

Day One - Track One

Wednesday, March 21st, 2018

2:00 p.m. – 2:30 p.m.

Quantifying the Benefits of Volume Reduction and Water Quality Improvement of Green Infrastructure

Presenter: Daniel Medina, LimnoTech

Biography



Daniel Medina is a Senior Engineer based in LimnoTech's Washington, DC office, who specializes in water resources and climate change and resilience. He obtained his Civil Engineering degree in 1982 from Universidad de los Andes, Bogotá, Colombia and a PhD in 1989 from Cornell University. He specializes in urban water issues including flood risk management, water supply, watershed restoration, and the application of Green Infrastructure for stormwater management.

Abstract

Green infrastructure (GI) is frequently considered as an alternative to grey infrastructure, and quantifying volume reduction benefits is all the more important when comparing to a fixed volume structure, such as a tunnel or storage facility. In 2016, the Consent Decree for combined sewer overflow (CSO) reduction that Washington, DC's wastewater treatment utility, DC Water, had received was amended to include requirements for GI facilities to manage the 1.2-inch storm event from 498 impervious acres. The goal is for GI to reduce tunnel storage and treatment requirements mandated in the original decree. DC Water has expanded upon a foundation of planning-level modeling and monitoring efforts that have laid the groundwork for investing in widespread GI implementation in the city. The possibility of substantial runoff reduction was demonstrated using a high-level, large area runoff model developed in MIKE URBAN. More detailed models using MIKE URBAN and EPA SWMM5 followed to simulate runoff and GI reductions. As the GI program progressed from a planning -level analysis to the design phase, the SWMM5 runoff and GI model, combined with the MIKE URBAN collection system model provided a powerful and flexible framework for evaluating GI effectiveness, including investigation of maximum volume capture, optimal GI location within sewersheds, and verification of the overall implementation strategy.

Learning Objectives

1. Understand the unique challenges in quantifying the benefits of GI;
2. Understand the criticality of proper selection and development of models for GI evaluation; and
3. Understand the limitations of GI models and the proper way to interpret results.