

Day Two - Track One

Thursday, March 23rd, 2017

1:30 p.m. – 2:00 p.m.

Development of a Low Impact Development and Urban Water Balance Modeling Tool

Presenters: Steve Auger, Lake Simcoe Region Conservation Authority
Christopher Davidson, Golder Associates

Biographies



Mr. Steve Auger, M.Sc. (Eng.), P.Eng., C.P.E.S.C., is a water resources engineer and hydrologist, specializing in stormwater management (SWM) and erosion & sediment control (E&SC). Steve joined the Lake Simcoe Region Conservation Authority (LSRCA) in mid-November, 2014, filling a new role at the LSRCA as the stormwater management specialist. This position has been created to support the implementation of Low Impact Development (LID) SWM initiatives, design innovation, monitoring and evaluation programs, technical review, and public outreach within the Lake Simcoe Region watershed. Prior to joining the LSRCA, Steve worked in the consulting industry for over ten years. Steve has worked on many SWM designs throughout Canada, incorporating innovative practices wherever feasible.



Mr. Christopher Davidson, B.Sc., P.Eng. is a water resources engineer with interests in stormwater management, stream hydraulics, and the effects of climate change on these applications. He graduated from the University of Waterloo in 2003, working first in the residential development industry before joining Golder in 2007. He has been involved in a diverse range of projects; from design of SWM systems for commercial, mine, and landfill sites, to the modelling and design of flood protection following the 2013 Alberta floods, to the creation of water management software tools for communities in northern Ontario and Iqaluit. He worked with climate experts at Golder to develop the stochastic Golder Climate Generator, used for generating synthetic climate data for future scenarios to map out potential failures in water management systems. In addition to project work, Mr. Davidson is a guest lecturer on water permitting at U of T and promotes engineering outreach at local schools through PEO's Engineers in Residence program. He was the recipient of the Mississauga PEO Chapter's Young Member Award in 2016.

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Abstract

The TRCA, LSRCA, and CVC (GTA CAs) will present on their collaborative efforts to identify preferred Low Impact Development (LID) Stormwater Management (SWM) models suitable for meeting typical design criteria. The GTA CAs research and experimentation efforts with various LID SWM case studies will inform the audience of model criteria and rationale that supports the selection of preferred open-source and/or commercial license LID modelling tool(s) which effectively demonstrate design targets have been met.

This presentation will also overview the strategy moving forward with the development of an LID Treatment Train Tool (LIDTTT) for Ontario in 2016-2017, and will highlight the status of its development. The primary intention of the LIDTTT is to support more consideration and realization of LID opportunities for a proposed site plan, throughout the design process undertaken by planners, SWM designers, and other decision makers for all types of site development or retrofit projects. The development of the LIDTTT will process computational results from EPA-SWMM, to provide an assessment of stormwater runoff volume and associated target depths, along with total suspended solids (TSS) and total phosphorus (TP) reductions for both annual and event based scenarios, throughout the design process. A preliminary water budget assessment for pre and post conditions is also planned for Version 1.0 of the Tool. A demonstration of the LIDTTT will also be provided in this presentation.

Learning Objectives

1. Appreciate model criteria and rationale that supports the selection of preferred open-source and/or commercial license LID modelling tool(s) which effectively demonstrate design targets have been met;
2. Understand the recommendations for developing an LID Treatment Train Tool that will utilize EPA-SWMM to provide stormwater runoff, Total Suspended Solids, and Total Phosphorous reduction predictions, along with a providing a preliminary water budget assessment for post and pre development conditions; and
3. Recognize how an adapted LID Tool for Ontario could be used to enhance discussions during preliminary planning efforts, and to be re-applied for final design and assessment (for approval).