry staff continue to receive training on the source protection program, their annual reporting requirements, and recent amendments to the Director’s Technical Rules.

6. Source Protection Awareness and Change in Behaviour

Municipalities, conservation authorities and other implementing bodies within the CT Source Protection Region work with landowners and business owners to help safeguard our sources of drinking water. All municipalities across the CTC have established education and outreach programs, which contribute to enhancing awareness of source water protection. Examples of 2022 efforts to build awareness include:

• Phase 1 of the Lake Ontario Collaborative Group partners (Peel, Toronto, Durham) Lake Ontario Water Quality Forecasting System was completed, allowing forecasting of potential impacts from contaminant spills to their water treatment plant intakes.

• Wellington County municipalities collaborated on 3 Smart about Salt training events for municipal staff and 2 sessions for private contractors

• Peel Region endorsed a Source Water Protection Incentive Program to help reduce costs incurred by affected landowners and business owners who must comply with a Risk Management Plan

• Credit Valley Conservation is promoting source water protection best practices thorough education and outreach to owners of non-municipal drinking water sources

7. Source Protection Plan Policies: Summary of Delays

The development of a Joint Municipal Water Supply Management Model (policy DEM-6) for municipalities of Mono, Amaranth, Orangeville, East Garafraxa within Dufferin County is nearing completion as all 4 municipal councils have passed resolutions to execute the agreement, final sign-off is expected in 2023.

Provincewide, all Source Protection Plans were required to include policies to address significant drinking water threats. The CTC Source Protection Committee chose to also include policies to address moderate and low drinking water threats. These moderate and low drinking water threat policies relate to the application of road salt, the handling and storage of certain chemicals and provision of education and outreach materials. Since the implementation of these moderate and low threat policies (SAL-12, SAL-13, DNAP-3) are non-legally binding, their implementation status varies across the source protection region.

A number of policies associated with implementation of Risk Management Plans to address existing threats, also remain in progress.

8. Source Water Quality: Monitoring and Actions

Thirteen drinking water issues have been identified at wells in three drinking water systems in our Source Protection Region. For these drinking water systems, the Source Protection Plan requires that the municipality establish more frequent raw water quality monitoring to help further characterize concentrations and trends. All municipalities have monitoring and treatment systems in place to ensure that municipal drinking water meets the requirements under the Safe Drinking Water Act, 2002.

In the Orangeville Drinking Water System, five wells have been identified with chloride issues and three wells with sodium issues. While chloride concentrations in three of the wells continue to rise, they appear to have stabilized in two wells. Sodium concentrations in the affected wells continue to increase.

In the Acton Drinking Water System, two wells have been identified with nitrate issues though concentrations appear to have stabilized.

In the Georgetown Drinking Water System, three wells have been identified with chloride issues and concentrations are increasing.

Over time, appropriate monitoring will help determine if implementation of plan policies and other actions are improving the raw water quality for these systems. Further assessment of water quality trend across the CTC Region will be implemented in the coming years.

9. Science-based Assessment Reports: Work Plans

No work plans were required to be implemented for our assessment report(s).

Review of the 2021 Technical rules is ongoing and the Source Protection Committee is guiding a multi-year comprehensive review and update of the CTC Source Protection Plan and Assessment Reports under s.36 of the Clean Water Act, 2006.

10. More from the Watershed

To learn more about our source protection region, visit our website at https://ctcswp.ca/

TO: Chair and Members of the Source Protection Committee Meeting #1/23, March 23, 2023

FROM: Behnam Doulatyari, Senior Manager, Watershed Plans and Source Water Protection

RE: Extension to Risk Management Plan Timeline for Impacted Municipalities

KEY ISSUES

Discussion regarding a proposed two-year extension to the current Risk Management Plan (RMP) completion deadline, December 31, 2023, in the CTC Source Protection Plan.

RECOMMENDATIONS

THAT the CTC Source Protection Committee receive the report on Extension to Risk Management Plan Timeline for Impacted Municipalities for information.

AND FURTHER THAT the CTC Source Protection Committee authorizes a 2-year extension to the December 31, 2023, deadline for municipalities to complete RMPs that address existing significant drinking water threats contingent on their submission of a workplan.

AND FURTHER THAT all impacted municipalities provide Council endorsement of this workplan to ensure the necessary resources available to meet the objectives.

AND FURTHER THAT staff be directed to take the necessary actions to request a formal 2-year extension to December 31, 2025 from MECP, for the completion of RMPs to address the remaining existing significant drinking water threats.

AND FURTHER THAT all impacted municipalities report on the status of workplan progression by February 1st of each calendar year through 2026.

Background

The timeline to complete all Risk Management Plans (RMPs) to address existing activities designated under section 58 of the *Clean Water Act* was initially set to December 31, 2020, five (5) years from the effective date of the Source Protection Plan (Policy T-6).

At meeting #2/20, the CTC SPC authorized CTC staff to request a 3-year extension to this deadline. This decision acknowledged the number of outstanding existing significant drinking water threats (SDWTs), typical RMP development timelines,

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resource and capacity limitations faced by Risk Management Officials/Inspectors (RMOs/RMIs) for Source Protection Plan (SPP) implementation, changes to Director's Technical Rules for threats identification, and challenges and delays anticipated in RMP development because of the COVID-19 pandemic.

The extension request was approved by the Ministry of Environment, Conservation and Parks (MECP) in July 2020, with a requirement for annual updates on municipal workplan progression by February 1st of each calendar year through 2024. CTC Source Protection Region staff provided a template for municipal work plans in late December 2020. In early January 2021, municipal RMOs from impacted municipalities (Halton Region, Town of Orangeville, Town of Erin, Town of Mono, and York Region) submitted work plans and accompanying letters summarizing implementation challenges and proposed mitigation strategies to address challenges.

At the time, 339 existing significant drinking water threats (SDWTs) remained to be managed through 205 RMPs. The outstanding RMPs were needed to address SDWTs associated with commercial fertilizer, pesticides, road salt, fuel, non-agricultural source materials, dense non-aqueous phase liquids and organic solvents, and snow storage.

Progress Update

The annual implementation progress update for existing RMP's for the period 2021 through 2023 can be found in **Attachment 1**. **Table 1** below summarizes municipal targets and actual RMPs completed since 2021. Please note the 2023 actuals reflect the period from January to March of 2023, during which time the Town of Mono completed their remaining RMPs; and Halton Region and the Town of Erin completed three and two RMPs respectively.

Table 1. s. 58 extension RMP progress summary (January 2021-March 2023)

	2021	2022	2023	Total
Target	42	97	66	205
Actual	13	16	7 (to date)	36

Figure 1 and **Figure 2** show the number of outstanding existing SDWTs and RMPs reported on Feb 1st from 2021 through 2023, related to the s.58 extension across CTC. As of March 2023, there are a total of 248 existing SDWTs that require 158 RMPs in the affected municipalities.

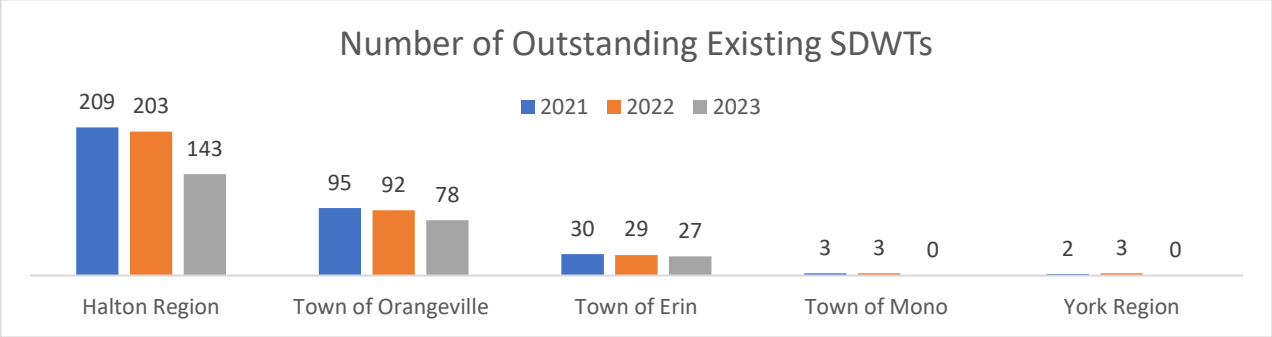

Figure 1. s. 58 extension outstanding significant threats (2021-March 2023)

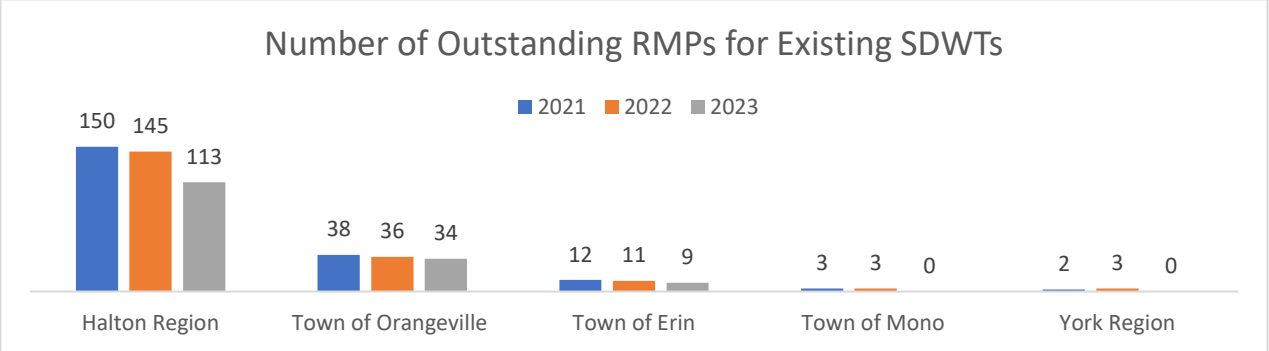

Figure 2. s. 58 extension outstanding RMPs (2021-March 2023)

The restrictions from the COVID-19 pandemic were longer and proved more challenging than originally anticipated. Given the resulting multi-year gap in negotiations, the process of reengaging landowners has been slow particularly when changes in ownership have taken place. Other implementation challenges identified by municipal RMOs as discussed in their presentation to the SPC (Item 9.1), include:

- The time-consuming nature of the threat verification and RMP negotiation process. Experience among RMOs in the CTC Source Protection Region has been that RMPs can take between 9 and 22 months to negotiate. The disruption caused by the COVID-19 pandemic has in some cases reset the clock on previous efforts.
- RMPs typically have annual monitoring and reporting requirements. As more RMPs get established, the volume of annual reporting documents submitted by RMP holders increases. The review of the submitted material requires a significant time investment each year and requires follow up when documentation is missing or incomplete (a common occurrence with new RMP holders). Additionally, even though an RMP holder is required to immediately inform the RMO of any changes in property ownership, site conditions, etc.; such changes are often not revealed until the annual reporting deadline. Several existing RMPs have had to be amended due to such changes, sometimes with

new site contacts who are unfamiliar with RMPs or who are completely unaware that one had been negotiated for the property.

- In addition to preparation of RMPs and enforcement responsibilities, RMO/RMIs are responsible for development planning application review, groundwater monitoring, the integration of source protection into municipal planning updates (e.g., secondary plans) and infrastructure projects, and education and outreach. Given the substantial growth experienced across CTC, the demands on RMO/RMIs have greatly increased in recent years.
- Municipal prioritization placed on RMPs initiated through the land use planning and building permit process to meet prescribed approval timelines.
- Additional complexities in negotiating agricultural RMPs. Seasonal availability has reduced negotiation window to winter months. Often there are multiple threats to be addressed with existing regulatory burden through other prescribed instruments. Although there have been improvements in clarifying the requirements of *Clean Water Act, 2006* versus those from the *Nutrient Management Act*, further work is required.
- Although RMOs can give a Notice to establish a RMP for an activity at a particular location, there are legislated timelines in the *Clean Water Act, 2006* to ensure that a landowner is given sufficient time to respond. Use of these legal instruments may address specific SDWTs but may have a negative impact on the long-term goals of the Clean *Water Act, 2006* for having an engaged and supportive public.
- Negotiating RMPs with federal and provincial bodies has proven challenging at time.

As part of the section 36 workplan, CTC staff are working on updating SPP policies for compliance to the latest Director's Technical Rules (2021 version). It should be noted that the updated policies, particularly those addressing threats from storage and handling of Salt and storage of snow, will likely result in additional RMPs across the CTC Source Protection Region.

Mitigation Strategies

Mitigation strategies identified by RMOs, and additional resources dedicated to their source protection programs by municipalities include:

- In Halton, a Source Protection intern position was created and filled in mid-2022 to support review of development applications and coordination of the RMP process.
- In Wellington, the hiring of the first Source Protection Coordinator has been helpful in freeing up RMI and RMO time to focus on RMP negotiations. Pending budget approval, a second Coordinator will provide support.

- Halton and Wellington are undertaking a collaborative effort in addressing landowners who are subject to RMPs in both municipalities.
- Town of Orangeville hired a Source Water Protection Coordinator in fall 2022, who is scheduled to take the RMO/RMI training in March 2023.

Furthermore, CTC staff will continue to work closely with RMOs through the Implementation Working Group (IWG) and Amendment Working Group (AWG) in updating SPP policies for compliance to the latest Director's Technical Rules. For example, the proposed amendments to DNAP-1 and OS-1 policies, currently in pre-consultation as part of the ongoing section 34 amendment, address RMP implementation challenges by providing volume thresholds and clarification on the meaning of total volume. CTC staff will further prioritise updating the salt, snow, and agricultural policies to facilitate implementation.

Next Steps

MECP Conservation and Source Protection Branch have recently indicated this will be the final extension considered by the Ministry with a maximum extension duration of two years. They have also requested feedback on how the ministry can help expedite the establishment of any remaining Risk Management Plans. CTC Staff will engage other Source Protection Regions and Conservation Ontario to provide a coordinated response.

CTC staff will develop an updated template for municipal work plans by May 1st of this year. It is anticipated that RMOs will submit the work plans and accompanying letters summarizing implementation challenges and proposed mitigation strategies by the end of June 2023. RMOs from impacted municipalities will present the workplan to their Councils to ensure the necessary resources are available. The official extension request will be submitted to MECP shortly thereafter.

Report prepared by:

Behnam Doulatyari, Senior Manager, Watershed Plans and Source Water Protection, Credit Valley Conservation

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Email: behnam.doulatyari@cvc.ca

Date: March 20, 2023

Attachments (1):

Attachment 1: CTC section 58 extension progress summary

Attachment 1: CTC section 58 extension progress summary

S. 58 RMP Extension Work Plan:

January '23 Annual Update

Note: Existing/outstanding SDWT's in this workplan refer to those that were originally required to have RMP's in place Dec. 31, 2020 to manage them, as per the CTC Source Protection Plan policy #T-6. In July 2020, the implementation deadline for SPP policy T-6 was extended by 3 years until Dec. 31, 2023.

Instructions

Work Plan: Blue cells filled in early 2021. This template assumed RMOs established annual targets for RMP completion, and may employ notices and/or impose RMPs, as needed, to achieve annual targets. Additional milestone tasks added to Column A as appropriate (e.g., # site visits).
Annual Progress Reports: Fill in green cells with red text to complete applicable annual update

		January 2022 Update	January 2023 Update	January 2024 update
Date of update:	11-Mar-21	Feb. 7, 2022	1-Feb-23	Date
Municipality:	Erin, Halton, Mono, Orangeville, York	Erin, Halton, Mono, Orange	Erin, Halton, Mono, York, Orangeville	
Risk Management Official(s):	Various	Various	Various	RMO(s)
			Progress Reports	
# Outstanding Existing SDWTs:	339	330	256	# as of Jan 1, 2024
Summary of Outstanding SDWTs by type:	Application, handling, and storage of Agricultu	Application, handling, and s	as of Jan 1, 2023	as of Jan 1, 2024
	Application, handling, and storage of Commerc	Application, handling, and storage of Commercial Fertilizer		
	Application, handling, and storage of pesticide	Application, handling, and storage of pesticides		
	Application, handling, and storage of road salt	Application, handling, and storage of road salt		
	Appliction of NASM	Appliction of NASM		
	Handling and storage of Fuel	Handling and storage of Fuel		
	Handling and storage DNAPL	Handling and storage DNAPL		
	Handling and storage of Organic Solvents	Handling and storage of Organic Solvents		
	Storage of Snow	Storage of Snow		
	Livestock grazing or pasturing, and outdoor co	Livestock grazing or pasturing, and outdoor confinement area		
# of Outstanding Risk Management Plans:	205	198	163	# as of Jan 1, 2024

Work Plan

RMO Tasks	Targets/Dates		
Develop Workplan and submit to CTC Program Manager	Monday January 11, 2021		
2021		**2021 Progress Report (due by Feb. 1, 2022)**	
Target # RMPs to be completed Jan 1 - Dec 31 2021	42	13	
OPTIONAL: Send warning letter to all persons requiring risk management plans	In advance of issuing S. 58 (7) Notices-Halton 06/30/2021- Orangeville 12/31/2021-Erin This is possible, contigent on the duration of COVID and will be explored in early Q3-Mono 12/31/2021-Halton 1/17/2022-Orangeville	1	Date issued
Issue s. 58 (7) notices, if necessary	not anticipating this to be required-Mono	0	Date issued
	Implementation Challenges (2021)	Ongoing and recurrent COVID restrictions; pandemic related hiring freeze; shift to remote/hybrid work; focus on pandemic related H&S protocols; reluctance of landowners to meet in person; staff turnover/recruitment challenges	
	Proposed Mitigation Strategies	RMP extension; property redevelopment may reduce significant threatas; outreach letters, emails and phone calls; hiring of consultant	
	Additional Resources to Implement Work Plan	New staff position to allow RMO/RMI to focus on inspections and RMP negotiations	
2022		**2022 Progress Report (due by Feb. 1, 2023)**	
Target # RMPs to be completed Jan 1 - Dec 31 2022	97	16	# RMPs completed
OPTIONAL: Send warning letter to all persons requiring risk management plans	In advance of issuing S. 58 (7) Notices-Halton 05/16/2022-Orangeville 02/28/2022-York 12/1/2022-Orangeville 12/30/2022-Halton 12/31/2022-Erin	0	Date issued
Issue s. 58 (7) notice, if necessary	not anticipating this to be required-Mono	2	Date issued
Issue s. 58 (10) notices, if necessary	12/22/2022-York	0	Date issued
	Implementation Challenges (2022)	Ongoing pandemic related restructions; agricultural RMP negotiation window limitations exacerbated by pandemic restrictions and limited availabilty; need for reengagement with property owners; property ownership changes; federal government not subject to CWA; low response to outreach attempts; resistance to final sign-off; lack of local Risk Management staff	
	Proposed Mitigation Strategies	Coordination amongst RM staff; prioritization of agricultural RMPs including multi-farm; consideration of RMP deadline extension; outreach follow-up; Section 58(7) notices of intent; hiring of additional source protection staff	
	Additional Resources to Implement Work Plan	Hiring of additional staff to allow risk management negotiation focus by risk management officials	
2023		**2023 Progress Report (due by Feb. 1, 2024)**	
Target # RMPs to be completed Jan 1 Dec 31 2023	66	# RMPs completed	
OPTIONAL: Send warning letter to all persons requiring risk management plans	03/15/2023-Orangeville 07/03/2023-Halton 07/17/2023-Orangeville 08/01/2023-Halton	# warning letters issued	Date issued
Issue s. 58 (7) notice, if necessary	not anticipating this to be required-Mono	# notices issued	Date issued
Completion Date	**Sunday, December 31, 2023**		