



# NATURAL CHANNELS 2018

Sustaining Connectivity: Exploring the Importance of Connectivity in Systems, Knowledge, Practice and Policy

## Sediment Transport, Fish Passage and Open Channel Hydraulics

### Sediment Transport and Open Channel Hydraulics

GEO Morphix Ltd. is partnering with the Natural Channel Initiative to provide a 2.5 hour Seminar on '**Sediment Transport**' with emphasis on applications in natural channel design, erosion mitigation, and stormwater management. This course outlines both basic concepts in hydraulics and sediment transport, and real-world application. Specific topics include:

- Introduction to open-channel hydraulics
- Sediments and their characteristics
- Initiation of motion
- Field measurement techniques
- 'Rules of thumb' and simple sediment transport and hydraulic models
- Potential pitfalls of models in channel design, including real-world case studies
- Application to erosion mitigation and stormwater management

This seminar provides professionals with a greater understanding of hydraulics and sediment transport as they pertain to channel design and stormwater management. It provides tools to understand the evaluation of channel stability and erosion mitigation measures associated with stormwater management. This course assists agency and municipal personnel to ensure that the proper questions are asked when assessing channel designs and stormwater management plans.

### Fish Passage and Open Channel Hydraulics

GEO Morphix Ltd. is partnering with the Natural Channel Initiative to provide a 2.5 hour Seminar on '**Fish Passage and Open Channel Hydraulics**' with particular emphasis on applications in natural channel design and stream crossings. This course outlines both basic concepts in hydraulics and fish behavior, and real-world application. Specific topics include:

- Introduction to simple, open-channel hydraulics
- Fish behavior
- Techniques to mitigate fish passage issues
- Eco-hydraulics and the application of simple hydraulic models to address fisheries questions
- Field measurement techniques
- Modelling of hydraulics to assess fish passage

This seminar provides professionals with a greater understanding of hydraulics and fish passage as they pertain to channel design and stream crossings. Fish behavior/response to different flow conditions is reviewed. It provides tools to understand and assess fish passage. Several simple hydraulic approaches for assessing fish passage are presented. Methods for instream treatments (e.g. vortex weirs, armoured beds) are also discussed in the context of channel hydraulics and ecological benefit. This course assists agency and municipal personnel to ensure that the proper questions are asked when assessing channel designs and other activities that impact aquatic habitat.



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## Instructor

This workshop is prepared and delivered by Dr. Paul Villard of GEO Morphix Ltd. Dr. Villard has extensive local and international experience in fluvial geomorphology and channel design from both an academic and applied perspective. His recent activities include design and implementation of large-scale valley and channel realignments and research on fish passage, habitat suitability, and stability of natural channel designs.

## Open Channel Hydraulics Site Tour

Participants of this workshop will be taken on a 2-hour tour of sites in the Guelph area that will reinforce and compliment information presented in class.

## Timeline – Wednesday May 23, 2018

7:30 AM – 8:30 AM	Registration and refreshments
8:30 AM – 10:00 AM	Sediment Transport and Open Channel Hydraulics
10:00 AM – 10:15 AM	Break
10:15 AM – 11:30 AM	Continuation of Sediment Transport and Open Channel Hydraulics
11:30 AM – 12:00 PM	Lunch
12:00 PM – 2:00 PM	Tour of Guelph area sites
2:00 PM – 4:30 PM	Fish Passage and Open Channel Hydraulics

## Who Should Attend?

This course is intended for recent graduates with a hydraulics specialization, and practitioners in the hydraulics field, as well as resource managers, planners, engineers, geomorphologists, biologists, ecologists and consultants who are involved in the planning, reviewing and/or designing of natural channels and fish passage. This course is intended for an intermediate to advanced audience.

## Learning Objectives

1. Overview of open-channel hydraulics and fish passage
2. Introduction to modeling of sediment dynamics and fish passage
3. Improved understanding of how to assess and review channel designs and the activities that may impact the channels

## Additional Information

Lunch will be provided to participants. You will be contacted to share dietary restrictions. Course is contingent on sufficient registration.