

Day Two - Track One

Thursday, March 23rd, 2017

10:00 a.m. – 10:30 a.m.

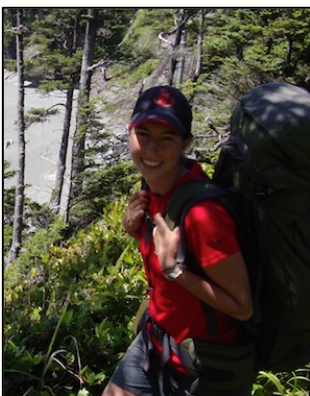
Water Budget Mitigation & Enhancement Measures Between SWM Outflow and Ecological Receivers

Presenters: Nathan Miller, Lillian Knopf and David Stephenson, Natural Resource Solutions Inc.

Biography



Nathan Miller, M.Sc., is a Terrestrial and Wetland Biologist with extensive experience carrying out research and ecological projects including Environmental Impact Studies, Renewable Energy Assessments, Natural Heritage Studies and Species at Risk Management, among others. Nathan routinely provides guidance on recommended mitigation measures related to impacts from development on natural features such as wetlands, woodlands, watercourses and Significant Wildlife Habitat.



Lillian is a Terrestrial and Wetland Biologist with over 5 years of experience in the environmental field. She has experience coordinating and conducting a variety of field investigations. Lillian has conducted literature reviews and prepared reports for consulting firms, academia, and government agencies. She completed her undergraduate degree at the University of Guelph in Environmental Sciences and is a M.Sc. Candidate in aquatic ecology at the University of Waterloo. She has been involved as part of multi-disciplinary teams assessing the impacts on existing aquatic, wetland and terrestrial resources and assists in the siting of a diversity of proposed undertakings.



David is a Senior Biologist at Natural Resource Solutions Inc with over 30 years of experience. He specializes in natural resource inventories and evaluations, management, research and impact studies. He is a Certified Arborist, Wetland Evaluator and Ecological Land Classification practitioner. He is routinely involved, as part of multi-disciplinary teams, in assessing the impacts on existing aquatic, wetland and terrestrial resources and assisting in the siting of a wide range of proposed undertakings.

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Abstract

In many stormwater management design analyses, the calculated water budget parameters, such as runoff volumes/discharge, generally do not consider the various measures that can be implemented between the outlet and an ecological receiver. These measures can influence the fate of water discharging from the stormwater management pond prior to entering an ecological receiver such as a watercourse, wetland, etc. By utilizing a range of mitigation measures between the outflow and the receiver, water quality and quantities reaching the receiver can be greatly mitigated or even enhanced. In such cases, the characteristics of the water regime entering the ecological receiver can be managed/enhanced to contribute to achieving a water budget suitable for the receiver. This presentation will discuss these components, including but not limited to: additional storage and infiltration provided by spreader swale/pipe and infiltration pipes, implications of minor changes in grade, benefits of soil amendments and pore storage, vegetation up-take in root systems, evapotranspiration, etc. Many of these measures can be combined and implemented as part of buffer restoration activities. The results of past and ongoing research will form the basis of this presentation. Issues associated with these measures such as implementation, ownership, maintenance, and policies will be discussed, which in some instances may preclude some of these measures. The conclusion provides a 'tool box' to be considered during stormwater design.

Learning Objectives

1. Provide information on various water budget mitigation/enhancement components between outlet and receiver;
2. Present results of past and ongoing research on this topic; and
3. Provide information on issues associated with these measures such as implementation, ownership, maintenance, and policies.