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Executive Summary

The purpose of Source Protection Planning is to ensure that communities are able to protect municipal drinking water supplies from overuse and contamination. This report provides the science-based assessment of the conditions within the North Bay-Mattawa Source Protection Area (SP Area) pertinent to the delineation of vulnerable areas and identification of threats.

It starts with a regional overview of the North Bay-Mattawa Source Protection Area and region-wide assessments and then presents the findings of the technical work for the drinking water systems in each of the municipalities including:

- Municipality of Callander,
- Town of Mattawa,
- City of North Bay,
- Town of Powassan, and
- Village of South River

The North Bay-Mattawa Source Protection Area is located in northeastern Ontario approximately 350 km north of Toronto and a similar distance west of Ottawa. It covers about 4,000 km² extending from Mattawa in the east to North Bay in the west and south to the Village of South River.

Development of the Source Protection Plan (SPP) is a collaborative process amongst and between municipalities (which have the responsibility of ensuring safe drinking water for residents) and other stakeholders. The integrity of the process is overseen by the Source Protection Committee (SPC) which consists of equal representation from municipalities, industrial-commercial interests, and residents at large. In addition, the North Bay-Mattawa SPC includes a seat for a First Nations representative recognizing the territory of the Nipissing First Nation within the SP Area. (That seat is vacant at time of posting of this report.)

The Source Protection Authority Board ensures that the SPC has appropriate resources to have the Source Protection Plan developed in accordance with all applicable legislation and meets the requirements of the *Clean Water Act (2006)*. One of those requirements is a specific program of public consultation preceding each milestone of the project including:

- Terms of Reference – October 2008
- Proposed Assessment Report – October 2010
- Source Protection Plan – August 2012

The public and other interested stakeholders are encouraged to participate to ensure that the resulting Plan is relevant, appropriate and implementable. Once complete, the proposed SPP is to be submitted to the Minister of Environment for review and approval. The Ministry review ensures that all requirements have been met for an effective plan and that the plan is not inappropriately restrictive or unfair.

Once approved by the Ministry of Environment (MOE) the Source Protection Plan (SPP) cannot be appealed. Implementation of the SPP is expected to be achieved largely through changes to policies within municipal official plans. Such policy changes also require public consultation. Just as they are now, policies contained in and administered by municipalities within their Official Plans may be appealed. But changes to Official Plans are only one policy alternative.

The range of voluntary and regulatory programs and tools that will be available to the SPC to incorporate into policies to reduce or eliminate threats to drinking water, include:

- outreach and education;
- incentive programs;
- land use planning (zoning by-laws, and Official Plans);
- new or amended provincial instruments;
- risk management plans;
- prohibition; and
- land use restrictions.

Both assessment and planning must be conducted on a watershed basis - the natural landscape unit that defines a system of lakes and rivers that drain to a common receiving water body. Flowing water frequently crosses political boundaries. All municipalities that have lands within a watershed must work together to ensure that their downstream neighbours continue to receive clean water to meet their needs.

Water Quantity

The Conceptual Water Budget presents the analysis of water availability and the demands on it on a regional basis. That exercise concluded that although there was adequate water for the overall region, a more detailed analysis for each subwatershed was required. A tiered analysis was undertaken.

Each subwatershed underwent a simple Tier One Subwatershed Stress Assessment to identify any signs of moderate or severe levels of stress. Stress was found to be low in all subwatersheds except for the Trout/Turtle Lake subwatershed, which supplies the City of North Bay.

The Trout/Turtle Lake Subwatershed Tier One analysis indicated moderate stress during the winter and the summer seasons, therefore requiring more detailed assessment at the Tier Two level. The Tier Two Subwatershed Stress Assessment concluded stress levels to the Trout/Turtle Lake system exceeded the threshold for all months except March and April and, therefore, required that a Tier Three Local Area Risk Assessment be completed.

The Tier Three Local Area Risk Assessment was conducted to investigate whether the City of North Bay's municipal water supply can meet its existing and planned demands. The Tier Three Local Area Risk Assessment considers four scenarios when evaluating the level of risk for the municipal supply. They are as follows:

1. Existing Land Use, Existing Pumping, Average Climate Conditions;
2. Existing Land Use, Existing Pumping, Drought Conditions;
3. Planned Land Use, Committed/Future Pumping, Average Climate Conditions; and
4. Planned Land Use, Committed/Future Pumping, Drought Conditions.

Simulated water levels for all four scenarios remained above critical lake level thresholds, resulting in the North Bay municipal supply quantity being assigned a risk level of Low. These findings indicate that Trout/Turtle Lake can meet the current and planned demands of the North Bay municipal system while maintaining critical lake levels. Due to the Low risk level, no significant or moderate water quantity threats were identified within the Trout/Turtle Lake subwatershed.

Water Quality

The focus of planning with respect to water quality is to address all activities that are or would be a threat to drinking water if they occurred in vulnerable areas.

To identify the vulnerable areas and threats for each system:

- the system was characterized (type, population serviced, pumping rates, etc.);
- vulnerable areas were delineated and scored for vulnerability according to the technical rules; and
- threats, issues and conditions (both existing and potential) were identified.

There are 19 prescribed categories of activities to which all defined threats to water quality belong and an additional two prescribed categories related to water quantity. There are many possible circumstances for each prescribed activity. For example, the handling and storage of fuel is a prescribed activity, but the significance of it as a threat depends on specific circumstances such as how much fuel is involved, how close it is occurring to the wellhead or intake, and how vulnerable is the well or intake. Each specific set of circumstances and the nature of the threat is counted as a separate threat in the Provincial Table of Threats resulting in multiple threats from a single activity.

Threats are classified as either significant, moderate or low and all significant threats must be addressed by the Source Protection Plan with policies to reduce or eliminate the threat posed to below significant. Few of the municipal systems had any existing significant threats.

The assessment of each system includes summary tables as follows:

- areas where activities are or would be significant, moderate or low threats;
- numbers of would be significant, moderate or low threats in each vulnerable area (related to pathogens or to chemicals);
- list of applicable tables of circumstances; and
- number of existing significant threats currently within each prescribed activity.

The applicable Tables of Circumstances are important for property owners to understand in order to identify the activities that may pose a potential threat to municipal drinking water, depending upon where their property is located relative to the vulnerable areas.

Callander was the only system that had a drinking water issue related to a non-natural source of a contaminant, and this is related to the toxin known as microcystin in blue-green algae. As such, all sources of phosphorus (a key contributing factor to the growth of blue-green algae) within the areas of the watershed that potentially contribute water to the intake are considered significant threats. These are currently part of the Callander Subwatershed Phosphorus Study: an investigative study to assess the relative contributions of each source of phosphorus.

The numbers of existing activities considered as significant threats to each municipal drinking water source are summarized in the table below with further information included in the municipal sections in this report (Sections 4 to 9).

Table ES-1. Summary of Existing Threats, Issues, and Conditions in North Bay-Mattawa Source Protection Area

Municipal Drinking Water Source	Source Water Type	Prescribed Drinking Water Threat	# of Significant Threat Occurrences	# of Anthro-pogenic Issues	Conditions
City of North Bay	Surface Water	NA	0	0	0
Municipality of Callander	Surface Water	NA	0	1*	0
Village of South River	Surface Water	NA	0	0	0
Municipality of Powassan	Ground Water	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage	2	0	0
Town of Mattawa	Ground Water	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage	4	0	0
		The handling and storage of fuel	9		

**Microcystin has been identified as an issue to the Callander Bay intake. As a result, 705 significant threat occurrences related to phosphorus loading and contributing to the production of microcystin have been identified.*

The Updated Assessment Report is available online at www.actforcleanwater.ca and at the North Bay-Mattawa Conservation Authority (NBMCA) office at 15 Janey Ave., North Bay, ON. CD copies are available by request at dwsp.comments@nbmca.on.ca or 705-474-5420.

Public comments can be submitted on this Updated Assessment Report to the Source Protection Committee c/o the NBMCA until February 18, 2014 – 4:30 PM by mail or by email at dwsp.comments@nbmca.on.ca.

Comments made to the Source Protection Committee on the Updated Assessment Report will be reviewed and summarized for inclusion in a submission to the Ministry of the Environment.