

## Thames – Sydenham and Region Drinking Water Source Protection Source Protection Committee Discussion Paper

**Report to** Chair and members  
Thames – Sydenham and Region  
Source Protection Committee

**Agenda #** 2008.09.7b

**Cc** SP Management Committee

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**Prepared By** Chris Tasker, Project Manager

**Re:** Vulnerability Assessment Peer Review

### **Background**

Although the province has yet to require that vulnerability assessment work be subject to a peer review process, it has suggested that we may proceed with such a process. Peer review has been encouraged as a way of ensuring that the work done through Drinking Water Source Protection is science based. A peer review process is built into the water budget work being completed. Many regions have already initiated such a process to review the vulnerability assessment work.

Peer review involves an individual or group that knows a lot about a subject, reviewing the work produced by another individual or group. A peer review has a specific purpose, scope, format, and duration. The purpose of a peer review is to provide a scientific review of the draft technical document (or other work) by peers of the individual or group that did the work. In the case of technical work being undertaken by professionals it is important that the peer review be completed by professionals with an equal or greater knowledge of the technical subject materials. Peer review is not the routine checking of a work product. This differentiates it from other review such as the review of the client or commissioning agency and as part of ensuring that the product fulfills the desired outcomes. Peer review is undertaken to ensure and enhance the adequacy, completeness, consistency, accuracy, and quality of the project work products. Everything within this review process must be done openly. A Peer Review is commissioned; it has a formal beginning; it produces a report; and it is formally decommissioned.

In developing guidance on the water budgets the Province developed the *Peer Review Water Budget Interim Direction, Version 2.0 (DRAFT)* (dated August 9, 2005) which describes Peer Review as the process whereby regional source water protection water budget teams engage experts from outside their project team in the development of the water budget on a continuous improvement basis. Peer review, therefore, constitutes outreach to and participation by the broad scientific and engineering communities. It was to involve academics, consultants (not already involved in the work), members of the water budget team from neighbouring region, as well as representatives from the review agency (Ministry of Natural Resources in the case of the water budget) and Conservation Ontario. It also involved the water budget team and any consultants engaged on the water budget process. The guidance described peer review as a continuous process for enhancing water budget products so that the decision or position taken, based on the water budget products is technically sound and defensible. Peer review performed in the early and ongoing water budget project phases is a

preferred approach, particularly where it involves complex tasks, has decision points, or could be expected to produce subjective findings.

The Peer Review Committee for the Water Budget includes:

Peer Review Role	Expertise
Peer Review Leader	SWP Project Manager
Peer Reviewer	Academic Representative/ Hydrogeology
Peer Reviewer	Consultant/ Hydrogeology
Peer Reviewer	Hydrologic Modelling
Peer Reviewer	Consultant/ Hydrologic Modelling
Peer Reviewer	Municipal Engineer (added for Tier 1 and beyond)
Peer Reviewer	Provincial Representative
Peer Review Observer	Conservation Ontario, SWP
Technical Lead	Water Resources Engineer

Through the members identified above the committee includes peer reviewers which have been involved with the work being undertaken by our neighbouring regions.

In the case of the vulnerability assessment work it is not possible to engage the peer reviewers in an ongoing process as the work has been largely completed. Further, it is important to understand in developing a peer review process for this work, that much of this work was initiated, completed and in some cases peer reviewed years ago. Dr. Theo Beukeboom, a hydrogeologist from the London district Ministry of the Environment (MOE) branch, coordinated a process which involved the review and approval of the Middlesex-Elgin, Perth, Oxford, Lambton and Essex Chatham- Kent municipal groundwater studies. Dr. Beukeboom and his team ensured standardized quality reports across the region and that the reports met or exceeded the requirements set out in the terms of reference established by the Policy Branch of the MOE. It is also important to note that most, if not all of those studies also engaged a steering committee of municipal staff, politicians and public in directing the work undertaken in the original groundwater studies. That work has been relied upon by those who have undertaken the current vulnerability assessment work as it related to Drinking Water Source Protection.

Peer Review is aimed at an in-depth assessment of the assumptions, calculations, extrapolations, alternate interpretations, methodology, and conclusions pertaining to the water budgets and any supporting documentation. At the end of the Peer Review, it is expected that a documented review of the work will be created to help satisfy stakeholders that activities are technically adequate, competently performed, properly documented, and satisfy technical guidance. The peer review process is not to consider the adequacy of the technical guidance and rules which are to be followed, but rather they are to focus on how the work meets that guidance and rules. Peer reviewer comments will be included in the document along with the responses from the person or group that undertook the work and any revisions which may result from those comments.

### Objectives

- To ensure consistency with the expectations of the technical guidance acknowledging the guidance that available at the time the work was undertaken but identifying technical deficiencies relative to the MOE Director’s Rules and any current guidance

- To ensure that the work is scientifically defensible

The following are essentials of peer review:

- The Peer Reviewers are independent of the peer being reviewed.
- The Peer Reviewers should know as much, or more, about the work than the peer being reviewed.
- The Peer Reviewers should have no stake in the outcome of their recommendations.
- Peer reviewers may be outsiders assembled only for the review at hand. Written procedures and a scope for the peer reviewers should be established before they begin their work.
- A written report on their review should be provided.

The peer review would be based on a terms of reference which would establish the purpose, scope and procedures for the review. It would also outline the discussion sessions among the reviewers and the opportunities for the peer reviewers to interact with the person or group which undertook the work. The municipal working groups have expressed an interest in being involved with establishing the peer review process for the vulnerability assessment.

## ***Discussion***

A number of discussion points are included for the Source Protection Committee's consideration.

- Do we need a single peer review process across the entire region is it more appropriate to establish separate groundwater (GW) and surface water (SW) peer review committees? Both of these options have advantages.
- The use of members from both GW and SW peer review committees to peer review the work on groundwater under the direct influence of surface water (GUDI) systems could be considered if separate processes were established for each of SW and GW.
- How many peer reviewers should be involved in the peer review? 1, 3, 4?
- A balance between academics and consultants needs to be considered.
- Need to engage people that understand and accept the process described in the guidance and rules.
- Need to consider consistency with our neighbours – perhaps by engaging a peer reviewer from the Lake Erie Source Protection Region staff or a peer reviewer of work completed in the Lake Erie Source Protection Region
- Does the Source Protection Committee wish to see the work before or after peer review?
- Do we need to peer review work that was previously peer reviewed as part of completed groundwater studies?
- Are there other aspects of the Assessment Report work which should be peer reviewed (such as threats inventories or risk assessment)?