

A Path Forward for Source Water Protection Numerical Models

S. Holysh, M. Marchildon, T. Arnold, and R. Gerber

In response to the Walkerton tragedy, the Province of Ontario passed the Clean Water Act, under which a number of programs have been established, one of the most prominent being Source Water Protection (SWP). Whereas SWP is now moving to implement water management and protection policies, in early days the program involved a series of technical assessment studies that eventually led to the construction of many numerical models. In addition, numerical models have also been constructed for a number of other programs and purposes, both Ontario-wide as well as locally focused. The resultant Ontario water management landscape is now left with a legacy of sophisticated groundwater and surface water models. The models have been built at considerable cost to the public and have resulted in the collection, analysis and interpretation of data and information, all of which have been synthesized into an understanding of the groundwater and surface water flow systems across broad parts of Ontario. Much of this understanding is documented in the many consulting reports that have been issued under the source water protection umbrella. The effective management of these numerical models, which can be viewed as infrastructure investments by Ontario, is the focus of this paper.

Public sector hydrologists at municipal and conservation authority agencies are now deliberating as to how best move forward to ensure that the knowledge gained through these modelling efforts is not lost. To assist in this regard, a model management guidance document is being prepared with a goal of assisting public sector staff to become more comfortable with the expectations and deliverables to be anticipated from numerical modelling projects. Amongst other topics, the document: i) outlines a standardized approach for assembling, organizing, and storing numerical modelling files; ii) proposes a cyclical approach to numerical modelling which deviates from a more typical linear approach; and iii) brings forward key insights for assembling “Request for Proposal” as well as legal contract documents. The document is aimed to be the “go to” reference document for technical public agency staff as they grapple with the management of numerical modelling project outputs, including refinement for future use.