DRINKING WATER SOURCE PROTECTION
Our Actions Matter

CATARAQUI Source Protection Area

Cataraqui Source Protection Area Policy Implementation Progress Report 2015 – 2021

May 1, 2022

The following annual report outlines the progress made in implementing source protection policies within the Cataraqui Source Protection Area (Cataraqui area), from April 1, 2015 to December 31, 2021.

Report contents are based on criteria provided by the Ontario Ministry of the Environment, Conservation and Parks (MECP) to score reporting feedback from implementing bodies, Risk Management Officials / Inspectors, and the Cataraqui Source Protection Committee (the Committee), while highlighting progress towards achieving the objectives within the Cataraqui Source Protection Plan (the Plan).

This report was prepared by Cataraqui Conservation staff on behalf of the Cataraqui Source Protection Authority. Local municipalities, Ontario provincial ministries, local public health units, landowners, stakeholders, and the Committee have all contributed to developing the Plan and implementing the associated policies.

Our Source Protection Area

Under the Ontario *Clean Water Act,* the Plan includes policy requirements and/or recommendations to reduce the risk of pollution in vulnerable areas surrounding municipal, residential drinking water supplies and sensitive groundwater areas. Additionally, there are related reporting obligations and recommendations included to track policy implementation and effectiveness. The Plan consists of 144 policies, 12 municipal drinking water systems, and came into effect on April 1, 2015.

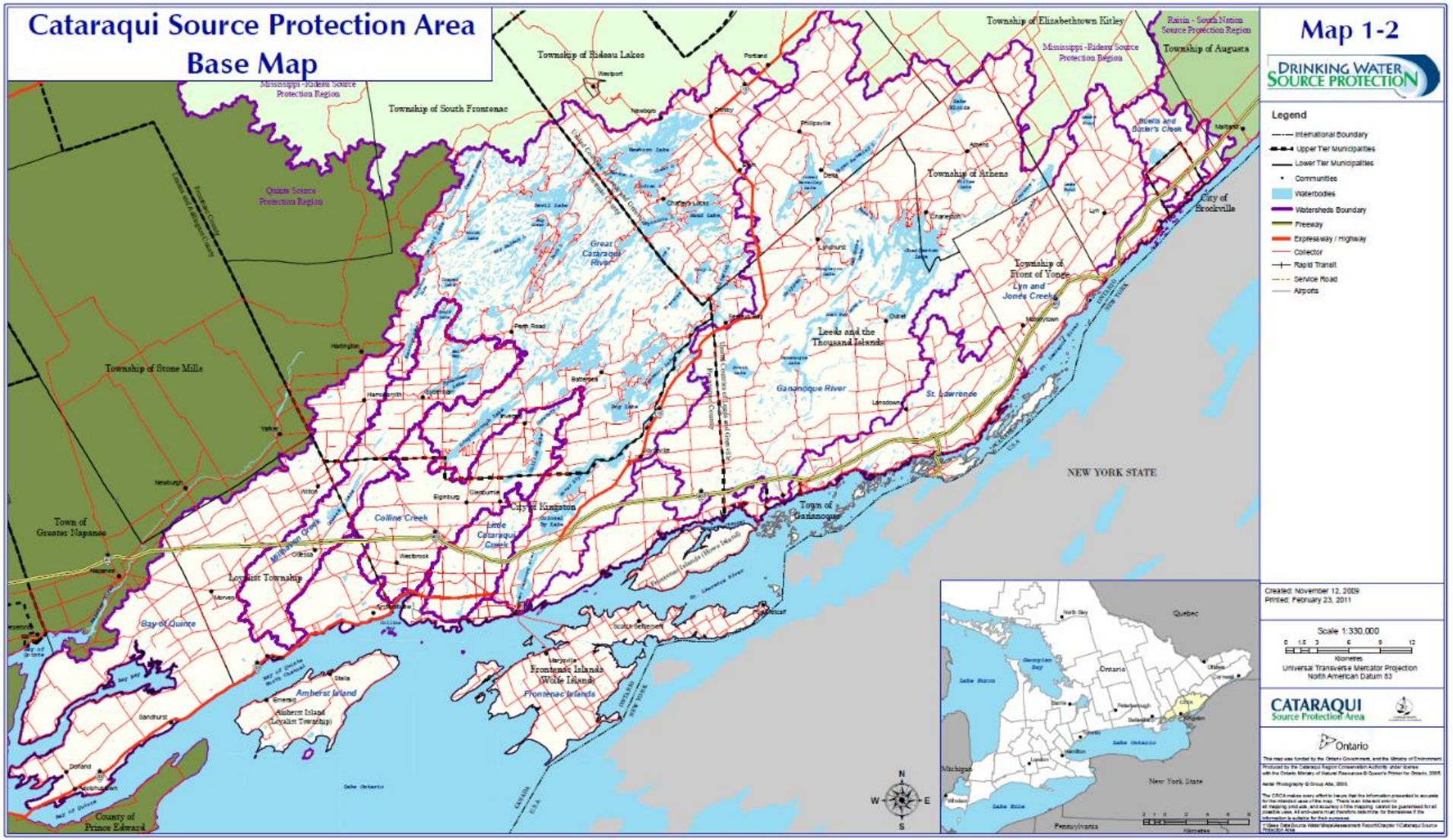
The Cataraqui area is comprised of 12 major watersheds that represent the jurisdiction of Cataraqui Conservation, with the addition of the Frontenac Islands (Howe and Wolfe Islands), and about 1,800 smaller islands in the St. Lawrence River. Located at the eastern end of Lake Ontario and beginning of the St. Lawrence River, the Cataraqui area measures approximately 3,600 square kilometers, with 12 lower tier municipalities, 3 upper tier municipalities (e.g., counties), and about 212,500 residents. Most of the population live in towns and urban centers concentrated along the shoreline, such as the City of Kingston (about 161,175 residents), and City of Brockville (about 22,000 residents), while the remaining live in rural areas[1].

The area is characterized by exposed bedrock, lakes, and woodlands of the Canadian Shield (Frontenac Axis) in the central part, and an agricultural landscape of limestone and clay plains to the west and east. Two main rivers, the Cataraqui and the Gananoque, flow towards Lake Ontario and the St. Lawrence River. In addition, several smaller tributaries drain throughout the western and eastern sections with 39 dams and water control structures in operation.

Approximately 80% of the residents (about 170,000) rely on municipal drinking water systems from surface or groundwater sources. The remaining 40,000 obtain their drinking water from private wells or intakes.

[1] Statistics Canada 2016 Census

Figure 1: Cataraqui Source Protection Area Base Map (Map 1-2 from 2011 Assessment Report)



The Cataraqui area has nine drinking water systems serving about 155,000 residents within intake protection zones (IPZs). One is in Sydenham Lake, six are along the Lake Ontario shoreline, and two are located along the St. Lawrence River. From west to east they include:

1. Town of Greater Napanee - Sandhurst Shores,
2. Town of Greater Napanee - A.L. Dafoe,
3. Loyalist Township – Fairfield in Amherstview,
4. Loyalist Township – Bath,
5. City of Kingston - Point Pleasant,
6. City of Kingston - Central,
7. Town of Gananoque - James W. King,
8. City of Brockville – Brockville, and
9. Township of South Frontenac - Sydenham.

Figure 2: Exposed bedrock, karst (fractures created by water drainage), and thin soils are common characteristics in the Cataraqui area.

In addition to the intake protection zones listed above, three municipal drinking water systems rely on groundwater. They include:

1. City of Kingston - Cana Subdivision (Kingston Mills),
2. Township of Front of Yonge - Miller Manor Apartments, and
3. Township of Leeds and the Thousand Islands – Lansdowne Well Supply.

The Picton Intake Protection Zone located around a municipal, residential intake in the Quinte Source Protection Region also extends into the Cataraqui area, as does a portion of the Westport Wellhead Protection Area (from the Mississippi-Rideau Source Protection Area).

Comments from the Cataraqui Source Protection Committee

The Cataraqui Source Protection Committee (SPC) is a multi-stakeholder group comprised of 16 members. The Committee's progress score for the Cataraqui area on achieving source protection plan objectives this reporting period is as follows:

P: Progressing well / on target: The majority of the source protection plan policies have been implemented and/or are progressing in accordance with the timelines specified in the source protection plan.

S: Satisfactory: Some of the source protection plan policies have been implemented and/or are progressing in accordance with the timelines specified in the source protection plan.

L: Limited progress made: A few of source protection plan policies have been implemented and/or are progressing in accordance with the timelines specified in the source protection plan.

The majority of significant drinking water threat policies are being implemented as required. Progress toward implementation of non-binding policies remains ongoing.

The Committee arrived at the above grade based on implementation efforts to date and compliance with noted timelines in the Plan. Members noted a score of "Satisfactory" is warranted as the majority of the Cataraqui Source Protection Plan is implemented but a few binding significant drinking water threat policies are outstanding along with non-compliance pertaining to the establishment of risk management plans in the Lansdowne Wellhead Protection Area and conducting the second round of septic inspections. Efforts were hampered in 2021 with the on-going COVID-19 pandemic and staffing changes but work is underway to ensure risk management and septic re-inspections are addressed to achieve the program's objectives in 2022.

Committee members are committed to engage municipalities, other implementing bodies, and representatives within their sector to ensure the success of the source protection program moving forward.

At a Glance: 2015 – 2021 Implementation Progress

1. Source Protection Plan Policies

P: Progressing Well/On Target

Of the 68 policies addressing significant drinking water threats, 85% have been implemented in accordance with the timelines set out in the Plan and / or were evaluated to determine no further action is required. An additional 12% are in progress with just 3% with no progress.

All policies to be completed immediately following the Plan's effective date have been implemented for land use planning, including the initiation of risk management efforts and municipal operation-based policies. Ontario Provincial ministries and local health units have also reported high implementation success.

2. Municipal Progress: Addressing Risks on the Ground

P: Progressing Well/On Target

Within the Cataraqui area, there are 15 implementing bodies including upper-, lower-, and separated municipalities with a total of 12 IPZs and WHPAs. Out of the fifteen, seven municipalities, listed below, have vulnerable areas where significant drinking water threat policies apply:

1. Cana WHPA - City of Kingston
2. Lansdowne WHPA - Township of Leeds and the Thousand Islands
3. Miller Manor WHPA - Township of Front of Yonge
4. Brockville IPZ - City of Brockville / Township of Elizabethtown-Kitley
5. Sydenham IPZ - Township of South Frontenac, and
6. James W. King IPZ - Town of Gananoque / Township of Leeds and the Thousand Islands.

Seventy-four percent (74%) of all municipal policies in the Plan have been implemented. Further, when only significant drinking water threat policies are considered, 2021 reporting results show that the level of completion is 88% percent.

The following table outlines municipal source protection implementation related to day-to-day decision making and operations.

Table 1: Level of Municipal Source Protection for Daily Operations and Procedures

Category	Percent Complete	Notes
Restricted Land Use	100%	
Prohibitions	100%	
Transport Pathways Notification	100%	
Land Use Planning (includes non-binding policies)	97%	Only non-binding polices have yet to be fully implemented
Education and Outreach	72%	Only two of the fifteen municipalities have yet to fully implement their binding education and outreach policies.
Operations (includes non-binding policies)	52%	Some Emergency Response Plan updates and specific strategies are either in progress or yet to begin.

The seven lower tier and separated municipalities with significant drinking water threats are required to review and update their Official Plan and Zoning By-Laws to ensure they conform with the Plan by April 2020 or no later than at the time of the next review required under section 26 of the *Ontario Planning Act*. Five of seven municipalities have completed Official Plan amendments while the other two are in progress. Three of the seven municipalities have updated their Zoning By-Laws, four others are in progress.

3. Septic Inspections

S: Satisfactory

Initial Inspections

Twenty-two significant drinking water threat onsite sewage systems are required to be inspected once every five years in accordance with the Ontario Building Code's mandatory program. Currently, this responsibility falls under Leeds, Grenville and Lanark District Health Unit for the Miller Manor Wellhead Protection Area and Lansdowne Wellhead Protection Area and the City of Kingston for the Cana Wellhead Protection Area.

Inspection results were to be provided by January 17, 2017 by both public health units. Ninety-five percent of the on-site sewage systems have been inspected in accordance with the Ontario Building Code.

One initial inspection remains within the Cana Wellhead Protection Area. This system was incorrectly identified as a moderate drinking water threat in the Cataraqui Source Protection Area Assessment Report. The building on this parcel is a warehouse and requires working with the body responsible for re-inspection to confirm that an on-site sewage system is present before making an amendment to reclassify it from a moderate to a significant drinking water threat. The City of Kingston took over this responsibility and is in the process of developing their septic inspection and maintenance program.

The initial round of inspection results showed septic systems are functioning as designed. A mix of major and minor work was completed since 2010 to ensure sources of drinking water are protected.

Re-inspections

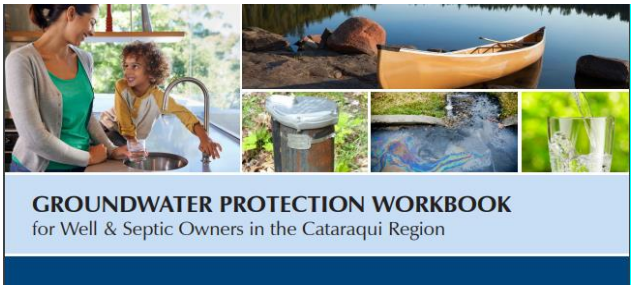
Of the twenty-two significant drinking water threat onsite sewage systems, a total of nineteen are due for re-inspection (1 due in 2017, 1 due in 2018, 7 due in 2020 and 10 due in 2021). Of these, one inspection was completed in 2021. The completion of these re-inspections is anticipated for 2022. For the outstanding re-inspections in the Cana Wellhead Protection Area, work is anticipated to begin following implementation of the City of Kingston's septic inspection and maintenance program. Additionally, communication between the Township of Front of Yonge and the Leeds, Grenville and Lanark District Health Unit is on-going to develop a plan to complete the remaining re-inspections in the Miller Manor Wellhead Protection Area.

Education and Outreach

Through this program, educational materials have been provided to septic system owners with recommendations for number of pump-outs and best practices for maintenance based on the requirements of the system.

The Groundwater Protection Workbook continues to be distributed to onsite sewage system owners to improve understanding of proper care, use and maintenance of onsite sewage systems to increase source water protection in the extensive highly vulnerable aquifers.

Figure 3: Groundwater Protection Workbook for Well & Septic Owners in the Cataraqui Region



4. Risk Management Plans (RMPs)

S: Satisfactory

In 2018, municipalities where Part IV policies apply removed themselves from a joint Regional Risk Management Office hosted by the Cataraqui Region Conservation Authority and retained their responsibility for risk management efforts in-house or through a third-party. Through this process, there are now four Risk Management Offices within the Cataraqui Source Protection Area, as shown in Table 2. All RMPs were to be completed two years following the effective date of the Plan (April 1, 2017).

Table 2: Risk Management Offices in the Cataraqui Source Protection Area

Municipality with Part IV Responsibility	Risk Management Office
Township of Front of Yonge	In-house: Township staff
Town of Gananoque	In-house: Township staff
Township of Leeds and the Thousand Islands	Third party: Malroz Engineering Ltd.
City of Kingston	Third party: Cambium Inc.
City of Brockville	Third party: Cambium Inc.
Township of Elizabethtown-Kitley	Third party: Cambium Inc.
Township of South Frontenac	Third party: Cambium Inc.

Within the Cataraqui Source Protection Area a hundred and eighty (180) significant drinking water threats were identified through the Assessment Report (2011, revised 2017). Of these threats, fifty-nine (59) existing drinking water threats remain to be addressed, belonging to the Township of Leeds and the Thousand Islands. Therefore, 67% of significant drinking water threats have been addressed through policy, some of which include implementation of Risk Management Plans.

It is important to note that not all remaining significant drinking water threats will be addressed through Risk Management Plans. As per Table 10 below, eighteen (18) threats related to transport corridors are aimed to be addressed through new education and outreach policies. These policies are currently in draft for addition into the Section 36 Source Protection Plan amendment.

There are currently fourteen (14) Risk Management Plans (RMP) established across the Cataraqui area, four (4) of which were established in 2021 in the Township of Leeds and the Thousand Islands. Additionally, three (3) have been renegotiated: two (2) resulting from change of property ownership and one (1) equipment upgrade. Work to negotiate the remaining parcels of land where significant drinking water threats were identified in the

Township of Leeds and the Thousand Islands remains ongoing. This includes twelve (12) draft RMPs out for signature, and the remaining parcels requiring threat verification.

In 2019, the Township followed an action plan to conduct drinking water threat verification work and contact property owners. Efforts to establish RMPs were slowed by the COVID-19 pandemic in 2020 and 2021. Throughout the on-going pandemic, the RMO for the Township of Leeds and the Thousand Islands was able to complete some threat verification (on both parcels from the initial enumeration and additional potential threat parcels), establish 4 new RMPs, and draft 12 RMPs. Threat verification at the remaining parcels will aid in confirming the remaining number of RMPs required. The Risk Management Officer for Leeds and the Thousand Islands has also drafted letters for properties with potential threats to provide education on these threats and assist with threat verification during the pandemic.

There were six property inspections conducted in 2021, with two occurring in the Township of Leeds and the Thousand Islands, and four in the Township of Front of Yonge. To date, no orders, or notices have been carried out.

5. Provincial Progress: Addressing Risks on the Ground

P: Progressing Well/On Target

Ontario ministries are reviewing provincial approvals (i.e., environmental compliance approvals), as indicated in the Plan, to address existing activities that may be a significant risk to drinking water sources. All reviews have a set timeline of 5 years to be completed with any necessary changes. Ontario ministries have completed review for 100% of previously issued approvals.

Within the Cataraqui area, 90% of all 59[2] policies for provincial implementation have been completed (See Table 3). This includes both binding and non-binding policies. Further, for binding policies, for which there are only 15, the provincial level of completion is 100% (see Table 4). For non-binding policies that address significant threats, 63% of the 8 polices have been fully implemented (See Table 5). Finally, for all other non-binding and have-regard-for polices that address moderate, low and non-specified threats, the level of completion is 92% (See Table 6).

Table 3: Status of Ministry Implementation Efforts for all Binding and Non-binding Policies

Implementing Body	Policy Completion
Ministry of Agriculture, Food, and Rural Affairs (OMAFRA)	91%
Ministry of Municipal Affairs and Housing (MMAH)	100%
Ministry of Government and Consumer Services (MGCS-TSSA)	0%
Ministry of Environment, Conservation and Parks (MECP)	97%
Ministry of Natural Resources and Forestry (MNRF)	100%
Ministry of Transportation (MTO)	71%

Table 4: Status of Ministry Implementation Efforts for Significant Binding Policies

Implementing Body	Policy Completion
Ministry of Agriculture, Food, and Rural Affairs (OMAFRA)	100%
Ministry of Municipal Affairs and Housing (MMAH)	n/a
Ministry of Government and Consumer Services (MGCS-TSSA)	n/a
Ministry of Environment, Conservation and Parks (MECP)	100%
Ministry of Natural Resources and Forestry (MNRF)	n/a
Ministry of Transportation (MTO)	n/a

[2] The count of 59 policies is consistent with the province's method of counting unique policies more than once when there are multiple implementing bodies for a single policy. The Cataraqui Source Protection Plan includes 42 unique polices from provincial ministries.

Table 5: Status of Ministry Implementation Efforts for Significant Non-binding

Implementing Body	Policy Completion
Ministry of Agriculture, Food, and Rural Affairs (OMAFRA)	0%
Ministry of Municipal Affairs and Housing (MMAH)	100%
Ministry of Government and Consumer Services (MGCS-TSSA)	0%
Ministry of Environment, Conservation and Parks (MECP)	100%
Ministry of Natural Resources and Forestry (MNRF)	n/a
Ministry of Transportation (MTO)	n/a

Table 6: Status of Ministry Implementation Efforts for Moderate/ Low and Non-specified threat policies

Implementing Body	Policy Completion
Ministry of Agriculture, Food, and Rural Affairs (OMAFRA)	100%
Ministry of Municipal Affairs and Housing (MMAH)	100%
Ministry of Government and Consumer Services (MGCS-TSSA)	n/a
Ministry of Environment, Conservation and Parks (MECP)	95%
Ministry of Natural Resources and Forestry (MNRF)	100%
Ministry of Transportation (MTO)	71%

6. Source Protection Awareness

P: Progressing Well/On Target

A total of 19 drinking water protection zone road signs were planned for installation at vulnerable areas with significant drinking water threat activities in the Cataraqui Source Protection Area; 17 for municipalities and two for the Province). Additionally, recommendations were made for the Province to erect ten more signs at intake protection zones areas where local transportation concerns were raised. See Table 7 below for more information.

As of 2021, 19 municipally installed signs identify vulnerable areas with vulnerability scores of eight or greater. This includes 17 originally planned and 2 additional. Further, 4 Provincially installed signs (2 that were required at the Cana Wellhead Protection Area and 2 others that were recommended along Highway 33) have been installed. It is not anticipated that the other 6 recommended signs will be installed. As such, all required source protection road signs have been installed.

Table 7: Road Sign Installations in the Cataraqui Source Protection Area

Timeframe	Provincial Signs	Municipal Signs	Signs to be Installed
2015-2021	4	19	0

There is greater confidence since the Plan took effect that septic systems are being operated properly within the related significant drinking water threat areas. Also, fuel storage (e.g., home heating oil) is being better managed compared to prior to risk management plan negotiations. Across the watershed, many landowners are transitioning to propane.

Source Protection Committee members have noted an enhanced recognition of the importance to protect source waters, especially within the rural community. A source protection video was produced in 2019 and is shared widely. Click here to view the video.

A road sign campaign also occurred in 2021 to promote awareness and education of the Drinking Water Protection Zone road signs. A storymap was developed by the DWSP Road Sign Working Group made up of staff from Conservation Ontario and several Conservation Authorities. Click here to view the storymap.

Any change in behaviour will take time to properly monitor across the Cataraqui area. Social media is one way to track ongoing conversations and will be a tool used to continue engagement in 2022. Monthly articles on topics related to Source Protection are being released on the Cataraqui Conservation website to promote engagement and knowledge across the watershed. Source Protection Committee members and municipalities will be supported by the Cataraqui Source Protection Authority as ambassadors to continued communication and source protection advocacy within the watershed.

Table 8: Implementation and Program Resources

Material	Target Audience
Guidance Documents	Municipalities
Groundwater Vulnerability Assessment Guideline	Land use planning authorities, development proponents, and consultants
Media Publications	Residents, landowners, business owners
Website Updates, Conservation Ontario Communications Material, and Fact Sheets	Residents, landowners, business owners, municipalities, real estate agents, and others
Groundwater Protection Plan	Implementing bodies and adjacent areas, landowners with wells and septic systems
Water Festival Engagement	Elementary school students
Risk Management Flyers and Fact Sheets	Landowners in vulnerable areas
Municipal Mural	Town of Gananoque residents and visitors
Municipal Working Group Meetings, Newsletters, and Forums	Municipalities, SPC members
DWSP Banners and Local Videos	Municipalities and other implementing bodies, lake associations, and local groups
Monthly Cat Tales/News Articles on Cataraqui Conservation Website	General Public

Source protection awareness is an ongoing effort to engage municipalities, other implementing bodies, and residents living in this highly vulnerable aquifer. Some of the targeted educational and outreach activities that have been accomplished since the Plan came into effect include the following (see Table 8).

7. Source Water Quality: Monitoring and Actions

P: Progressing Well/On Target

The table below is a list of the drinking water systems in the Cataraqui area with identified drinking water issues in raw water (untreated) testing, as reported in the Cataraqui Region Assessment Report (2011) compared to results provided by water treatment plant operators in 2021 (Table 9).

Table 9: Raw Water Quality Parameters of Concern

Location	Parameter of Concern (2011)	Parameter of Concern (2021)
Brockville	*Escherichia coli* (*E. coli*)	None – bacteria closely monitored
Fairfield at Amherstview	Total coliform	Decreasing Concentration/Trend
Bath	Organic nitrogen and *E.coli*	Decreasing Concentration/Trend
Cana (well supply)	Sodium, chloride, total coliform, and *E. coli*	No longer monitoring Sodium and Chloride in the raw water as issues have improved, and total coliforms and E.coli issues have improved but continue to be monitored weekly
Lansdowne (well supply)	*E. coli* and total coliform	No change in concentration/trend
Miller Manor (well supply)	Sodium, chloride, nitrate, *E.coli*, and total coliform	No longer monitoring sodium, chloride or nitrate in raw water as issues have improved, and total coliforms and E.coli

Location	Parameter of Concern (2011)	Parameter of Concern (2021)
		issues have improved but continue to be monitored monthly

Water samples are collected to produce Drinking Water System Reports, as per the Ontario Regulation 170/03 made pursuant to the *Safe Drinking Water Act.* This includes the collection of raw water samples.

Figure 4: Drinking water sample testing

For the above locations, drinking water treatment plant operators reported that no issues were identified in 2021 for the raw water quality.

It should be noted that there are concerns with sedimentation at the Bath drinking water intake, particularly during significant precipitation or spring melt events. The municipality has made changes at the treatment plant to more easily treat the water when sediment levels are high. In addition, efforts are being made to cooperate with watershed property owners to identify options to mitigate sedimentation.

In support of Source Protection Plan policy 4.2.2-NB, the Cataraqui Source Protection Authority should meet annually with drinking water treatment operators to discuss whether there are any gaps in the raw water testing parameters in relation to activities that could impact source water quality.

No Issues Contributing Areas (ICA) have been delineated.

8. Source Protection Plan Policies: Summary of Delays

There are a few areas where policies have been delayed in implementation and progress which are now out of compliance with the dates listed in the Plan. Below is a summary of those policies, a rationale for the delay, and proposed future actions that will be ongoing to ensure implementation is initiated.

a) Compliance with non-binding policies
   - Municipalities have indicated policies that have not been addressed due to staffing pressures and prioritizing projects with higher risk factors
   - Municipal representatives will work with Cataraqui Conservation staff to more fully discuss implementation challenges to either set work plans or to identify rationale for any decisions to not complete a policy.

b) Risk Management Services
   - Fifty-nine existing significant drinking water threats require assessment and appropriate risk management
   - The majority of the remaining activities are within the Lansdowne Wellhead Protection Area. The risk management official and municipal staff are continuing to work on implementing the action plan municipal staff developed with work to be completed in 2022.

Table 10: Existing Significant Drinking Water Threats

Prescribed threat	Number Remaining	Rationale for Delay	Future Actions
Handling and storage of fuel	26*	Landowner negotiations and municipal staffing changes	Twelve RMPs are out for signature. Ongoing efforts for threat verification and establishment of Risk Management Plans

Prescribed threat	Number Remaining	Rationale for Delay	Future Actions
Transportation corridors	18	Lack of policy and guidance.	Policy has been drafted to address transportation corridor threats through education and outreach. Policy is to be added to the Source Protection Plan amendment.
Sewage System Maintenance	1	Responsibility transferred from Health Unit to Municipality for outstanding system confirmation.	Outstanding sewage maintenance may not have on-site system for inspection. Have requested municipal confirmation.
Application of agricultural source material	4	Municipal staffing changes and reduced implementation efforts due re-training and knowledge transfer.	Work with responsible Township and Risk Management Officials to develop a plan to address the threats.
Storage of agricultural source material	3		
Application of commercial fertilizer	2		
Application of pesticide	3		
Use of land by livestock	2		

In 2021, threat verification confirmed several threats (handling and storage of dense non-aqueous phase liquids (DNAPLs), application of agricultural source material, application of commercial fertilizer, application of pesticides, and the use of land by livestock) are not present or no longer present in the Cataraqui Source Protection Area. As such, they do not require Risk Management Plans or other policy tools to address an existing threat.

*A full inventory of threats is being completed by the new RMO for Leeds and the Thousand Islands. Therefore, the number of fuel threats remaining differs from the 2020 Annual Report. Of the twenty-six (26) fuel threats, there are currently 12 RMPs drafted and out for signature.

9. Science-based Assessment Reports: Work Plans

No work plans were required to be implemented for the Cataraqui Source Protection Area Assessment Report.

More from the Cataraqui Source Protection Area

Each year the Cataraqui Source Protection Committee hosts an annual source protection workshop where the local source protection community comes together for a day of sharing and learning. In 2021, the workshop was held in March and covered a legal perspective on source protection and addressing challenges with extreme weather. The next workshop is being held in March 2022 hosting speakers from Conservation Ontario, Loyalist Township, Lake Huron and Elgin Area Water Systems and Health Canada. Topics include the Climate Change Vulnerability Assessment Tool (CCVAT), Climate Action Plans and the impacts of a changing climate on drinking water.
To learn more about the Cataraqui Source Protection Area and receive updates on ongoing projects and other initiatives, visit us at http://cleanwatercataraqui.ca/.