

## Day Two - Track Two

Thursday, March 22<sup>nd</sup>, 2018

1:30 p.m. – 2:00 p.m.

## Reaching Consensus for the Benefit of River Systems

**Presenters:** Mark Hartley, Water Regime Investigations & Simulations and Bill Annable, University of Waterloo

### Biography



Mark Hartley has been working in the fields of natural channel design and flood-erosion hazard assessments and mitigation for almost 30 years. Mark started working in rivers in 1987 as a stream rehabilitation technician and has developed a keen awareness of the form and function of watercourses and their interactions with municipal infrastructure as his career evolved from fisheries biologist to river engineer. He has considerable experience working in urban environments and creating watercourses with natural features that support thriving aquatic and riparian communities.



Dr. Bill Annable has been researching the hydraulic, sediment transport and morphological characteristics of rivers for over the past 18 years. In addition to theoretical and applied research, Bill has also been designing, monitoring and supervising the construction of natural channel restoration projects throughout North America totaling over 2,500km of streams and rivers studied and over 180km of restored river channels. Recent research has focused on the sediment transport characteristics of urban river systems and how changes in hydrology affect habitat dynamics.

## Abstract

The design of open channels has changed dramatically in Ontario in the last 30 years. Relatively straight alignments with uniform trapezoidal cross-sections have been replaced with meandering planforms with variable cross-sections and a non-uniform profile. The number of parties involved has also changed from the engineer as the designer with a single regulatory agency approval to multiple design professionals and multiple regulatory agency approvals often with incongruent design objectives. While communication amongst design professionals has strengthened, primarily due to the efforts of the Natural Channel Initiative, there remains opportunities to reach a consensus with the regulatory agencies during the design review process as well as the construction industry to reduce overall project cost that will ultimately benefit the river system. This presentation will summarize two design philosophies (threshold and alluvial) and three design methods (analogy, hydraulic geometry and analytical) to serve as a framework to contextualize the two common design procedures in Ontario; namely Rosgen and Newbury as well as the increasing number of "standard drawings" that may otherwise be viewed as treatments rather than design elements. How this framework can benefit the review of channel design by regulatory agencies will be discussed. Finally it will be shown how this framework could reduce the overall project costs during both the design and construction phases.

## Learning Objectives

1. Raise awareness of the many different channel design methods and approaches of which Ontario is familiar with two;
2. Discuss a framework to facilitate more effective communication amongst design practitioners, regulatory agencies and contractors; and
3. Enhance cooperation amongst design practitioners, regulatory agencies and contractors for the long-term benefit of river systems.