

DRINKING WATER
SOURCE PROTECTION

Our Actions Matter

CATARAQUI
Source Protection Area

Cataraqui Source Protection Area
Draft section 36 Workplan Proposal under the *Clean Water Act*

Prepared for:

Ministry of the Environment and Climate Change
Source Protection Programs Branch

Prepared by:



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on behalf of the Cataraqui Source Protection Authority

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Executive Summary

In the Cataraqui Source Protection Area of southeastern Ontario, the Drinking Water Source Protection Program has provided technical and policy work to 12 municipal residential drinking water systems through the implementation of the Cataraqui Source Protection Plan (the Plan), including nine surface water intakes, and three groundwater-based wellhead systems.

At the time of the Plan's approval in 2014, a section 36 order was issued by the Minister of the Environment and Climate Change (MOECC) specifying the lead source protection authority prepare and submit a workplan proposal November 30, 2018. The order outlined the workplan would include detailed steps for the review of the Plan and Assessment Report in consultation with the Cataraqui Source Protection Committee, participating municipalities and local stakeholders, and the Ministry of the Environment and Climate Change.

Since 2015, 71% of the policies within the Plan have been implemented and an additional 12% are well underway. The first annual progress report was submitted in May 2018 to the MOECC outlining implementation efforts for the Cataraqui area under the *Clean Water Act, 2006*. Reporting feedback from local implementers provided evidence that additional review of the Plan and the Cataraqui Assessment Report were required to address ongoing challenges and improve policy effectiveness on the landscape.

This document provides a workplan proposal to update the Cataraqui Source Protection Plan (2014) and the Assessment Report (2011) in accordance with section 36 of the *Clean Water Act*. The proposed priority review items were determined through a preliminary analysis based on criteria specified by the MOECC. This included considerations of environmental monitoring programs, growth and infrastructure changes, Council resolutions, policy effectiveness, implementation challenges, Director's Technical Rule changes, an agricultural prohibition impact assessment, and new information acquired since the original documents were approved.

The Director's Technical Rules referenced in this proposal include the amended version of March 2017, which will be modified from time to time and may warrant additional updates moving forward.

Priority review items were grouped into two main categories:

1. Required Document Updates (Section 2.1)
This includes sections of both the Assessment Report and the Plan, which require review due to typographical errors, new information, and mandated changes prescribed by the MOECC.
2. Improving Municipal Implementation and Supply (Section 2.2)
To ensure drinking water systems are effectively managed, climate variability and vulnerable area scoring were considered to determine policy implementation effectiveness and address management gaps.

Source protection policies were evaluated based on implementation progress and reporting challenges to determine where necessary modifications, additions, or removals may improve source protection management within municipal systems. Through feedback and reporting there are several identified areas that warrant additional review to improve policy implementation.

A summary of the proposed projects included in the above categories with a description, list of associated factors, key implementers, and timelines are provided in the tables below. Financial requirements for each proposed item are outlined based on a high, medium, or low projected budget to complete the work in the Cataraqui Source Protection Area. Low financial requirements represent project budgets between \$1-10,000, medium between \$10,001-50,000, and high represents projects that may require greater than \$50,000 to complete. Workplan objectives note technical work will begin in the fall of 2018 and continue through to completion, including policy implementation actions, in 2023.

This proposal was based on feedback provided from multiple stakeholder groups, primarily municipal partners, the Source Protection Committee, MOECC, internal Cataraqui Region Conservation Authority staff reviewers, and the Cataraqui Source Protection Authority.

The Cataraqui Source Protection Authority continues to support the objective of the Drinking Water Source Protection Program and would like to acknowledge the support of all groups involved in the preparation of this workplan, including the MOECC for their ongoing support through capacity funding under the Ontario Drinking Water Source Protection program grant.

Summary of Identified Source Protection Document Review Projects

Clerical Amendments							
Project	Description	Factors Influencing Project	Key Implementers	Timeline	Technical Work Required	Anticipated Financial Lead	Financial Requirement
Assessment Report Updates	Amend to include typographical error changes, update sections with new data, remove data that is no longer relevant, and edit sections pertaining to the changes in the Director's Technical Rules.	New data Typographical errors Policy effectiveness	CRCA (Lead)	2019	No	MOECC	Low
Source Protection Plan Updates	Provide updated policy summary tables and include an amendment to the explanatory document where required.	Implementation challenges	CRCA (Lead)	2019	No	MOECC	Low
Vulnerable Area Considerations							
Climate Change Review	Consider climate change vulnerability in all projects using guidance provided by the MOECC and Conservation Ontario. This includes consideration for blue-green algae assessments and climate indicators for incorporation into technical work.	Environmental monitoring Policy effectiveness Implementation challenges	CRCA (Lead) Source Protection Committee Academia MOECC Conservation Ontario Municipalities	2018 – Guidance provided 2019 – Review 2020 – Policy 2021-2022 – Action	Yes	MOECC	Medium
Western Intake Reclassification	Explore the impact of three proposed management options for four intakes that are shallow and close to shore to determine whether there would be a reduced risk to drinking water quality should significant drinking water threats be added in the area.	Environmental monitoring Growth and infrastructure Policy effectiveness Technical Rule changes	CRCA Loyalist Township (Lead) (Bath and Fairfield Intake) Town of Greater Napanee (A.L. Dafoe and Sandhurst Shores Intakes)	2018 – Consultation 2019 – Technical Work 2020 – Policy 2021-2022 – Action	Yes	MOECC / Municipal	Medium
Issues Contributing Area Consideration	Discuss the possibility or necessity of delineating an issue contributing area to address activities associated with increased sedimentation and total coliform raw water concentrations as identified at the Bath and Fairfield intakes.	Environmental monitoring Implementation challenges	Loyalist Township (Lead) (Bath Intake) CRCA	2018-9 – Technical Work / Consultation 2020 – Policy 2021-2022 – Action	Yes	MOECC / Municipal	Medium

Source Protection Plan Policy Review							
Proposed Project	Description	Assessment Factors Influencing Project	Key Implementers	Timeline	Technical Work Required	Anticipated Financial Lead	Financial Requirement
Part IV Management (Small Quantities of Waste)	Modify policy to incorporate education and outreach management for future threats.	Implementation challenges	Risk Management Officials CRCA (Lead)	2019 – Policy 2020-2022 – Action	No	MOECC / Municipal (Risk Management Officials)	Low
Part IV Management (Transportation Corridors)	Add policy to address significant drinking water threats through education and outreach of best management practices.	Implementation challenges Policy effectiveness	Risk Management Officials Ministry of Transportation CRCA (Lead) Municipalities	2019 – Policy 2020-2022 – Action	No	MOECC / Municipal (Risk Management Officials)	Low
Salt Management Plan Source Protection Review	Modify policy to encourage all municipalities in the Cataraqui area to incorporate source protection into salt management plans prior to the Government of Canada Code of Practice for the Environmental Management of Road Salts (April 2004) Review.	Implementation challenges Policy effectiveness	Municipalities (Lead) CRCA	2019 – Policy 2020-2022 – Action	No	MOECC / Municipal	Low – per municipality Medium – Cataraqui area
Pipelines – Transportation of Liquid Hydrocarbons	Add policies to incorporate pipelines as a significant, moderate, or low drinking water threat within vulnerable areas where specific circumstances apply. This will capture the transportation of liquid hydrocarbons over watercourses as a potential future threat activity for new drinking water systems or new or revised pipeline projects.	Policy effectiveness	Risk Management Officials Municipalities (Lead) National Energy Board CRCA	2019 – Policy 2020 – Action	No	MOECC	Low
Above-grade Fuel Handling and Storage in Wellhead Protection Areas	Add policies to reflect the handling and storage of above-grade fuel in outside areas with volumes of equal or greater to 250L as a local significant drinking water threat in wellhead protection areas.	Implementation challenges Policy effectiveness Technical Rule changes Local considerations	Risk Management Officials (Lead) Municipalities CRCA	2019 – Policy 2020 – Inventory 2021-2022 – Threat Management (Risk Management Plans)	Yes	MOECC / Municipal (Risk Management Officials)	High

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1.0 Introduction

Ontario's Drinking Water Source Protection Program (DWSP) under the *Clean Water Act, 2006* (the Act) helps to ensure access to existing and future clean and plentiful sources of drinking water for human health and the environment. The Act was created in response to Justice Dennis R. O'Connor's Report of the Walkerton Inquiry (2002) outlining 121 recommendations to better protect sources of drinking water as a response to a municipal residential bacterial contamination crisis in Walkerton, Ontario, May 2000. The municipal drinking water supply became contaminated with *Escherichia coli*, resulting in multiple deaths and thousands of ill residents due to the failure of multiple protective management measures.

Justice O'Connor emphasized the need for a multi-barrier approach to protecting municipal drinking water "from source to tap", to reduce the likelihood of water contamination. As a result of the public inquiry, the Ontario DWSP established 19 source protection areas, regions, and governing authorities, each with a local source protection plan containing policies to protect the quantity and quality of residential drinking water sources. These plans are legislated to be reviewed cyclically to ensure ongoing protection of local drinking water sources.

Through the approval of the Cataraqui Source Protection Plan (the Plan) on November 26, 2014, the Minister of the Environment and Climate Change (MOECC) issued an order to the Cataraqui Source Protection Authority (CSP Authority) to perform a mandatory review of the Plan and Cataraqui Assessment Report (2011) under section 36 of the *Clean Water Act* (Appendix A). The order specified the lead source protection authority would prepare and submit a workplan proposal outlining a detailed review process, supporting rationale per activity, and associated timelines for implementation for submission on November 30, 2018. The CSP Authority is the lead authority for the Cataraqui Source Protection Area (Cataraqui area).

The proposal was developed in consultation with the Cataraqui Source Protection Committee (the Committee), participating municipalities and local stakeholders, and the Ministry. The order also required results from the first mandated annual progress report on policy implementation efforts to be included within the workplan considerations.

The Cataraqui Source Protection Authority fully supports the DWSP's objectives outlined in the Act and the Cataraqui Source Protection Plan and looks forward to advancing the program through continued collaboration between the Ministry of the Environment and Climate Change and other local stakeholders.

1.1 Cataraqui Source Protection Area

The Cataraqui Source Protection Area includes 15 municipalities composed of three upper-tier municipalities (e.g. counties) and all or part of 12 lower-tier municipalities. Within the area, there are 12 municipal drinking water treatment plants within delineated vulnerable areas (Appendix B). Nine of the vulnerable areas are intake protection zones (IPZs), eight located within Lake Ontario and the St. Lawrence River and one within Sydenham Lake. The remaining three areas consist of wellhead protection areas (WHPAs)(Table 1). Each of the treatment plants within the noted vulnerable areas consists of a single intake and wellhead, with the exception of Lansdowne's drinking water system which

contains two wells within Wellhead Protection Area-A. Correspondence with drinking water treatment plant operators and municipal representatives in 2017 has indicated there are no proposed intakes or wells to be developed within the Cataraqui area.

Table 1: Summary of current and proposed municipal drinking water treatment plant systems

Municipality	Drinking Water Treatment Plant	Proposed Intakes and Wells
Township of Athens	None	None
City of Brockville	Brockville Intake Protection Zone	None
Township of Elizabethtown-Kitley	Brockville Intake Protection Zone	None
Frontenac County	Sydenham Intake Protection Zone	None
Township of Frontenac Islands	None	None
Township of Front of Yonge	Miller Manor Wellhead Protection Area	None
Town of Gananoque	James W. King Intake Protection Zone	None
Town of Greater Napanee	A.L. Dafoe Intake Protection Zone Sandhurst Shores Intake Protection Zone	None
City of Kingston	Point Pleasant Intake Protection Zone Central Intake Protection Zone Cana Wellhead Protection Area	None
Township of Leeds and the Thousand Islands	Lansdowne Wellhead Protection Area	None
Loyalist Township	Bath Intake Protection Zone Fairfield Intake Protection Zone	None
Lennox and Addington County	A.L. Dafoe Intake Protection Zone Sandhurst Shores Intake Protection Zone Bath Intake Protection Zone Fairfield Intake Protection Zone	None
Township of Rideau Lakes	None	None
Township of South Frontenac	Sydenham Intake Protection Zone	None
United Counties of Leeds and Grenville	Lansdowne Wellhead Protection Area Brockville Intake Protection Zone Miller Manor Wellhead Protection Area James W. King Intake Protection Zone	None

1.2 Annual Implementation Progress Report Summary

The Cataraqui Source Protection Authority submitted its first annual progress report to the Ministry of Environment and Climate Change (MOECC) in May 2018 highlighting implementation progress towards achieving the goals within the Cataraqui Source Protection Plan (CRCA 2018).

Since April 1, 2015, the Cataraqui Source Protection Area has implemented 71% of the policies outlined within the Plan, with an overall “Satisfactory” implementation effort, as graded by the Committee. Through the reporting analysis provided by 15 municipalities, 2 health units, 2 risk management officials, and 6 Ontario Ministries, there has been significant progress made; however, multiple areas require improvement and may warrant additional review.

What experience was gained from implementing the Plan?

Source protection from all implementers is viewed as a priority for consideration, especially pertaining to development review within vulnerable areas. However, due to limited staff dedicated to the program and many non-legally binding policies, implementation is not often achieved. Staffing and funding limitations have been recognized as the two main challenges facing implementation success in the Cataraqui area. In response, implementers have collaborated and shared material to address common policy goals such as education and outreach in vulnerable areas; efforts the CSP Authority are very supportive of. Source water protection has been integrated into land use planning and emergency response strategies, but additional education is required to ensure all departments within an organization are aware of the vulnerability of drinking water sources in the area.

Committee members and municipal staff have noted there is a greater awareness of protecting drinking water sources and understanding of the vulnerable nature of groundwater in the Cataraqui area. For example, through risk management efforts, landowners within vulnerable areas have transitioned to propane fuel tanks and are beginning to implement best management practices to protect nearby water sources within their local watershed.

The source protection implementation experience has been positive overall, but there will be a challenge for municipalities moving forward to retain program development responsibilities (e.g., technical work) and fund actions without additional assistance.

How did reporting help with workplan development?

In speaking with municipal representatives and risk management officials specifically, reporting highlighted challenges and misunderstanding among implementers based on policy wording interpretation, risk management criteria, and enhanced protection of drinking water systems; all of which enhanced the rationale for the proposed review topics outlined in section 2.0 of this workplan.

The main implementation challenge was notably significant drinking water threat management, due to policy gaps highlighted by risk management officials and municipal staffing challenges.

1.3 Workplan Development Process

The preliminary review of the Plan and the Assessment Report was coordinated by Cataraqui Region Conservation Authority (CRCA) staff on behalf of the Cataraqui Source Protection Authority and developed through consultation with the Cataraqui Source Protection Committee and local implementers.

Three years have passed since the Source Protection Plan came into effect in 2015, providing an appropriate timeline for reviewing progress and updating the required source protection. The two main components of this workplan submission include a preliminary analysis of review factors and considerations, and consultation with local implementers and stakeholder engagement.

In the Cataraqui area, staff have identified two main categories summarizing the proposed review:

1. Required Document Updates (Section 2.1 and 2.2); and
2. Improving Municipal Implementation (Section 2.3)

There were no additional requirements outlined in the Minister's initial approval letter for the Cataraqui Source Protection Plan to be included in future reviews of the documents.

1.4 Preliminary Analysis

In 2015, CRCA staff and the Committee prepared a list of options for future drinking water source protection consideration in the Cataraqui area based on a review of Chapter 8 of the Assessment Report. Using these topics as a foundation, CRCA staff and the Committee modified the list to incorporate the review of local policies, managing drinking water quality issues, and provincial updates for further consideration. All review items were screened by CRCA staff based on a set of evaluation criteria including: (1) data availability, (2) modelling uncertainty, (3) impact on the local drinking water source, (4) optional versus mandatory Technical Rule change, and (5) reporting and consultation feedback, also considering the factors for assessment provided by the MOECC.

Throughout proposal development, the Cataraqui Source Protection Committee continued to follow its mission statement, as outlined in the Terms of Reference (2008), of ensuring cooperation with local communities, the Ontario government and stakeholders to protect water quality and quantity.

The workplan was developed based on a preliminary analysis of the Plan and Assessment Report using guidance provided by the MOECC. The guidance outlined the purpose of the review is "...to provide an opportunity for updating source protection documents with new information to advance the understanding of risks to drinking water sources and incorporate local growth" (MOECC 2016).

The analysis included multiple factors for assessment, which CRCA staff used to evaluate for inclusion in the upcoming review. Factors include:

- a) Results from environmental monitoring programs
- b) Growth, infrastructure changes, and Council resolutions
- c) Policy effectiveness and implementation challenges
- d) Technical Rule changes
- e) Agricultural prohibition impact assessment
- f) Other local considerations

Each proposed item for review included in this workplan outlines (1) the document and section(s) requiring review, (2) an evidence-based rationale based on the associated factors listed above, (3) a project management strategy identifying the roles and responsibilities, review process, funding options, and targeted consultation, and (4) the anticipated timeline for the associated work to be completed.

1.4.1 Highlights

An initial review was completed to prioritize specific areas of the Plan and Assessment Report for a comprehensive review. The results of this review are highlighted below.

Environmental monitoring

Drinking water treatment operators continue to provide monitoring efforts for drinking water quality and quantity at municipal systems to report on legislated parameter concentrations against human health standards for drinking water. Local monitoring analysis has shown bacterial concentrations are high or increasing in some drinking water systems, primarily *Escherichia coli* and total coliform in the

raw water. No parameters have flagged enhanced risks to human health and all treatment facilities meet Ontario drinking water standards.

Additional monitoring is ongoing for risk management efforts to ensure activities are “ceasing to be significant” on the landscape, as outlined in section 22 of the Act. Where activities were noted as threats, effective prevention of the activity from becoming a significant drinking water threat has been successful through policy implementation. However, there is a gap in this monitoring, as multiple significant drinking water threat activities have not yet been addressed (e.g., properly managed) due to municipal challenges, but will be considered on an as-needed basis as monitoring efforts continue. This will determine whether additional environmental monitoring is required to inform future decisions and updates.

CRCA staff are working with municipalities to enhance monitoring efforts where required to ensure significant drinking water threat management is achieved. Examples include road salt, landfill, septic system, and well monitoring where infrastructure is already present throughout the watershed.

Growth, infrastructure changes, and Council resolutions

Municipalities noted there are growth and infrastructural changes being planned through residential builds as urban sprawl continues within the Cataraqui area. There were no Council resolutions regarding the addition of new intake or well systems associated with any of the proposed items. However, communal wells are in consideration for future development projects, at which time source protection integration and additional reviews to the Plan will be discussed. Drinking water treatment facilities have also expanded their operations facilities and incorporated new technology to improve contaminant removals (e.g., Point Pleasant in Kingston). To ensure municipalities can meet water demands with increasing development pressures, there are ongoing discussions of connecting intake pipes and expanding operations, pending funding.

Stormwater management projects are ongoing within the Cataraqui area and continue to be a challenge for municipalities to properly manage these systems within vulnerable areas. Municipalities continue to find incorporating local climate changes challenging (refer to section 2.3.).

Policy effectiveness and implementation challenges

Risk management officials and local municipal representatives have flagged policy gaps, implementation challenges (e.g., staffing capacity) and interpretation difficulties, which have limited efforts in certain areas of the Cataraqui Source Protection Area. This includes consideration for the following topics area:

1. Part IV Management – Risk management officials have noted implementation of Part IV services for small quantities of hazardous waste is extremely challenging and alternative methods should be considered. In addition, there is currently no management strategy to address transportation corridors as a significant drinking water threat (originally enumerated in the Assessment Report at 18 locations).
2. Policy Improvement – Municipalities noted there are multiple operational policies that have been challenging to implement. Specifically, the inclusion of source protection integration into salt management and winter maintenance plans. Consideration for adjusting the policy to allow for earlier review and inclusion is warranted.

3. Drinking Water Threat Considerations – Through amended legislation earlier this year, the addition of policies regarding pipelines across vulnerable areas has been considered since there are multiple pipelines crossing open water bodies within the Cataraqui area (although none within drinking water protection zones). Exterior above-grade fuel considerations with volumes of greater than or equal to 250 litres has been prioritized for inclusion as a local threat. This has been discussed at length with the MOECC and through pre-consultation with implementers and the Committee, a comprehensive review of this threat is warranted.

Technical Rule changes and local considerations

Amendments to the Director's Technical Rules have flagged mandatory updates (e.g., pipelines) and provided optional flexibility to improve drinking water system protection in vulnerable areas within the Great Lakes. In the Cataraqui area, this includes consideration for increasing four intake vulnerability scores in the western portion of the Cataraqui area.

Climate change considerations were previously incorporated in the Plan and Assessment Report, but as climate conditions have changed significantly in the past decade a comprehensive review of shoreline conditions is recommended by local implementers and the Committee. Conservation Ontario and MOECC are developing a water quality risk assessment guidance for incorporating source protection and climate change into planning documents, which is considered in section 2.3.1.

Agricultural prohibition impact assessment

MOECC provided guidance on this review factor, which focuses on the analysis of policies prohibiting agricultural activities outside of a WHPA-A or IPZ-1 with a vulnerability score of 10 in wellhead protection areas and 8 or higher in intake protection zones. The goal of the assessment was to review the cumulative impacts of prohibition policies and assess if these policies were having a notable negative or positive impact on agricultural operations and water quality to inform policy amendments and management in these areas. In the Cataraqui area, five vulnerable areas fit this criterion: Lansdowne WHPA-B, Miller Manor WHPA-B and Brockville IPZ-2.

Within the Plan, policies 6.4.7-CW (Lansdowne WHPA), 6.5.6-CW (Miller Manor WHPA) and 7.4.4-CW (Brockville IPZ) outline prohibited agricultural activities which include:

- Application and storage of agricultural source material to land
- Handling and storage of commercial fertilizer
- Handling and storage liquid fuel above, below, or partially below grade
- Handling and storage of pesticides at a facility where it is sold or used for application
- Use of land as livestock grazing or pasturing, an outdoor confinement area or farm animal yard

Upon further assessment, three properties within Lansdowne WHPA-B required additional review and landowner consultation to determine whether these policies should remain in the Plan or require modifications. In speaking with landowners during the creation of the Assessment Report, there are no noted complaints or concerns relating prohibited activities to current impacts on agricultural operations.

Since there is no evidence for a change, policies pertaining to prohibition within these areas require further no additional review. It should be noted landowners have incorporated source protection

considerations into their current agricultural management practices where applicable. Therefore, there is no need to modify the respective policies within the Cataraqui Source Protection Plan.

Other local considerations

Efforts such as considering updated floodplain mapping information have been discussed, but will be included in the noted climate change review of the Cataraqui area, versus having its own designated section review.

There were multiple opportunities for municipalities, local stakeholders, and residents to comment on the draft proposal items for review through pre-consultation sessions during workplan development.

1.5 Consultation

To determine the priority areas for review, multiple consultation efforts were undertaken. This included presentations, information sessions, and in-person meetings with municipal representatives and the Committee. Throughout this process, CRCA staff consulted with the MOECC in the fall and spring of 2017-2018 regarding the content of the workplan. A summary of the efforts is noted in Table 2.

Table 2: Workplan development consultation process

Timing	Consultation Details
September 2017	A presentation was delivered to the Source Protection Committee (the Committee) on the section 36 workplan process.
October 2017	An inventory update was completed to determine changes in municipal drinking water systems (e.g., wells and intakes) in consultation with municipalities and drinking water treatment plan operations. Preliminary analysis of the nine review factors was initiated.
November 2017	A report was submitted to the Committee regarding section 36 workplan process, requirements, and first draft of identified priority action items for discussion. This was to help prepare for upcoming municipal and stakeholder engagement.
February 2018	Agricultural landowner communication for prohibition impact assessment initiated (phone call, emails) with a follow-up survey to be completed by the end of April 2018. Municipal consultation workshop held at the CRCA to discuss annual reporting results and identified workplan priority items for review to provide additional opportunities for discussion. A summary of the workshop is provided in Appendix C.
March 2018	Follow-up communication with municipalities (phone calls, emails) to discuss details from the workshop and communicate with those who were not able to attend. Based on municipal feedback and annual reporting, the Committee finalized the priority items for review, outlined timelines, and discussed roles and responsibilities moving forward.
April 2018	Draft workplan for section 36 updates was circulated, reviewed, and discussed electronically by the Committee.
May 2018	Consultation with MOECC on workplan content (phone calls, emails).

	A CSP Authority meeting was held to discuss the draft workplan and approve for circulation.
June 2018	A draft workplan proposal was circulated electronically to stakeholders and municipal partners, for a comment period ending August 2018. Comments provided in Appendix D.
September 2018	A Committee meeting was held to discuss all received comments.
November 2018	The proposed workplan was submitted electronically to MOECC.

Additional consultation will be completed as part of the review process and will be outlined with respect to each topic area. The process will be as detailed in the Explanatory Document of the Cataraqui Source Protection Plan (2014). Additional funding may be required.

2.0 Source Protection Documents Review

2.1 Required Document Updates – Assessment Report

Through discussions with CRCA staff, adjacent source protection areas and regions, and risk management officials, multiple areas of the Cataraqui Assessment Report (2011) were flagged for review. Originally intended to be completed under section 51 of the Act, CRCA staff were directed by the MOECC to include the items within this section.

2.1.1 Update 1: Clerical Amendments

Updating Map 5-16, Map 5-24, Map 5-32, and Map 5-40 indicating significant, moderate, and low drinking water pathogen threats for wellhead protection areas (WHPA). Currently, the maps note WHPA-C and -D have low drinking water threats. Based on the Tables of Drinking Water Threats (2017), this is inaccurate and will need to be updated. Multiple appendices also require editing based on changes to the source protection program and reporting feedback. Refer to Table 3 below for details.

Table 3: Proposed changes to Assessment Report Appendices

Appendix	Title / Topic	Update Required
Appendix A	Source Protection Committee Biographies	Addition of current members and associated biographies who were involved in the Plan's review and amendment process.
Appendix E-3	Source Water Issue Contributing Area Delineation Plans	Provide an update on how the noted issues have been addressed since the Assessment Report, additional monitoring that may be taking place, and a strategy to address current water raw water quality issues at water treatment plants.
Appendix H	Enumeration of Significant and Moderate Drinking Water Threats	Maintain the current table as reference, but add an update with removal and addition of significant drinking water threats based on risk management efforts, including the management status of properties per vulnerable area.
Appendix I	Transportation Corridors	Note additional transportation corridors that have been added within vulnerable areas as part of a preliminary analysis ensuring intake and well delineations do not require additional modifications.

Appendix L-1	Technical Rules Assessment	Change to the newest available amended Technical Rules document and provide a clause that the document does change from time to time, with changes to be reflected within the Assessment Report as required.
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Rationale

As noted above, since the Assessment Report, there has been new data and typographical errors noted to be included within the next reviewing cycle. Through an assessment of policy effectiveness, risk management officials and municipal representatives noted an Appendix update on threats management, specifically existing activities, is warranted. This update would primarily focus on updating Appendix H based on reported observations and an aerial imagery search via a desktop exercise. This will include noting managed, removed, and existing threats, updating threat categories (e.g., activities thought to be significant are in fact moderate), and providing new vulnerable area threat counts where applicable.

Project Management

CRCA staff on behalf of the CSP Authority will lead the review. Additional consultation with the Committee, risk management officials, municipal representatives, and drinking water treatment plant operators will be required for data verification.

Anticipated timeline

All work to review and amend the Assessment Report, as indicated above, is anticipated to be completed and submitted to the MOECC by December 2019. Funding will be provided through the Drinking Water Source Protection Program grant.

2.1.2 Update 2: Part IV Management – Transportation Corridors

Due to the natural flow of water and fractured bedrock environments in the Cataraqui area, there is ongoing concern to properly manage transportation corridors to reduce existing and future significant drinking water threats. This often includes road operations staff from the Ministry of Transportation and local municipalities to coordinate best management practices and ensure emergency response protocols include areas of vulnerability.

Rationale

Risk management officials have reported there is an implementation challenge for addressing the 18-existing significant drinking water threats pertaining to transportation corridors throughout the Cataraqui area. Currently there is no management tool in place within the Source Protection Plan to address this threat. It is proposed a new policy be developed with the intention of managing transportation corridors using an education and outreach program enforcing best management practice considerations. Through analysis of policy implementation and significant drinking water threat management, as it relates to the objectives in the Plan, the policy for addressing this local threat has not been effective and requires modification.

Project Management

CRCA staff will lead policy development in consultation with the Committee, local municipalities, adjacent source protection areas and regions, and local stakeholder groups and will draw on wording and experience from other risk management staff and source protection plans.

Anticipated Timeline

Policy development will occur during 2019 and submission to the MOECC will be within the 2019-2020 fiscal year. Pending approval of the policy, implementation efforts will be required by 2022, two years following the new policy approval.

2.1.3 Update 3: Pipelines (Transportation of Liquid Hydrocarbons) as a Drinking Water Threat

As of July 1, 2018, the MOECC has approved an amendment to the *Clean Water Act* to require liquid hydrocarbon pipelines be assessed in all source protection areas and, where necessary, policies be developed to address the potential drinking water threat in workplan proposals.

The CSP Authority is proposing to develop a policy to incorporate pipelines as a significant, moderate, or low drinking water threat within vulnerable areas, including highly vulnerable aquifers, where specific circumstances apply. This will capture the transportation of liquid hydrocarbons over watercourses as an existing and potential future threat activity for new drinking water systems or new or revised pipeline projects.

Rationale

There are multiple pipelines within the Cataraqui Source Protection Area carrying liquid hydrocarbons across open waterbodies and the highly vulnerable aquifer environment. However, none intersect with the 12 vulnerable areas within the Cataraqui area. Within the threat circumstances table for liquid hydrocarbon transportation provided by the MOECC, highly vulnerable aquifers have a vulnerability score of 6, therefore pipeline activity is listed as a low drinking water threat. The CSP Authority has expressed interest to address this potential threat through developing a have-regard for policy to work with local pipeline stakeholder groups and ensure source protection is considered in future pipeline locations and managing the existing systems in vulnerable environments.

Consultation with representatives from Shearwater Environmental Solution Inc. have confirmed there is a mutual benefit to having a policy in place confirming environmental mitigation efforts are ongoing (e.g., visual inspections, testing, spills response etc.), with notice provided to the CSP Authority when completed in the Cataraqui area.

Project Management

Policy development will be lead by CRCA staff in consultation with the Committee, adjacent source protection areas and regions, risk management officials, MOECC staff, and local stakeholders, when applicable. Policy wording will be based on six source protection plans with current pipeline policies.

Anticipated Timeline

Policy development and consultation sessions will take place throughout 2019. Submission to the MOECC will occur in late 2019 and, pending approval, all implementation efforts will be required for

completion in 2020 by the local risk management officials. Funding for policy development will be covered through the Drinking Water Source Protection program grant.

2.1.4 Update 4: Above-grade Fuel Handling and Storage as a Significant Drinking Water Threat in Wellhead Protection Areas

The CSP Authority is requesting the consideration and addition of above-grade fuel handling and storage in exterior environments at volumes of greater than or equal to 250 litres in wellhead protection areas to be considered a local significant drinking water threat to address a gap in risk management.

Groundwater vulnerability within the Cataraqui area is high due to fractured bedrock transport pathways, minimal overburden, and high-water tables in some areas. Potential spills from exterior and interior tanks, if not properly managed, can pose a significant risk to drinking water sources.

Current significant drinking water threat activities in the Cataraqui area, excluding bulk plants and facilities that manufacture or refine fuel, include the following:

- Wellhead Protection Areas:
 - Greater than 250 litres stored below-grade
 - Greater than 2500 litres stored above-grade
- Intake Protection Zones:
 - Greater than 2500 litres stored above-grade or partially below-grade

As part of the March 2017 Technical Rule amendments, exterior above-grade fuel activities with volumes greater or equal to 250 litres are listed as significant drinking water threats in intake protection zones with a vulnerability score of 9 or 10. Relevant policies within the Plan will be updated to reflect this change. Brockville IPZ-1, James W. King IPZ-1, and Sydenham IPZ-1 are the only intake protection zones within the Cataraqui area that comply with this change. Preliminary analysis identified there are no known exterior above-grade fuel activities within any of the intake protection zones that would be considered a significant drinking water threat. This is not the case in wellhead protection areas.

The CSP Authority understands MOECC has identified topics for further discussion including the definition of groundwater transport pathways and potential impacts on the vulnerability of wellhead protection areas with high vulnerability scores (MOECC 2018). Should exterior above-grade fuel handling and storage activities in wellhead protection areas not be considered in time for workplan submissions, CRCA staff were advised to include this proposed activity for review considerations.

Rationale

During risk management implementation, officials noted there was a gap in management regarding the handling and storage of fuel tanks. For example, a property with a noted below-grade basement oil tank required a risk management plan, while the adjacent neighbour with an exterior above-grade tank of the same volume and minimal protection did not require risk management services. Risk management staff have indicated additional protection is warranted to effectively implement Part IV responsibilities in the Cataraqui area.

Heating oil contains many compounds that when spilled in large quantities can contaminate municipal drinking water (i.e., petroleum hydrocarbons). The Canadian Oil Heat Association has previously noted

above-grade fuel tanks located outside pose an equivalent or greater risk as compared to below-grade fuel storage. A spill from an exterior, above-grade storage tank can impact the soils, enter fractured bedrock environments, and potentially drinking water sources. Above-grade fuel tanks are exposed to weather and other elements, depending on their exterior placement, therefore are at an equal or greater risk of corroding and leaking due to moisture and precipitation events. As the Cataraqui area is entirely within a highly vulnerable aquifer, the risk of exterior spills directly accessing groundwater through exposed bedrock is high and should be addressed through Part IV of the Act.

CRCA staff reviewed the threat inventory for Cana, Lansdowne, and Miller Manor wellhead protection areas with vulnerability scores of 10 to determine the number of potential activities that would apply should this activity be accepted as a local significant drinking water threat. Results indicated 22 properties (10 in Cana WHPA-A, five in Lansdowne WHPA-A, two in Lansdowne WHPA-B, four in Miller Manor WHPA-A, and two in Miller Manor WHPA-B) would be flagged for inspection and potentially qualify for additional risk management (e.g., risk management plans).

The Committee and municipalities with wellhead protection areas are supportive of this activity as a local significant drinking water threat. Targeted consultation will be required with each of the municipalities with wellhead protection areas to discuss the long-term application, level of effort from risk management officials, and timeline for policy implementation moving forward.

Project Management

CRCA staff will lead policy development in consultation with local and adjacent risk management officials and the Source Protection Committee. Implementation will be the responsibility of local risk management officials. There will be technical work associated with policy development to confirm the potential significant drinking water threat activities continue to exist in the noted locations, and ensure successful implementation of Part IV management. Funding for policy development will be provided by the MOECC through the program grant, and all risk management efforts will be funded by the respective municipalities.

Anticipated Timeline

Policy development is anticipated to take place throughout 2019. Pending approval, technical work to inventory the potential threat activities would occur in 2020 through risk management official efforts or via third-party services. All potential risk management plans and Part IV services would be required to be completed by 2022.

2.2 Required Document Updates – Cataraqui Source Protection Plan

To ensure continuous improvement of the Drinking Water Source Protection Program, multiple implementers have recommended considering the addition and modification of specific policies within the Plan. This section outlines possibly modifying policy text to improve applicability, understanding, and overall policy effectiveness. All policies, unless otherwise stated, will be developed by CRCA staff in consultation with applicable implementers and the Source Protection Committee with funding from the MOECC's program grant.

2.2.1 Update 5: Clerical Amendment

Originally intended to be completed under section 51 of the Act, CRCA staff were directed by the MOECC to include these items as part of this proposal.

Rationale

Cataraqui Source Protection Plan, Appendix D outlines the policies applicable to all implementers within the Cataraqui Source Protection Area, but does not include an exhaustive list. Through implementation reporting, municipalities noted the summary tables of policy requirements included in Appendix D were not all-inclusive of the requirements implementers were expected to implement.

Project Management and anticipated timeline

CRCA staff on behalf of the CSP Authority will be responsible for updating this item and will notify the MOECC of the change when it is completed in late 2019.

2.2.2 Update 6: Salt Management Plan Source Protection Review

Many policies within the Plan are non-binding and not often implemented in the suggested timeline due to staffing challenges. Road salt continues to be a concern across the Province of Ontario, especially with increased winter storm events and longer maintenance periods. Municipalities have expressed interest that the timeline for source protection integration should be reviewed to ensure road salt as a potential drinking water threat along transportation corridors and in highly vulnerable aquifer environments is considered prior to the next review of National Canadian Road Salt Standards (4.7.2-NB, CSPA 2014).

The CSP Authority is aware Conservation Ontario is developing a salt management document for distribution across the Province, which will provide additional guidance on how to incorporate source protection into winter maintenance protocols. The MOECC is also developing alternate methods for road salt distribution and management, which may need to be considered during a future amendment of the Plan. However, to improve implementation, policy modification is proposed.

Rationale

Through municipal reporting, updates to some winter maintenance and salt management plans have not been incorporated with source protection mapping and resources due to the statement "...the establishment or update of the salt management plans should occur within three years of the Code of Practice being updated" (CRCA 2014) based on the timeline for the Government of Canada Code of Practice for the Environmental Management of Road Salts Review (April 2004). Smaller municipalities have noted there is interest in creating salt management plans, although not required due to quantities below the 500MT threshold and expressed this should be considered in a modification to the policy.

Project Management

CRCA staff will lead the policy review and consult with local stakeholder groups, MOECC staff, and local municipalities who have not already implemented this policy. The cyclical review aspect would remain the same, but the policy would include flexibility to ensure source protection considerations are included.

Anticipated Timeline

Policy development will occur during 2019 and submission to the MOECC will be within the 2019-2020 fiscal year. Pending approval of the policy, implementation efforts will be required by 2022, two years following the new policy approval.

2.2.3 Update 7: Part IV Management – Small Quantities of Hazardous Waste

There is a noticeable implementation challenge with addressing small quantities of hazardous waste in the Cataraqui area due to the uncertainty of how to classify waste, the minimum quantity requirements, and the effort required by risk management staff to properly manage the threat. CRCA staff therefore propose policies pertaining to small quantities of hazardous waste management be modified to improve current and ongoing implementation (6.3.4-CW, 6.4.5-CW, 6.5.4-CW, CSPA 2014).

Rationale

Risk management officials have reported the consideration for modifying policies pertaining to the management of small quantities of waste through education and outreach initiatives to address future threats.

Currently, small quantities of waste activities are managed through risk management efforts under the *Clean Water Act*, using the requirement of a risk management plan. The initial inventory of threats included extensive research, third-party assistance, and site visits to assess small quantities of hazardous waste as part of the threat enumeration work for the Assessment Report (2011), with no risk management plan requirements. Risk management officials noted the same management outcome could have been achieved through an inventory and education and outreach program. This would improve management sustainability moving forward. Implementation is challenging and often the chemicals under investigation are unknown to risk management staff. A similar initiative was successfully completed in the Brockville Intake Protection Zone through targeted information packages about handling and storage of agricultural source material and managing livestock confinement.

The Committee has expressed its concern with removing the risk management plan requirement from addressing the existing and future small quantities of hazardous waste drinking water threat; however, would like to consider alternative policy text to improve implementation and policy effectiveness moving forward.

The CSP Authority is aware the MOECC is reviewing small quantities of hazardous waste circumstances, including minimum quantity thresholds and will incorporate any guidance or amended rules when appropriate.

Project Management

CRCA staff on behalf of the CSP Authority will lead this project with consultation from risk management officials, adjacent source protection areas and regions and MOECC staff to determine whether a policy amendment would achieve enhanced policy implementation.

Anticipated Timeline

Policy development will occur during 2019 and submission to the MOECC will be within the 2019-2020 fiscal year. Pending approval of the policy, implementation efforts will be required by 2022, two years following the new policy approval.

2.3 Improving Municipal Implementation – Assessment Report

Within the Cataraqui area, delineated vulnerable areas are increasingly at risk to pressures from urban development, climate changes, winter maintenance operations, and stormwater runoff. Through municipal and sector feedback, additional management consideration is warranted for to ensure environmental protection mechanisms are in place to ensure the drinking water source protection program can adapt to ongoing changes on the landscape and effectively reduce risks.

2.3.1 Update 8: Climate Change Review

With a continuously changing climate, there is a need to understand how to incorporate vulnerability and adaptation into municipal intake and well water quality management. Through local initiatives such as flood forecasting and warning, water treatment plant raw water monitoring, Provincial surface water and groundwater monitoring programs, and stormwater management, it is evident there have been more frequent storm events and variable climate conditions since the development of the Assessment Report. The Committee and municipal representatives have expressed their concern and interest in learning how to incorporate these changes into daily operational practices to improve emergency response and reduce risks to water quantity and quality at intakes and wells. This could include consideration for blue-green algal assessments along Lake Ontario and Sydenham Lake and establishing a list of climate indicators for incorporation into technical work.

Rationale

Through environmental monitoring programs there have been multiple events showing increased flows, high turbidity, and rises in chloride concentrations. Water treatment plant operators have noted improvements were required to enhance infrastructure (e.g., filter capacity) to ensure enhanced drinking water treatment. Municipal representatives noted transport pathway consideration and notification is challenging with properties adjacent to intake and wellhead protection zones or those near headwaters, as it is uncertain how they will impact contaminant transport with variations in climate.

Similarly, stormwater management policy implementation has been noted as a challenge within vulnerable areas due to the natural geology of the area reducing the effectiveness of low impact development solutions (e.g., minimal overburden for saturation). There is uncertainty on how to incorporate source protection into best management practices and site plan development applications while allowing for adaptation of multiple environmental scenarios.

As noted in Chapter 7 of the Assessment Report (2011), climate change has a direct impact to water quantity and quality and there are multiple instances where vulnerable area delineations may require modifications to capture additional transport pathways and climate variations. Within the Assessment Report, the Great Lakes intake delineation modelling was based on 10-year and 100-year storm event conditions from April-October 2006 (Paturi and Boegman 2009). Since then, climate patterns and local

storm conditions have changed quite substantially where a 100-year storm event may no longer accurately reflect environmental conditions, and the ice-free periods on the lake may be longer than previously recorded (personal communication 2018). Incorporating climate change considerations into source protection initiatives and land use planning is essential to effectively implement policies and ensure drinking water system protection. This aligns with the MOECC’s vision to “ensure consideration of climate change mitigation and adaptation (resilience) is embedded into every decision and action” (MOECC 2017).

To be clear, a climate change review would include a literature review of local climate projections and technical study assumptions for identifying key indicators to incorporate within the proposed priority projects included within this proposal. The review would be inline with the MOECC’s guidance and may be required as an on-going effort.

Project Management

CRCA staff will lead this initiative on behalf of the CSP Authority. To properly incorporate climate change into the proposed items for review, where applicable, it is important to assess the vulnerability of drinking water sources to qualitative climate change data to evaluate the potential impacts on water quality. The Committee and CSP Authority fully support the MOECC and Conservation Ontario’s initiative to provide a guidance document and risk assessment workbooks to assist in this process. The climate change review would therefore incorporate four main aspects, as outlined in Figure 1.

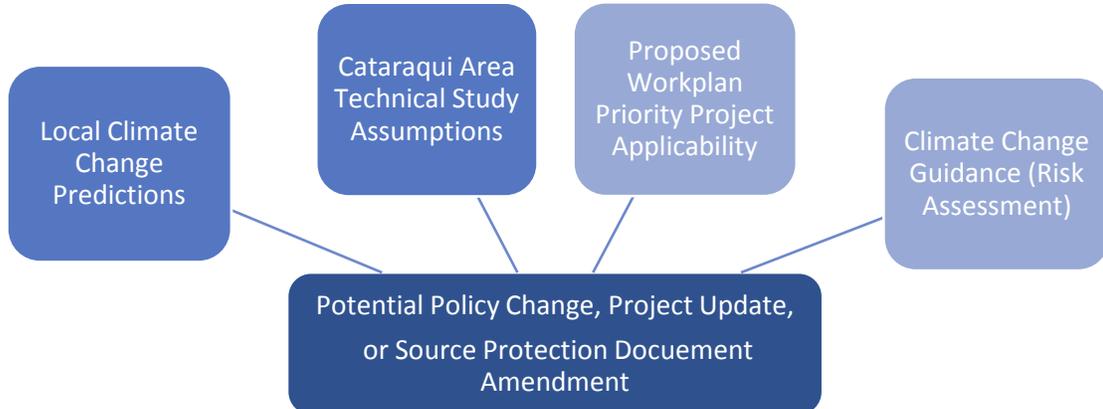


Figure 1: Climate change review project details

Additional collaboration with academia and municipal representatives will be encouraged, as well as with source protection project managers across Ontario. To efficiently conduct the work, CRCA staff will consider hiring a third-party consultant, pending external funding support from the MOECC or other sources, to provide a literature review and data analysis of local climate predictions and technical study assumptions.

Anticipated timeline

Should the climate change guidance be available in the fall of 2018, CRCA staff anticipate initiating a review of climate change literature and data (e.g., modelling, academic literature review, local data analysis etc.) throughout 2019. This includes conducting a climate change risk assessment based on the MOECC's guidance for water quality in vulnerable areas. Pending analysis results, new policies may be proposed in 2020, otherwise the results from the review will be used to establish climate change indicators to be incorporated into all future amendments and source protection initiatives for the Cataraqui area. Any management and implementation actions required will then take place in 2021-2022. A notice to the MOECC regarding findings and potential policy implications is anticipated to be submitted in 2020.

2.3.2 Update 9: Western Intake Reclassification

Through discussions with MOECC staff, it was noted there are three potential management options for enhancing the protection of four near-shore and shallow intakes in the western jurisdiction of the Cataraqui area (A.L. Dafoe IPZ and Sandhurst Shores IPZ in the Township of Greater Napanee, and Bath IPZ and Fairfield IPZ in Loyalist Township). Additional review of the three management options would determine whether there would be a risk to drinking water quality should significant drinking water threats be added in the area. The three management options are as follows:

1. Reclassify "Type A" intakes (Great Lakes) to "Type D" (Other) (not preferred);
2. Maintain "Type A", modify vulnerability factors to increase score (option); and
3. Identify an issue contributing area where applicable (option) - additional detail on this option is provided in the next section.

Rationale

In speaking with water treatment plant operators and municipal staff from Loyalist Township and the Township of Greater Napanee, there is concern the intakes are at risk to nearshore contamination during more frequent and high intensity storm events. Loyalist Township has expressed their concern with local agricultural management practices, increasing development pressures, and enhanced stormwater runoff due to impervious surfaces. The Bath intake is currently experiencing a sedimentation challenge and during peak storm events, the filters in the water treatment plants are often clogged. As there are no significant drinking water threats associated with any of the four western intakes, policy implementation is minimal. Highway 33, which runs parallel to all four intakes is a transportation pathway of concern.



Loyalist Township Bath Intake within a sedimentation plume during a heavy rain event on April 4, 2018. The circle highlights the location of the intake from shore.

In March 2017, a new amendment to the Director's Technical Rules noted in rule 95.1 stated if an intake is located in shallow waters, is in close proximity to the shoreline, or there has been a history of water

quality concerns, the vulnerability factor may vary from 0.5-1.0. All four western intakes are located within the Lake Ontario near-shore environment and compared to other Type A, Great Lakes intakes are significantly shallower, suggesting there is merit to revisit the vulnerability scoring (CRCA 2017).

In connection with the depth and proximity to shore, research from Queen's University noted contaminants might become trapped due to a "thermal bar" known to develop along the Lake Ontario shoreline, which affects the hydrodynamics of the water surrounding the four intakes (Hall 2008). This was not pursued during the first cycle of source protection planning owing to time and resource constraints; therefore, there are neither significant drinking water threats nor binding source protection policies for these vulnerable areas at present.

A preliminary analysis was completed in March 2017 by CRCA staff to revisit the vulnerability scoring, present information to support higher scores, indicate significant drinking water threats and policy tools that may apply, and recommend additional work required to inform local decision-makers through a desktop analysis (CRCA 2017). By increasing the vulnerability factor for all western intake zones, CRCA analysis showed vulnerability scores increased to eight or higher for all zones except Sandhurst Shores IPZ-2. This would result in significant drinking water threat identification, management, and policy development, and would require the establishment of a risk management office at the Township of Greater Napanee and Loyalist Township.

The Township of Greater Napanee and Loyalist Township wish to continue consultation to determine the best approach for managing the vulnerable intakes. The Township of Greater Napanee reported no evidence of contamination in their raw water treatment and have not expressed the same concerns at their intakes. In comparison, Loyalist Township has previously expressed interest in increasing the vulnerability scores of Bath and Fairfield intakes to address intake vulnerability to contamination. There are concerns in the area due to shallow overburden, sedimentation from stormwater runoff, and bacterial concentrations, affecting the overall vulnerability of the intake during storm events.

Project Management

Additional consultation with the respective municipalities is planned to determine the feasibility and impact should the vulnerability scores be increased at one or all four western intakes. Further work is necessary to determine the financial, political, and practical implications of the increased vulnerability scores and will include consideration as to whether the source waters would be better protected after the proposed changes. CRCA staff will support the project, however, the project lead will be staff from Loyalist Township and the Township of Greater Napanee should this option be considered moving forward.

Pre-consultation with both municipalities indicated funding sources would need to be secured prior to completing the work and assistance from the MOECC would be sought.

As a decision has not been reached whether this management option is the most effective and feasible, the CSP Authority, with endorsement from the Committee and respective municipalities, is proposing the project for further consideration and analysis. This includes meeting with municipal planning, operations, and management staff during 2018. An update to MOECC will be provided once a decision has been made for the above noted intakes.

Anticipated timeline

Consultation has been initiated in 2018 and will continue throughout this fiscal year to determine the best path forward. All associated technical work, if required, is anticipated to follow in 2019, pending funding sources are secured. Technical work would include a risk management threat enumeration exercise. Policy development and approval will take place in 2020 and all associated actions to implement the policy would be required two years following the Plan's amendment in 2022.

2.3.3 Update 10: Issues Contributing Area Consideration

Discuss the possibility of delineating an issue contributing area as a management option around the Bath Intake Protection Zone to address activities associated with increased sedimentation and total coliform raw water concentrations, as identified by Loyalist Township staff.

Rationale

Environmental monitoring and implementation reporting has indicated there are increased instances of high turbidity, total coliform and E. coli bacteria in the raw water, particularly post-storm events. Based on the Director's Technical Rules (2017), a water quality "issue" is a parameter of human health concern that is present at a concentration exceeding the Ontario Drinking Water Quality Standards or showing an increasing trend that would result in the deterioration of water quality, or the parameter is already at a concentration that may result in the deterioration of water quality. For the Bath IPZ, total coliform is a human health concern if above 0 CFU/100 mL and often found in soils and vegetation, as the soil particles can carry the bacteria throughout the watershed. Often not a health risk, the presence of total coliform indicates the raw water is vulnerable to contamination from other bacteria (Parcel Laboratories Ltd. 2006). Therefore, Township staff have expressed interest in exploring this management option, as an issues contributing area would allow for significant drinking water threat activities to be inventoried that are specific to the high concentration in raw water, rather than identifying all potential threat activities in the watershed.

The CSP Authority is proposing this Township continue to work with CRCA staff to fully consider this option for enhanced risk management at the Bath intake. A decision on whether the project will continue will be provided to the MOECC prior to its initiation.

Project Management

CRCA staff are working with Loyalist Township to determine the feasibility of this proposed project and investigating the benefit a potential issue contributing area may have on the Bath intake. As sedimentation is the primary driver, CRCA staff have partnered with Loyalist Township staff and Lafarge Canada Inc to create a sampling plan for the four creeks inflowing into the Bath intake. To-date there have been two sampling runs completed during peak rain events in spring 2018. Initial observation indicates there is agricultural runoff on farm property due to lack of appropriate buffers and best management practices.

Should this be the preferred management option moving forward, Loyalist Township staff will be the lead on the project with support from the CRCA. In speaking with the Township staff, funding sources will need to be acquired to assume this work. Funding support from the MOECC will be discussed.

Anticipated timeline

Additional consultation is required with Loyalist Township to determine the necessity for moving forward with this potential project. The outcome will depend on which management strategy will best effectively reduce contamination risks to the Bath Intake moving forward. However, should this be the preferred option, additional desktop analysis and in-field work will be required by Loyalist Township staff with CRCA support. Loyalist Township will be required to set up a risk management office and appoint a risk management official to manage the significant drinking water threat activities that would be identified through additional on-the-ground technical work. Planned work would take place in 2021-2022 after required policies have been developed, discussed by the Committee, and approved by the MOECC in 2020.

3.0 Conclusion

Since 2015, significant progress has been made to effectively implement the policies within the Cataraqui Source Protection Plan; however, multiple areas warrant additional review to address management gaps and implementation challenges for improving source protection efforts. Through preliminary analysis of the Plan and Assessment Report, nine priority projects were identified for inclusion in this workplan. The timeline for completion of all proposed updates is March 2023. Additional consultation is required to initiate a comprehensive review of the proposed actions, which is scheduled to begin in late 2018.

Ministry of the Environment
and Climate Change

Ministère de l'Environnement et de
l'Action en matière de changement
climatique



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ENV1283MC-2012-2398

Mr. Allan McPhail
Chair, Cataraqui Source Protection Authority
Box 160, 1641 Perth Road
Glenburnie ON, K0H 1S0

Mr. John Williamson
Chair, Cataraqui Source Protection Committee
4145 Homes Road, R.R. #1
Inverary ON K0H 1X0

Dear Mr. McPhail and Mr. Williamson:

It is a pleasure to inform you that the review of the source protection plan for the Cataraqui Source Protection Area, developed under the Clean Water Act, 2006, has been completed. Pursuant to section 29 of the Clean Water Act, I approve the plan for the Cataraqui Source Protection Area.

I appreciate the efforts undertaken by the Cataraqui Source Protection Committee and Authority and all stakeholders to assess and develop a plan 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 source assessment and development of the Cataraqui source protection plan with an investment of \$5,816,623 since 2004. An additional \$425,370 was provided within the Cataraqui Source Protection Area for various projects under the Ontario Drinking Water Stewardship Program to landowners, municipalities and the conservation authority to take action to protect drinking water.

Following today's approval of the plan, in order to allow time to prepare for implementation, the Cataraqui source protection plan will take effect on April 1, 2015. Please ensure that this date is clearly stated in the plan when it is posted on the Internet. As specified in the Clean Water Act, the ministry will be posting a notice of the approval of the plan on the Environmental Registry as soon as possible.

Mr. McPhail and Mr. Williamson
Page 2:

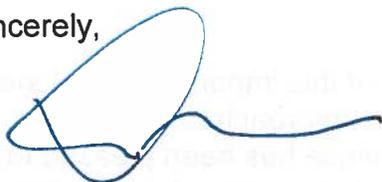
Under section 36 of the Clean Water Act, when a source protection plan is approved, an order must also be given that governs the review of the plan. Pursuant to clauses 36 (1) (c) and (d), and as an initial step in the development of detailed requirements that will govern the plan's review, the Cataraqui Source Protection Authority shall prepare and submit a workplan to the ministry. The workplan shall propose the detailed steps for the review of the plan, including which portions of the plan are to be reviewed, the timeframes for each step of the review and the consultation that would be undertaken as part of the review. A rationale shall accompany the workplan that explains its contents and summarizes how the workplan was developed. The workplan shall be developed in consultation with the Cataraqui Source Protection Committee, participating municipalities of the Cataraqui Source Protection Area, 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 plan 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 governing the content and timeframes that will govern the review of the plan for the Cataraqui Source Protection Area.

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.

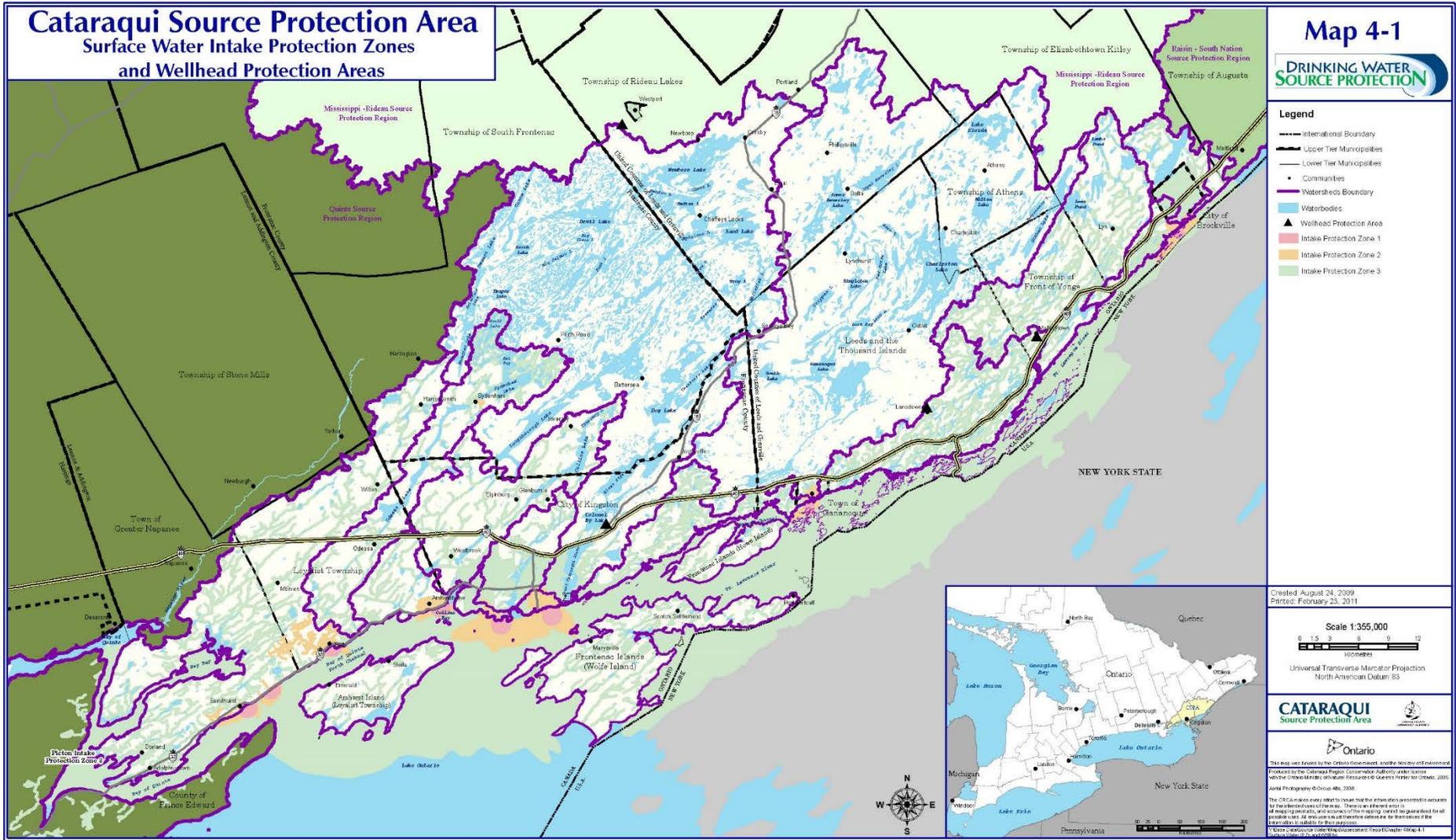
Sincerely,



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
- Stephen Knechtel, General Manager/Secretary Treasurer, Cataraqui Region Conservation Authority
- Rob McRae, Project Manager, Cataraqui Source Protection Authority

Appendix B – Cataraqui Source Protection Vulnerable Areas Map





Municipal Stakeholder Workshop Summary

Outdoor Center, Little Cataraqui Creek, February 26, 2018

CRCA staff on behalf of the Cataraqui Source Protection Authority held a municipal stakeholder workshop on February 26, 2018 to speak to:

1. Annual reporting: results, challenges, areas of improvements, reasons for not reporting or minimal implementation; and
2. Highlight priority projects for inclusion within the section 36 workplan while providing an opportunity for discussion.

The workshop provided multiple opportunities for municipal staff to provide feedback and suggestions, and was based on the guidance provided by the Ministry of Environment and Climate Change (2016). All comments were asked to be returned by March 9, 2018.

Results

Out of the 15 municipalities invited, seven participated in the workshop. All the proposed items for inclusion in the section 36 workplan were accepted for further consideration. There were four main themes drawn from the workshop discussion:

1. **Source protection is being integrated into daily business practices**, but interdepartmental knowledge transfer and policy implementation is slow
2. **Policies are often challenging to implement** (e.g., transport pathway notification uncertainty, stormwater management etc.)
 - In municipalities where there are no significant drinking water threats, how much influence does a municipality have on a development site plan with regards to source protection efforts, especially if already approved through an ECA prior to the source protection plan coming into effect
3. **Municipalities are concerned regarding funding and Provincial support.** Cyclical updates are important and highlight the need for continued education and outreach and assessment of risk management effectiveness.
 - This was primarily speaking to increasing vulnerability scores in a vulnerable area and the potential of assuming communal wells in future developments
4. **Integrating climate change and source protection into land use planning and business practices is challenging.** Is there guidance being developed to help with municipal implementation and adaptation?

From the highlighted discussion points above, there were multiple recommendations and questions for future consideration in source protection document amendments. They included the following:

- Enforcement of drinking water threat management activities (e.g., risk management) should be considered if there are areas not achieving required responsibilities. Who has the authority to do this and what would enforcement look like? Compliance dates should not be changed within the Cataraqui Source Protection Plan to encourage action.
 - o Follow-up – CRCA should consider mapping significant drinking water threats and management status for municipal staff

- Road signs should be installed at all vulnerable areas, not just where significant drinking water threats are present (e.g., along Highway 33)
 - o Follow-up – CRCA should provide a map of all road sign locations to municipalities

- There are land use changes through growth and infrastructure being planned on the landscape. How will this best be captured in source protection mapping moving forward?

- How are transport pathways that occur outside vulnerable areas (often adjacent to boundaries) but will have a direct effect on vulnerable area (e.g., flow rates, runoff etc.) best addressed? Do they need to be part of the notification process? Is this up to the municipality?

- Technical studies need to be discussed and planned to help support development and enhanced source water protection
 - o Follow-up – CRCA should determine where data gaps remain and the type of information required for municipalities and other stakeholders to gather / fund for acquiring (this includes climate change considerations) and will help with funding allocations moving forward

- Alternatives for low impact development should be considered in the Cataraqui area, as the bedrock environment is vulnerable and variable. Often techniques such as bioswales are not conducive for this area due to minimal overburden and fractured bedrock.



To be completed in fall 2018.