

## Day Two - Track One

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

2:00 p.m. – 2:30 p.m.

## Stormwater Management: Getting the Temperature Just Right

**Presenter:** Michelle Letourneau, Savanta

### Biography



Michelle Letourneau has spent more than 10 years, mainly as a consultant, studying, assessing and protecting aquatic ecosystems within Canada, the United States and South America. She has extensive experience inventorying and assessing flora and fauna in both freshwater and marine environments. She has lead and organized projects in various industry sectors, including pulp and paper, mining, power generation, transportation, recreation, urban development and government. These projects have given her a comprehensive working knowledge of government regulations, habitat assessment techniques and monitoring methods. She has implemented projects to meet regulatory requirements under CEPA , SARA, ESA, FWCA, Planning Act, Reg. 153/04, Fisheries Act, MMER, and PPER. She delivers experience and services in ecology (aquatic and terrestrial), biology (aquatic and terrestrial), environmental quality, ecological health, human health and toxicology. She has developed a holistic view of the aquatic ecosystem and anthropogenic activities allowing her to identify and focus on key interactions potentially affecting the long-term health of ecosystems.

## Abstract

Elevated temperature is a villain in the world of SWM. The warm water threat is particularly acute in urban watersheds where impervious surfaces such as parking lots, roads and roofs bake in the sun. When rain contacts these surfaces, stormwater heats up and runs off into rivers and streams. Runoff temperatures can increase as much as 5°C from the inlet to outlet in a typical wet SWM facility. This is a lethal problem for downstream fauna since many species survive in a narrow range of water temperature. When this warm discharge from commonly employed wet ponds or wetlands blasts the natural environment following a rainfall event, the fauna may stress and often die. There has been a long-standing desire among regulatory agencies to cool urban runoff before it reaches natural watercourses; however, despite this objective, an end-of-pipe best management practice (BMP) has yet to emerge and the performances of many candidate solutions remain unproven. Stantec has been implementing cooling trenches in SWM facilities for clients over the past 15 years and has been monitoring their effectiveness for almost a decade. The results of this monitoring have allowed Stantec to improve the cooling trench design to fit a variety of site conditions as well as paint an accurate picture of construction costs associated with each. Analysis of all collected data has allowed Stantec to determine the best cooling trench designs based on thermal mitigation performance and cost effectiveness.

## Learning Objectives

1. Understand the basic theory behind cooling trenches and the design;
2. What critical factors contribute to the success of a cooling trench; and
3. Gain a better understanding of how SWM facilities can affect development and the downstream aquatic ecosystem through increased temperatures.