

## Day Two - Track Two

Thursday, March 23<sup>rd</sup>, 2017

11:00 a.m. – 11:30 a.m.

## **Brierwood Creek Relocation: Lessons Learned from Stream Restoration with Contractors Unfamiliar with Natural Channel Design**

**Presenter:** Jeff Muirhead, Stantec Consulting Ltd.

### **Biography**



Jeff is a water resources engineer working in the stream restoration group with Stantec in Waterloo, Ontario. Jeff's work focuses on stream design and fluvial geomorphological assessments, specifically how they relate to river stability and aquatic habitat. Jeff has an M.A.Sc. in Eco-Hydraulics and Stream Restoration from the University of Waterloo and a B.Eng in Water Resources Engineering from the University of Guelph.

### **Abstract**

Stream restoration using Natural Channel Design (NCD) is a developing industry in Canada. Restoration design and construction practices have been established in urban settings by consulting and contracting companies, owing to the larger body of work completed in built-up regions. Comparatively, there have been relatively few NCD stream restorations in rural settings, which has resulted in less knowledge and experience in completing NCD construction in these areas. This lack of rural NCD experience leads to a unique set of challenges for designers and contractors alike when designing, permitting, and constructing stream restorations in new regions.

Following significant rainfall events in 2011, extensive erosion occurred along the outer meander bank of Brierwood Creek in rural Manitoba. The bank erosion threatened the integrity of an adjacent road. To remove the threat, Brierwood Creek was moved away from the road; 287 metres of existing channel was replaced with 151 m of realigned stream. The realigned stream employed principles of Natural Channel Design and fluvial geomorphology to provide a stable stream and functioning ecosystem. The project was built in late fall of 2016 by contractors who had previously not installed a NCD stream restoration. This session presents the challenges of rural stream construction using contractors unfamiliar with NCD which were experienced in this project, specifically relating to water management and diversion, erosion and sediment control, permitting requirements, instream

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structure installation, inclement weather delays, and overall NCD education. Lessons learned by designers and contractors alike are shared to enhance the standard of future stream restorations.

## **Learning Objectives**

1. What is Natural Channel Design?;
2. When landowners, clients, and contractors are unfamiliar with Natural Channel Design, what can the designer do to ensure the project gets permitted and built properly?; and
3. If inexperienced with Natural Channel Design, what can the contractor do to ensure they build the restoration as designed and as efficiently as possible?