

1. INTRODUCTION

The *Clean Water Act (CWA)* was introduced in 2006 to ensure clean drinking water for Ontario residents. The CWA provides a process for drinking water source protection. This Assessment Report is part of that drinking water source protection process. It describes the vulnerable water resources, their current threats and any water quality issues. The report contents were locally compiled and based upon scientific studies approved by multiple local and provincial stakeholders. The report contents are specified by the Ontario Ministry of the Environment (MOE) Assessment Report Technical Rules (2009).

1.1 *Drinking Water Source Protection and the Ontario Clean Water Act, 2006*

In the middle of May 2000, a deadly strain of *E. coli* bacteria contaminated the drinking water system in Walkerton, Ontario. The water contamination resulted in the deaths of seven people, with 2,300 falling ill, and effects are still seen today in many victims who endure permanent chronic conditions. In the follow-up inquiry which sought out causes of the contamination, Justice O'Connor focused on five major safeguards known as a "multi-barrier approach" to protecting municipal drinking water. The first of these safeguards was the protection and enhancement of drinking water sources within natural watershed systems. The other four safeguards included (1) adequate treatment, (2) secure and well maintained distribution systems, (3) proper monitoring and warning systems, and (4) strategic responses to adverse conditions.

The Walkerton report concluded that protecting water at the source is a first line of defense and an important part of ensuring the health of people and the environment. Conventional water treatment methods cannot cost effectively remove many types of contamination such as hazardous chemicals when present in the source water. Therefore reduction or elimination of potential contamination before it enters the drinking water system will ensure safer drinking water, healthier ecosystems and reduced costs associated with treatment.

The Source Protection Program completes the multi-barrier approach to ensuring safe drinking water from the originating source. Protecting both existing and future municipal drinking water supplies is achieved by identifying potential risks to local drinking water sources and taking action to reduce or eliminate these risks.

1.2 The Source Protection Planning Process

The four stages of Source Protection Planning in Ontario are:

Stage 1	<ul style="list-style-type: none">• Selection of a Source Protection Committee (SPC)• Developing a Terms of Reference (TOR)• Initiation of technical studies
Stage 2	<ul style="list-style-type: none">• Preparation of the Assessment Report (AR)
Stage 3	<ul style="list-style-type: none">• Development of a Source Protection Plan (SPP)
Stage 4	<ul style="list-style-type: none">• Implementation of the SPP

Under the CWA, the area of jurisdiction for each Conservation Authority (CA) is generally designated as the drinking water Source Protection Area and the CA acts as the drinking water Source Protection Authority (SPA). The Source Protection program is led by the Source Protection Committee (SPC) made up of various stakeholders and is administered locally here in Niagara by the Niagara Peninsula Conservation Authority (NPCA).

The SPC is responsible for the key reports throughout the Source Planning Protection Process beginning with the Terms of Reference (TOR), followed by the Assessment Report (AR) and finally the Source Protection Plan (SPP). Formed in 2007, the Niagara Peninsula SPC is a multi-stakeholder group with nine members appointed by the SPA plus a Chair appointed by the province. It is comprised of three sectors, including three municipal representatives, three members from the general public, and one member each from agriculture, industry, and business. The ultimate goal of the SPC is to develop Source Protection Plans for safeguarding the watershed's surface and ground water sources from contamination and overuse.

The first major task for the SPC was to prepare a TOR which identified the details of tasks to be completed, including parties responsible for conducting the work, and estimates for time and budgets. The Terms of Reference involved a significant public consultation process and was approved by the MOE in the spring 2009. Tasks in the TOR include mapping vulnerable areas around municipal drinking water sources and identifying and assessing risks to the municipal drinking water supply.

Stage two involved the preparation of the AR. Originally the AR was approved by the MOE in July 2011. This update to the AR includes tertiary zone (IPZ3) delineation, identification of threats and enumeration of threats for IPZ3, and transportation threats enumeration. The update will be submitted to the MOE for approval in 2013. The AR looks at the watershed in its entirety and seeks to understand surface and ground water characteristics and which vulnerable areas need protection from significant drinking water threats. Several technical studies have been initiated by the NPCA and also Niagara Region under the source protection program and the results are included in the AR. The AR is a key requirement of the CWA and provides the information for the SPC to develop a Source Protection Plan. Several technical studies have been prepared

according to provincial regulations and the Assessment Report Technical Rules (MOE, 2009). They are:

- Watershed Characterization Report
- Water Budget and Water Quantity Threats Assessment
- Groundwater Vulnerability
- Surface Water Vulnerability
- Threats Inventory and Issues Evaluation

Stage Three of the Source Protection process will be the development of the SPP following approval of the AR by the MOE. The plan will use information from the AR, setting out policies and risk management strategies to address any significant threats to the municipal drinking water supply.

The following tools may be incorporated in policies of the source protection plan:

- Education and Outreach measures and incentive programs to promote awareness of steps residents and property owners can take to protect drinking water sources.
- Utilizing the province's *Planning Act* to address significant threats to drinking water supplies.
- New or amended provincial instruments as prescribed under the CWA regulations.
- Possible regulation of activities that are significant threats through a Risk Management Plan.
- Prohibition of activities that are significant threats to drinking water supplies particularly when other alternatives are not viable.

Stage Four is the final stage and involves implementing the SPP. Local municipalities will be substantially involved with the implementation of the SPP policies, as implementation may require amendments to Official Plans and revision to land-use zoning to abide by the goals expressed in the SPP.

1.3 Participants in the Process

Under the CWA, collaboration is required between local municipalities, CAs, communities and stakeholders to work together at protecting Niagara's municipal drinking water supplies.

The CWA designates 19 Source Protection Areas or Regions in Ontario where the source protection program is to be administered locally under the guidance of a Source Protection Committee (SPC). Ontario Regulation (O.Reg.) 288/07 requires that the Niagara Peninsula SPC consist of 10 members (the Chair, 3 municipal, 3 general public, and 3 sector representatives). The Niagara Peninsula SPC has the following representatives:

Table 1.1 Niagara Peninsula Source Protection Area Source Protection Committee		
Chair Mark Neufeld		
Municipal Representatives	Sector Representatives	General Public Representatives
Councilor Tim Rigby (Niagara Region)	Robert Bator (Agriculture)	David Renshaw
Don Ricker (Haldimand County)	Maria Bellantino Perco (Industry)	Dean Ostryhon
Chris Shrive (City of Hamilton)	Brian Antonsen (Commerce)	Drew Semple

Once risks to the drinking water supply have been identified and documented, the SPC will guide the development and implementation of the Source Protection Plan. The SPC will use broad consultation and develop a source protection plan to eliminate the SP Area’s existing and potential significant drinking water threats. The consultation will aim to find effective solutions and involve municipalities, Conservation Authorities, public health officials and the public.

1.4 Scope and Purpose of the Assessment Report

The Assessment Report is one of the major requirements of the CWA. It assesses the quality and quantity of municipal drinking water supplies across the watershed. It analyses water issues and identifies vulnerable areas and threats. The primary goal of the Assessment Report is to provide the necessary information to establish the Source Protection Plan and make local policy decisions that will manage and protect our drinking water. The CWA also requires that the AR describe the local watershed and available water supply for the Niagara Peninsula Source Protection (NPSA) Area.

This report has been written for the general public and the Minister of the Environment. A listing of relevant acronyms and a glossary of terms are provided after the body of this report.

A series of technical studies were completed by NPCA, or for Niagara Region and the NPCA, to complete the Assessment Report. Key studies are listed below as they appear in the Assessment Report (Table 1.2).

Table 1.2 Assessment Report Primary Data Sources		
REPORT	REFERENCE	CHAPTER
Watershed Characterization	NPCA, 2009b	Chapter 2
Water Budget and Stress Assessment	(i) Franz Environmental Inc., et al 2007, (ii) NPCA & AquaResource Inc., 2009b, (iii) AquaResource Inc. and NPCA, 2009a through 2009j	Chapter 3
Significant Groundwater Recharge Areas	NPCA and AquaResource Inc., 2009a	Chapter 4
Groundwater Vulnerability Analysis	NPCA, 2009a	Chapter 4
Intake Protection Zone Delineation, Vulnerability Assessment Study and Uncertainty Analysis for the Niagara Region Water Treatment Plants	Stantec Consulting Ltd., 2008a through 2008f	Chapters 5 through 11
Technical Memorandum: Riverine and Pathway, Vulnerability, and Uncertainty Level Analysis for the Niagara Region Water Treatment Plants	Stantec Consulting Ltd., 2009g and 2009h	Chapters 5 through 11
Issues Evaluation, Threats Inventory and Threat Level Assessment for the Niagara Region Water Treatment Plants *	Stantec Consulting Ltd., 2009a through 2009f	Chapters 5 through 11
IPZ-3 Delineation for the Port Colborne, Welland and DeCew Falls Water Treatment Plants	Stantec Consulting Ltd., 2012 and NPCA, 2013	Chapters 5 through 8
Spill Scenario Modelling for Lake Ontario Intakes, Report for Lake Ontario Collaborative	Dewey, R., 2011	Chapter 5
Transportation Threats Technical Memorandum*	Stantec Consulting Ltd., 2010	Chapters 5, 6, 7, 8 and 9

Note: *Confidential reports containing personal information

This information is listed as required by the MOE Assessment Report Technical Rules (2009). The Technical Rules (TR) reference is listed in the box below. This format of referencing items required by the TR is continued throughout the report.

TR 9 (2) (a)

1.5 Description of Vulnerable Areas

Four types of vulnerable areas are defined in the Clean Water Act that must be identified and assessed for significant threats. Upon delineation of these areas, the rules require that vulnerability scores be assigned to each. Source water protection areas that may be vulnerable from a water quality and/or quantity perspective are divided into the following classifications:

- Municipal
 - Surface Water Intake Protection Zones (IPZs);
 - Wellhead Protection Areas (WHPAs);
- Non-municipal
 - Highly Vulnerable Aquifers (HVAs); and
 - Significant Groundwater Recharge Areas (SGRAs).

These source water protection areas are described in more detail in Chapters 4 through 11 except WHPAs which are not present in the NPSP Area.

TR 5(1)

1.6 Technical Rules

The technical work conducted for preparation of this assessment report followed the technical rules outlined by the Ministry of Environment (2009b) in accordance with the CWA.

1.7 Technical Advisory Groups and Peer Review

Technical advisory groups and peer reviewers were used for each of the technical studies completed in preparation of the Assessment Report and are presented in their relevant sections (2, 3, 4 and 5).

Lake Erie (looking to the southwest)

