



CTC SOURCE  
PROTECTION  
REGION

DRINKING WATER  
SOURCE PROTECTION  
ACT FOR CLEAN WATER

## CREDIT VALLEY SOURCE PROTECTION AUTHORITY

### 16th MEETING

FRIDAY March 21, 2014 AT 9:15 A.M.  
CVC Administration Office at  
1255 Old Derry Road, Mississauga, ON

#### MEMBERS:

P.	(Pat)	Mullin	- Chair
J.	(Joan)	Robson	- Vice-Chair
D.	(Don)	Maclver	- Vice Chair
T.	(Tom)	Adams	
G.	(Gail)	Campbell	
J.	(John)	Hutton	
N.	(Nando)	Iannicca	
L.	(Lou)	Maieron	
P.	(Paul)	Palleschi	
R.	(Ron)	Starr	
A.	(Allan)	Thompson	
J.	(Jim)	Tovey	

### AGENDA

#### 1. APPROVAL OF AGENDA

##### Recommended Resolution:

*RESOLVED THAT the agenda for the 16<sup>th</sup> meeting of the Credit Valley Source Protection Authority be adopted.*

#### 2. DECLARATIONS OF CONFLICT OF INTEREST

3. MINUTES OF PREVIOUS MEETING

15<sup>th</sup> MEETING, CVSPA

March 8, 2013

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Recommended Resolution:

*RESOLVED THAT the minutes of the 15<sup>th</sup> meeting of the Credit Valley Source Protection Authority held March 8, 2013 be adopted.*

4. AMENDMENTS TO THE CVSPA APPROVED ASSESSMENT REPORT FOR SOURCE PROTECTION INITIATIVES

A report on the above-mentioned subject as submitted by Kerry Mulchansingh, Source Water Protection Project Manager/Hydrogeologist and John Kinkead, Deputy CAO and Director Water Resources Management & Restoration is attached as Schedule 'A'.

Recommended Resolution:

*RESOLVED THAT the report entitled "Amendments to the CVSPA Approved Assessment Report for Source Protection Initiatives" be received and appended to the minutes of this meeting as Schedule 'A'; and further*

*THAT the CVSPA Chair and Chief Administrative Officer be authorized to submit the amendments to the CVSPA Approved Updated Assessment Report to the Minister of the Environment on or before the end of the day on March 31, 2014.*

5. INFORMATION ITEMS DISTRIBUTED TO MEMBERS

6. NOTICE OF MOTION

7. OTHER BUSINESS

8. MEETING ADJOURNED

**TO:** The Chair and Members  
of the Board of Directors  
Credit Valley Source Protection Authority

**SUBJECT:** AMENDMENTS TO THE CVSPA APPROVED ASSESSMENT REPORT  
FOR SOURCE PROTECTION INITIATIVES

**PURPOSE:** To seek CVSPA Board of Directors' support in authorizing the CVSPA Chair and CAO to submit required amendments to the approved Assessment Report to the Ministry of Environment (MOE).

**BACKGROUND:**

The *Clean Water Act* (Bill 43) was introduced by the Province of Ontario to ensure every Ontarian has access to safe drinking water. Bill 43 requires municipalities to implement plans necessary to protect the sources of their municipal drinking water supplies. Municipalities are required to prepare an inventory of existing and potential threats to those supplies and to establish and implement actions necessary to reduce or eliminate significant threats.

In accordance with the act, source protection initiatives must be fulfilled within four phases. In the first phase, each Source Protection Area (SPA) in the province was mandated to prepare a terms of reference (TOR) document outlining tasks, timing and budgets for developing the Source Protection Plan. The CVSPA terms of reference received approval from the Minister of the Environment (MOE) on August 17, 2009.

The second phase entailed the execution of technical studies according to tasks within the TOR, and in keeping with the timelines committed in the TOR. Component studies were compiled into a comprehensive document termed the proposed CVSPA Assessment Report (AR) which was submitted to the MOE on December 30, 2010. This document received approval on June 24, 2011. Updates to the approved AR were subsequently submitted to the MOE on July 31, 2011, and this amended document, the CVSPA Updated Assessment Report (UAR), received approval on January 18, 2012.

The third phase involved development of source protection policies and a proposed source protection plan premised upon addressing quality and quantity concerns and issues highlighted by the technical studies. The proposed plan must consider existing and future development, future water uses, mitigation against perceived threats etc. Proposed Source Protection Plans (SPPs) had to be completed within a period of three years after MOE approval of the assessment report. The CVSPA SPP was submitted to MOE on October 20, 2012, and is currently under review.

The fourth phase is the implementation of the SPPs. This includes assigning and carrying out of tasks, regular monitoring and updates of SPPs, work to ensure the reduction of threats, and promotion of sustainable development practices.

Implementation of the SP plan must occur within one year of plan acceptance by the Minister of the Environment.

### **AMENDMENTS TO THE CVSPA APPROVED ASSESSMENT REPORT**

The CVSPA Updated Assessment Report (UAR) received approval from MOE on January 18, 2012. This document reviews the technical analyses undertaken to assess the vulnerability of aquifers supplying water to municipal wells and enumeration of threats to the quality of water sources feeding these wells. The approved report contains the technical analyses upon which the source protection policies and plans have been based (see Appendix 1).

Notwithstanding MOE approval of the UAR it was recognized that the report was still "incomplete" in that two foundation pieces required by the legislation, could not be finalized in time for the mid-2011 submission. MOE granted additional time for the completion of this work, for amendment of the affected content in the approved report, and for the subsequent resubmission of the report.

During the intervening time period, the additional studies generated new data and information. This permitted staff not only to update the assessment report with new information, but also to revise existing (i.e. approved) information which may have been impacted by the new data and /or the additional assessment.

The technical studies finalized during 2012 and 2013 are as follows:

- Spill Scenario Modeling for Lake Ontario Intakes (April, 2012), and
- Tier 3 Water Budget and Local Area Risk Assessment for the municipalities of Acton and Georgetown (July, 2013)

In addition, the technical rules governing the execution of water quantity (water budget) studies were refined in December 2013. This forced a review of the applicable framework previously accepted and documented within the approved report.

Amendments to the approved UAR include:

- Terminology and framework review of text and tables pertaining to previously approved Tier 3 Water Budget assessment for Orangeville, Mono and Amaranth;
- Inclusion of new discussion on the Tier 3 Water Budget for Acton and Georgetown, based on the data generated through the Tier 3 Water Budget Study for those municipal supplies;
- Refinement of previously approved Significant Groundwater Recharge Areas (SGRA) within the CVSPA, based on new data generated for SGRAs in the Acton and Georgetown area, through the Tier 3 Water Budget Study;
- Revision of the previously approved Wellhead Protection Areas (WHPAs) for the municipal wells of Acton and Georgetown, based on new data and mapping generated through the Tier 3 Water Budget Study;

- Review of the criteria applied to the assessment of water quality issues at municipal wells. This resulted in a revision of the issue assignments initially made for the Orangeville, Acton and Georgetown municipal wells;
- Revision of the previously approved Issue Contributing Areas (ICA), for the municipal wells of Acton and Georgetown, based on new data and mapping generated through the Tier 3 Water Budget Study;
- Revision of the previously approved threat counts related to managed lands, livestock density and impervious surfaces within the SGRAs; and to those within the WHPAs of Acton and Georgetown. These revisions were precipitated by the updates to the vulnerable areas (SGRAs, WHPAs) described above;
- Refinements, and in several cases, revision of previously approved information pertaining to the spill scenario modeling undertaken for Lake Ontario. This was precipitated by the changes reflected in the final spill scenario report; and
- Renaming the document as "Updated Approved Assessment Report".


Related contents of the report are being updated accordingly. These amendments are due to be submitted to the MOE, through the CVSPA, by the end of March 2014.

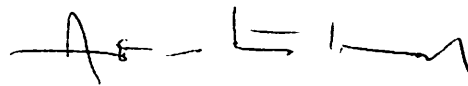
**Recommended Resolution:**

***RESOLVED THAT*** the report entitled "Amendments to the CVSPA Approved Assessment Report for Source Protection Initiatives" be received and appended to the minutes of this meeting as Schedule 'A'; and further


***THAT*** the CVSPA Chair and Chief Administrative Officer be authorized to submit the amendments to the CVSPA Approved Updated Assessment Report to the Minister of the Environment on or before the end of the day on March 31, 2014.

**Submitted by:**

  
Kerry Mulchansingh  
Source Water Protection Project  
Manager/Hydrogeologist

  
John Kinkead  
Director, Water Resources

**Recommended by:**

  
Deborah Martin-Downs  
Chief Administrative Officer

## **Preface**

### **Source Protection Committee Commitment**

*The CTC Source Protection Committee (SPC) is a multi-stakeholder committee selected to represent municipalities, economic sectors, and the general public interests. The Committee has legislated responsibilities to protect drinking water sources across the CTC Source Protection Region.*

*The SPC's ultimate role is to develop a Source Protection Plan that, when implemented by the responsible parties (including municipalities), eliminates, reduces, or manages threats to drinking water sources, both now and in the future.*

### **About This Document**

This *Updated Approved Assessment Report: Credit Valley Source Protection Area (CVSPA)* contains new (updated) information about municipal drinking water threats. The previous version of this Assessment Report was approved by the Ministry of the Environment in January, 2012.

This *Report* identifies the location and nature of threats to sources of municipal drinking water supplies. These threats include activities that are impacting or could adversely impact drinking water quality or quantity from groundwater and/or surface water sources. New information is included with respect to the delineation of groundwater quality vulnerable areas, the determination of groundwater quality issues, and to the identification of groundwater quantity threats.

The completion of an Assessment Report is a requirement of the *Clean Water Act, 2006 (CWA)* and Ontario Regulation (O. Reg.) 287/07, both of which came into effect on July 3, 2007. It has been developed in accordance with these regulations, the *Director's Technical Rules (MOE, 2009)* and the *Terms of Reference: CVSPA (CVC, 2009)* as approved by the Minister of the Environment (MOE).

Public comments on the *Updated Approved Assessment Report: Credit Valley Source Protection Area (CVSPA)* were sought for a 30 day period from March 19 to May 1, 2012, coinciding with the consultation of the Source Protection Plan, and from mid-September to mid- October, 2013, for the Tier 3 study on the municipal water systems at Acton and Georgetown. The public was invited to review the *Updated Approved Assessment Report: Credit Valley Source Protection Area (CVSPA)* online at [www.ctcswp.ca](http://www.ctcswp.ca). Notice of this comment period was posted online and sent to individuals on the CTC SPC electronic mailing list. The comments and input received during the public consultation period were considered by the CTC SPC, in finalizing the *Updated Approved Assessment Report (CVSPA)*.

At the conclusion of this process, the *CVSPA* submitted the *Updated Approved Assessment Report: (CVSPA)* to the Ministry of the Environment and is awaiting approval.

## Acknowledgements

Funding to complete the technical studies on which this report is based has been provided by the Province of Ontario. The Province of Ontario also funds the conservation authority staff and Source Protection Committee members for their work on source water protection. Technical experts, including consultants working for municipalities and conservation authorities have prepared background technical reports, peer reviews and provided advice and direction in completing this report. Members of the CTC Source Protection Committee and Working Groups have reviewed the technical studies and the text of this report. The following list is the key staff who prepared this report:

### Credit Valley Conservation (CVC)

John Kinkead, Deputy CAO and Director- Water Resources Management and Restoration

Kerry Mulchansingh, Project Lead and Hydrogeologist

Mike Thorpe, GIS Specialist

Amanjot Singh, Water Quality Engineer

Jennifer Dougherty, Manager, Water Quality Protection

Dan Banks, Senior Manager - Water Operations and Geoscience

Courtney Alexander, Watershed Monitoring Specialist

Amanda Cousins, Water Resources Technician

Loveleen Clayton, Acting Supervisor, Watershed Monitoring and Reporting

Neelam Gupta, Manager, Hydrology and Hydraulics

Alexander Pluchik, Junior Water Resources Engineer

Brian Morber, Senior GIS Specialist/I.T. Specialist

Kamal Paudel, GIS Specialist

Dan Schuurman, GIS Technician

Ghasaan Sabour, GIS Specialist

Aviva Patel, Manager, Natural Heritage, Science and Monitoring

Mark Eastman, Program Coordinator – Agricultural Extension

Bob Morris, Senior Manager- Natural Heritage

### CTC Source Protection Region

Beverley Thorpe, CTC Project Manager

Andréa Dubé-Goss, CTC Project Lead

Megan Price, CTC Communications Supervisor

Sylvia Waters, CTC Administrative Coordinator

The writing team wishes to thank the following staff at member Conservation Authorities, the Regions of Peel and Halton, the Towns of Orangeville, Mono, Erin, and the Township of Amaranth for their valuable review comments, sharing of information, and support.

### Technical Advisor

Rick Gerber, Conservation Authorities Moraine Coalition

Central Lake Ontario Conservation Authority

Gayle Soo Chan, Director, Groundwater

Gloria Suarez, Hydrogeologist

Amber Langmuir, Surface Water Engineer

Rod Wilmot, GIS Specialist

Toronto and Region Conservation Authority

Donald Ford, Manager Geo-environmental

Gary Bowen, Watershed Specialist

Rick Wilson, GIS Specialist

City of Toronto

William Snodgrass

Region of Peel

Rodney Bouchard

Luis Lasso

Region of Halton

John Mc Intosh

Steve Mc Kinnon

Tomislav Renic

Town of Orangeville

Jack Tupling

Doug Jones

Tim Thompson

Town of Mono

Mark Early

Town of Erin

Frank Smedley

Township of Amaranth

Sue Stone and Craig Johnston



## EXECUTIVE SUMMARY

### ***Why should you read this document?***

This *Updated Approved Assessment Report: Credit Valley Source Protection Area (CVSPA)* has been prepared under the direction of the CTC Source Protection Region Source Protection Committee. This report contains new (updated) information about municipal drinking water threats. The document also includes the previous information about threats, but the document has been reorganized within each chapter.

This *Report* identifies the location and nature of threats to sources of municipal drinking water supplies. These threats include activities that are impacting or could adversely impact drinking water quality or quantity from groundwater and/or surface water sources. New information is included with respect to the delineation of groundwater quality vulnerable areas, the determination of groundwater quality issues, and to the identification of groundwater quantity threats.

It is a requirement of the *Clean Water Act, 2006 (CWA)* and Ontario Regulation (O. Reg.) 287/07 as amended by O. Reg. 59/10. The Report has been developed in accordance with the regulations, the *Technical Rules: Assessment Report (MOE, 2009)* and the *Terms of Reference: CVSPA*, as approved by the Minister of the Environment.

This *Report* identifies the location and nature of potential threats to sources of municipal drinking water. These threats include activities that are adversely impacting, or could impact, drinking water quality or quantity from groundwater and/or surface water sources.

Source Protection Committees determine threats to drinking water sources by delineating and applying vulnerability scores where needed to the different types of vulnerable areas, where they exist, within each Source Protection Area, as discussed in the legislation. These areas are:

- intake protection zones (IPZs);
- highly vulnerable aquifers (HVAs);
- significant groundwater recharge areas (SGRAs);
- wellhead protection areas (WHPAs) ;
- issue contributing areas (ICAs); and
- water quantity vulnerable areas (Local Areas).

Detailed information about how these vulnerable areas were delineated and scored can be found in **Chapters 3, 4 and 5**. This report identifies and describes each of these types of vulnerable areas within the CVSPA, per the *Technical Rules*. Below are maps showing the vulnerable areas for CVSPA.

Descriptions, scoring, and documentation on the analyses performed to arrive at these delineations are all contained in the body of this report or in the referenced technical appendices. Work has been undertaken to delineate water quantity vulnerable areas around wells in Acton and Georgetown as part of Tier 3 water budget studies. This work also resulted in changes to the areas previously delineated as wellhead protection areas and to the issue contributing areas around these wells. Refinements to the mapping of significant groundwater recharge areas were also completed through this work.

In CVSPA, there are two municipal drinking water system intakes that are sourced from Lake Ontario. These intakes supply drinking water to over 1,250,000 people within the CVSPA and beyond; including residents in York Region who receive some of their municipal water from these water treatment plants. The IPZ-1 and IPZ-2 map (Error! Reference source not found.) indicates areas near these drinking water intakes where a contaminant spill could reach the intake before a plant operator is able to respond.

The IPZ-1 is based on drawing a 1 kilometre radius around each intake. IPZ-2 is based on the estimation of the distance a contaminant might move in a two hour time of travel to the intake, and is made up of two parts – the in-lake portion, and the landward extent. The delineation of the in-lake portion is based on hydrodynamic modelling, while the delineation of the landward extent is based on the extent of storm sewer drained areas, and on the *two-year storm* velocities in contributory watercourses. The upland component considers various setbacks, transport pathways such as tile drainage with the residual time of travel onto the land as a limiting factor. Details on this work can be found in Chapter 4 of this report.

**Two-year storm:** The maximum estimated precipitation likely to occur once every two years (two-year return frequency).

The map of Intake Protection Zones (Error! Reference source not found.) shows the locations of activities that eventbased modelling predicts will impact one or more Lake Ontario-based drinking water sources. Details on this IPZ-3 work can be found in Chapter 5 of this report, along with detailed maps for each of the Lake Ontario systems. The maps shows the shortest path that a modelled spill which has been identified a significant drinking water could take to reach the intakes within the CVSPA, or that could be affected by activities within the CVSPA.

Figure 5.53: Burlington WTP Intake

Figure 5.54: Burloak WTP Intake

Figure 5.55: Oakville Intake

Figure 5.56: Lorne park Intake

Figure 5.57: lakeview Intake

Figure 5.58: R.L. Clark Intake

Figure 5.59: R.C Harris Intake

The SGRA map (Error! Reference source not found.) indicates where a high percentage of rain or snow seeps down into the ground and flows to an aquifer that is used for drinking water (including both municipal and other users). These areas are delineated in Chapter 4 using the recharge results from the water budget process described in Chapter 3 of this report. Under the CWA the CTC Source Protection Committee (SPC) may choose to develop policies to protect SGRAs within CVSPA.

The HVA map (Error! Reference source not found.) indicates where an aquifer is highly vulnerable to contaminants moving from elsewhere into the aquifer, e.g. contaminants on the surface move downwards into the groundwater. Extra caution should be taken when constructing wells in vulnerable aquifers. Water well construction standards are set out in O.Reg. 903 under the *Ontario Water Resource Act*. Under the CWA the CTC SPC may choose to develop policies to protect HVAs within CVSPA.

The WHPA map shows the vulnerability scores within the WHPA around municipal groundwater systems (Error! Reference source not found.). This map illustrates the vulnerability of areas where certain activities are more likely to negatively impact a drinking water source. Chapter 4 of this report provides detailed maps for each of the municipal groundwater systems within the CVSPA.

**Figure 4.7:** Orangeville WHPAs

**Figure 4.10:** Mono WHPAs

**Figure 4.13:** Amaranth WHPAs

**Figure 4.18:** Erin WHPAs

**Figure 4.19:** Hillsburgh WHPAs

**Figure 4.20:** Bel-Erin WHPAs

**Figure 4.24:** Acton WHPAs

**Figure 4.25:** Georgetown WHPAs

**Figure 4.33:** Alton and Caledon WHPAs

**Figure 4.34:** Inglewood WHPAs

**Figure 4.35:** Cheltenham WHPAs

Where there is evidence of contamination levels increasing within the water reaching a municipal well, Issue Contributing Areas (ICA) are delineated. These areas are where activities could release the contaminant of concern and thereby contribute to the rising contaminant levels. Chapter 5 of this report provides the maps for these areas as listed below.

**Figure 5.13:** Orangeville ICAs for sodium and chloride issues

**Figure 5.38:** Georgetown ICAs for chloride issues

**Figure 5.39:** Acton ICAs for nitrate issues

**Figure 5.49:** Inglewood ICAs for pathogen issues

Where Tier 3 water budget studies are undertaken, water quantity vulnerable areas are delineated around wells or groups of wells where they interact with one another, called Local Areas. Chapter 3 of this report describes how these areas are delineated and Figure 3.28 and Figure 3.37 show these Local Areas in Orangeville, Mono, Amaranth, Acton and Georgetown.

The Source Protection Plan (SPP) will identify the actions required to reduce, manage, or eliminate current threats to municipal drinking water sources, as well as to prevent future potential threats. The SPP will also set out requirements for the regular monitoring and reporting on the implementation of the SPP. Public consultation will be an important part of developing the SPP. The SPP was submitted to the Minister of the Environment for approval in October 2012. When the SPP is approved, the Minister of the Environment will set the date by which the SPP must be reviewed and updated, as necessary.

### ***What does all this Mean?***

This *Updated Approved Assessment Report: CVSPA* describes the physical features and water resources within the Credit Valley Source Protection Area (CVSPA) jurisdiction. Using approved provincial methodologies it delineates vulnerable areas and assesses specific activities on the landscape within these vulnerable areas as potential drinking water threats. It should be noted that municipal drinking water supplies for the CVSPA jurisdiction come from both groundwater and surface water sources.

The analyses of the Watershed Characterization component in Chapter 2 of this *Report* show that groundwater quality across the CVSPA is generally high. In the deeper groundwater formations there are naturally elevated iron, manganese, and hardness levels. Surface water quality in the streams discharging into Lake Ontario shows some elevated chlorides and phosphorus levels as compared against ecosystem and aquatic life standards (Canadian Water Quality Guidelines). These contaminants are thought to be associated with the impact of urbanization within the CVSPA. The surface water in these streams is not used as a drinking water supply. Water quality in Lake Ontario in the vicinity of intakes is generally very good. Occasionally higher levels of some contaminants are found after significant rainfall. The

currents in the near shore area of the western end of Lake Ontario are complex. Contaminants released from a spill can be transported in both easterly and westerly directions along the shore, as well as moving from the surface to lower depths.

The water budget analysis in Chapter 3 of this *Report* assesses potential water quantity stress in both surface water (not including Lake Ontario) and groundwater. Groundwater sources in CVSPA are used for drinking water supplies for both municipal and private wells, and to support ecosystem functions. The surface water in streams in the study area is important for supporting the ecosystem, and is also used for irrigation and other non-drinking-water purposes.

Fletcher's Creek Subwatershed was found to have moderate surface water stress levels, while the Orangeville, Black creek, and Silver Creek Subwatersheds were inferred to have moderate groundwater stress levels. Orangeville, Black Creek, and Silver Creek Subwatersheds are each utilized as municipal groundwater sources, and as such, detailed Tier 3 Water Budget assessments are required for each. The Tier 3 water budget study has been completed for wells serving Orangeville, and parts of Mono and Amaranth, and more recently for those servicing Acton and Georgetown. Since the *Technical Rules* exclude consideration of Great Lakes in water budget "stress" assessments, Lake Ontario was not included in the water budget studies.

Chapter 4 assesses and scores vulnerability in all vulnerable areas in CVSPA (IPZs, HVAs, SGRAs, and WHPAs). The IPZ-1s and IPZ-2s for the study area were all ranked as having low vulnerability. The results of the CVSPA HVA and SGRA vulnerability analyses reflect the presence of many shallow aquifers that are naturally vulnerable. WHPA delineation and scoring has been completed for every municipal groundwater system within the CVSPA, identifying areas where certain types of activities may pose drinking water threats.

In Chapter 5, vulnerability is considered together with provincial hazard scores outlined in the Table of Drinking Water Threats (*Technical Rules*, MOE, 2009) for the various activities and their associated chemicals and pathogens to determine a risk score. Using both the natural vulnerability and hazard scores, potential drinking water threats are ranked as significant, moderate, or low in the vulnerable areas (IPZ-1s and IPZ-2s, HVAs, SGRAs, and WHPAs). In certain vulnerable areas (ICAs and Local Areas determined to have a significant risk level) all the relevant activities are deemed to be significant drinking water threats. In the case of the IPZ-3s for intakes in the Lake Ontario, the determination of whether a threat is significant was determined through spill scenario modelling to assess the impact of a particular spill scenario on individual intakes.

Significant threats must be identified and located in the assessment report and addressed in the Source Protection Plan. In the absence of field verification, the SPC took a conservative approach in identifying threats, assuming that a threat activity could exist based on current land use and other available information. However source protection plan policies will only apply to activities which actually exist or are planned. If the activity does not exist or ceases to exist on a property where it could pose a drinking water threat, any policies directed at the activity would not apply.

If the activity is categorized as a moderate or low-level threat, the province requires only the identification of all of the circumstances that could pose a threat to drinking water by reference to the Provincial Tables of Circumstances

[http://www.ene.gov.on.ca/environment/en/legislation/clean\\_water\\_act/STDPROD\\_081301](http://www.ene.gov.on.ca/environment/en/legislation/clean_water_act/STDPROD_081301).

It should be noted that these moderate and low threats may not actually exist within the vulnerable areas discussed. Low and moderate threats do not require mandatory action.

A number of spill scenarios were modelled as part of the Lake Ontario Collaborative (LOC) project to determine if certain land-based activities could pose a potential drinking water threat to these intakes. Any scenario that identifies conditions under which a contaminant could exceed a threshold in the raw water is identified as a significant drinking water threat. The scenarios considered included:

Based on the criteria above, the following list of preliminary scenarios was modelled:

- Disinfection failure at each Lake Ontario WWTP to evaluate the potential effects to nearby WTPs;
- Release of *E coli* from an industrial processing facility into the Credit River;
- Combined sewer overflow (CSO) release in the City of Toronto to evaluate the potential effects to the Toronto WTPs, (this does not impact any CVSPA intake);
- Sanitary trunk sewer (STS) break within the Toronto creeks (this does not impact any CVSPA intake);
- Spill of gasoline/refined product from large pipelines located under major tributaries to Lake Ontario (e.g. Credit River, Humber River etc.);
- Release of gasoline from a bulk petroleum fuel storage facility in the Keele/Finch area of Toronto (this does not impact any CVSPA intake) and in the Mississauga - Oakville area; and
- Discharge of tritium from nuclear generating plants at Pickering or Darlington (this does not impact any CVSPA intake).

*The Technical Rules* require an IPZ-3 is to be delineated if modelling demonstrates that contaminants may be transported to an intake and result in deterioration of the raw water quality of a drinking water supply above a specific threshold, based on the ODWS.

The selected LOC spill scenarios were based on "real" events that have occurred in the past, and were not based on extreme weather condition events at the time of the spill. The IPZ-3 for each threat activity was delineated by drawing a line from the location of the threat activity on shore where the contaminant is released to the affected intake along the shortest path within the area where concentrations were modelled to exceed the threshold for that contaminant.

With respect to surface water, three significant drinking water quality threat locations have been identified in CVSPA. With respect to groundwater, 6,552 significant drinking water quality threats have been identified in this *Updated Approved Assessment Report: CVSPA*.

Drinking water issues relating to sodium (Na) and chloride (Cl) were identified in WHPAs of municipal wells servicing the Towns of Orangeville and Georgetown; and issues relating to Nitrates (NO<sub>3</sub>) found in municipal wells servicing the Town of Acton. A drinking water issue relating to pathogens was also identified for a municipal well servicing Inglewood. These are areas in the middle and upper zones where sizeable populations receive municipal water supplies sourced from the ground. The Tier 3 work has also identified 353 significant drinking water quantity threats at Orangeville, Mono, Amaranth, and Acton.

**You may request more information by writing to:**

[sourcewater@trca.on.ca](mailto:sourcewater@trca.on.ca),

**or by regular mail to:**

Susan Self, Chair CTC Source Protection Committee

c/o Toronto and Region Conservation Authority

5 Shoreham Drive

Downsview, ON M3N 1S4

**or by fax attention Source Water Protection to:**

416-661-6898 - Attention Chair, CTC Source Protection Committee