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

2018 Preliminary Program

May 23rd - 25th, 2018
University of Guelph
Guelph, Ontario
# Program at a Glance

## Wednesday, May 23, 2018

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>8:30 AM – 4:30 PM</td>
<td><strong>Training, Workshops, and Tours</strong>&lt;br&gt;- Channel Design Principles&lt;br&gt;- Class 2 Backpack Electrofishing Certification Course&lt;br&gt;- Sediment Transport, Fish Passage and Open Channel Hydraulics</td>
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<tr>
<td>7:00 PM – 8:00 PM</td>
<td><strong>Young Professionals Networking Event</strong> (Held at The Bullring)</td>
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<tr>
<td>8:00 PM – 10:00 PM</td>
<td><strong>Ice Breaker Reception</strong> (Held at The Bullring) - Registration will be open</td>
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## Thursday, May 24, 2018

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<tr>
<th>Time</th>
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<tbody>
<tr>
<td>7:00 AM – 8:45 AM</td>
<td><strong>Registration</strong> (Rozanski Hall)</td>
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<tr>
<td>8:45 AM – 9:45 AM</td>
<td><strong>Welcome, Introductions and Opening Remarks</strong> (Room 101 Rozanski Hall)&lt;br&gt;Keynote Speaker Dr. Ellen Wohl</td>
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<tr>
<td>9:45 AM – 10:15 AM</td>
<td>Refreshment Break with Exhibitors (Rozanski Concourse)</td>
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<tr>
<td>10:15 AM – 11:30 AM</td>
<td><strong>Concurrent Sessions</strong> (Rozanski Hall) - T1A / T1B / T1C / T1D</td>
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<tr>
<td>11:45 AM – 1:00 PM</td>
<td><strong>Luncheon</strong> (Peter Clark Hall)&lt;br&gt;Keynote Speaker Richard W. Hill Sr.</td>
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<tr>
<td>1:00 PM – 1:30 PM</td>
<td><strong>Poster Presentations and Exhibitors</strong> (Rozanski Concourse)</td>
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<tr>
<td>1:30 PM – 2:45 PM</td>
<td><strong>Concurrent Sessions</strong> (Rozanski Hall) - T2A / T2B / T2C / T2D</td>
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<tr>
<td>2:45 PM – 3:15 PM</td>
<td>Refreshment Break with Exhibitors (Rozanski Concourse)</td>
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<tr>
<td>3:15 PM – 4:55 PM</td>
<td><strong>Concurrent Sessions</strong> (Rozanski Hall) - T3A / T3B / T3C / T3D</td>
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<tr>
<td>5:00 PM – 7:00 PM</td>
<td><strong>Wine and Cheese Networking Reception</strong> (Rozanski Concourse)</td>
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## Friday, May 25, 2018

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<th>Time</th>
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<tr>
<td>7:30 AM – 8:00 AM</td>
<td><strong>Registration</strong></td>
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<tr>
<td>8:00 AM – 9:00 AM</td>
<td><strong>Keynote Address and Awards Presentation</strong> (Room 101 Rozanski Hall)&lt;br&gt;Keynote Speaker Dr. Andrew Brookes&lt;br&gt;Natural Channel Initiative: Award of Recognition</td>
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<tr>
<td>9:15 AM – 10:30 AM</td>
<td><strong>Concurrent Sessions</strong> (Rozanski Hall) - F1A / F1B / F1C / F1D</td>
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<tr>
<td>10:30 AM – 11:00 AM</td>
<td>Refreshment Break with Exhibitors (Rozanski Concourse)</td>
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<tr>
<td>11:00 AM – 12:15 PM</td>
<td><strong>Concurrent Sessions</strong> (Rozanski Hall) - F2A / F2B / F2C / F2D</td>
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<tr>
<td>12:15 PM – 1:15 PM</td>
<td><strong>Luncheon</strong> (University Centre Food Court)</td>
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<tr>
<td>1:15 PM – 1:45 PM</td>
<td><strong>Poster Presentations and Exhibitors</strong> (Rozanski Concourse)</td>
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<tr>
<td>1:45 PM – 3:25 PM</td>
<td><strong>Concurrent Sessions</strong> (Rozanski Hall) - F3A / F3B / F3C / F3D</td>
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<tr>
<td>3:30 PM – 4:00 PM</td>
<td>Wrap-Up with Master of Ceremonies (Room 101 Rozanski Hall)</td>
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Natural Channels - Sustaining Connectivity: Exploring the Importance of Connectivity in Systems, Knowledge, Practice and Policy

At the 6th Natural Channel Conference we will explore Sustaining Connectivity – linking knowledge through generations, practice among disciplines, policy amidst practitioners, and science across the landscape. In 2018 we will take a multidisciplinary look at natural channel systems with a widened view of cause and effect, employing the knowledge of past work with present research to connect the landscape to the channel. Through this we are providing the opportunity for sharing and evolving our understanding of the importance, complexity, and interconnectedness of watercourses, and their relationship with hydrological, geomorphological, chemical and ecological processes.

Master of Ceremonies

Deborah Martin-Downs

Deborah Martin-Downs, B.E.S., M.Sc., is the Chief Administrative Officer of the Credit Valley Conservation Authority (CVC), a position she began in August of 2013 after 8 years as Director of the Ecology Division of the Toronto and Region Conservation Authority (TRCA). Prior to joining TRCA, Deborah spent 16 years as an environmental consultant with Gartner Lee Limited (now AECOM). She has a Bachelor of Environmental Studies from the University of Waterloo (1979) and a Master of Science in Zoology and Environmental Studies from the University of Toronto (1985).

Deborah began her career as an aquatic ecologist specializing in urban systems and the factors that have contributed to their change over time. Over the course of her career she has held progressive roles managing multidisciplinary teams of technical specialists in the fields of geoenvironmental, watershed planning, terrestrial and aquatic ecology, flood risk and infrastructure, water resources engineering, source water protection, and environmental monitoring.

She has been around long enough to have been one of the first people trained in fluvial geomorphology by Dave Rosgen in 1991, before that term became a household word (well at least in some of our households). Deborah presented at the first natural channels conference in 1994, bravely admitting to many mistakes made in designing and building channels with her new found knowledge. Deborah is honoured to be the MC this year but this time will let the experts do the talking!
2018 Keynote Speakers

Dr. Ellen Wohl
Ellen Wohl received a BSc in geology from Arizona State University and a PhD in geosciences from the University of Arizona before joining the faculty at Colorado State University in 1989. Her research focuses on physical process and form in river corridors, including interactions with biotic and human communities. Her research is predominantly field-oriented and she has conducted field research on every continent but Antarctica.

She has written more than 200 scientific papers and book chapters, as well as 16 books, and is a Fellow of the American Geophysical Union and the Geological Society of America and a Colorado State University Distinguished Professor. Much of her current research examines how physical complexity associated with the presence of instream wood and beaver dams influences the form and function of river ecosystems.

Richard W. Hill Sr.
Member of the Beaver Clan of Tuscarora Nation. Currently Coordinator for the Joint Stewardship Board serving the City of Hamilton and Six Nations of the Grand River Territory. Previously served as Senior Project Coordinator, Deyohahage Indigenous Knowledge Centre at Six Nations Polytechnic; Assistant Director for Public Programs, National Museum of the American Indians, Smithsonian Institution; and former Assistant Professor, State University of New York at Buffalo.

Dr. Andrew Brookes
Dr. Andrew Brookes has over 34 years of professional experience, is recognized internationally for contributing to river restoration, and is a nationally recognized as an expert in geomorphology. Dr. Brookes is also an expert in hydromorphology assessment working on a wide variety of projects from low flow projects to catastrophic floods, with a demonstrated expertise in linkages between geomorphology, hydrology and ecology having produced reports for the European Union.

Dr. Brookes’ vast career has included working as a Research Fellow at the Royal Society and University of Wales for three years, an expert in Public Inquiries and Court Cases, and a founding member of the River Restoration Project (now the River Restoration Centre). He is the winner of the (UK) Royal Geographical Society for outstanding national and international contributions to river management.

Dr. Brookes is the author of a book on river channelization published in 1988 by John Wiley & Sons, an Author and editor of a book on River Channel Restoration, and the author and contributor to approximately 40 peer-reviewed publications as well as many hundreds of technical reports.
Wednesday, May 23, 2018

For more detailed information on all 3 learning opportunities, please visit the Natural Channels website (www.naturalchannels.ca)

[1] Channel Design Principles

This workshop will provide an overview of the fundamentals of channel design. Information will be introduced in a classroom setting and further reinforced through the review of case studies and a tour of recently constructed sites. The in-class component will review design terminology, design process and design methods. Participants will be introduced to the concept of stream function pyramid, as well as better understand the right channel design for the right setting. Specific topics that will be covered include:

- Fundamental design parameters
- Key components of design drawings and design briefs
- What to consider to determine the correct design approach with specific review of when it's appropriate to consider natural channel versus geomorphically referenced engineered, urban versus rural, and constrained versus unconstrained
- Perspective on balancing the disciplines
- Opportunities to look for in a design

Following the in-class component, attendees will be taken on a tour of sites throughout Kitchener and Waterloo that will reinforce fundamental design parameters. The combination of in-class and site tours will provide attendees with a toolbox of methods that can be used in natural channel design and in turn provide a better capacity of review design briefs and design drawings. The workshop will be taught by an interdisciplinary panel and tour sites will be presented by Project Lead Designers.

Target Audience
This course is intended for a junior to intermediate audience with specific focus on proponents, agency review staff, young practitioners, and contractors. The course is designed for an interdisciplinary group of practitioners from various backgrounds including planning, engineering, ecology and biology. The course will benefit parties who play a role in the review of channel design or who are interested in pursuing a career in the review of channel design. The course will also benefit those interested in further understanding the fundamental components of natural channel design.

[2] Class 2 Backpack Electrofishing Certification Course

Offered by Ontario Streams and Toronto and Region Conservation Authority in Partnership with Natural Channel Initiative

This course is offered as a one day training workshop designed to certify attendees in the use of backpack Electrofishing equipment. The main emphasis of this course is the safe use of backpack electroshocking units. The topics covered will include protective equipment, safe procedures and backups or fail-safes. The course will also include the fundamentals of electrical theory; and a practical component for which participants will be required to demonstrate safe electrofishing practices in the field. Attendees will be required to complete a written examination for fully certification. Instruction will be provided by Class 1 OMNR certified instructors and meets OMNR policy standards.

Who Should Attend?
This course is intended for field staff, consultants and resource managers who are involved in fisheries surveys and management.
3 Learning Opportunities Available

[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 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.

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.

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, 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.
Solar farms are becoming increasingly common, and while the energy they produce may be “Green”, such installations provide both unique challenges and opportunities when it comes to designing green infrastructure and natural channel systems capable of handling their runoff.

Adam and Jason will provide an overview of the site characteristics and design considerations for a large solar farm project in Ontario. The panel will explore the various professional roles and perspectives involved in the project, and the unique design implications of having an impermeable surface above shaded ground.

Jason Sharpe & Adam O’Connor
McIntosh Perry

Why the Difference? Mariëtte Pushkar & Julia Howett
Ecosystem Recovery Inc.

Following up on Following up: Findings and Recommendations from NCI’s 2017 Post-Construction Monitoring Workshop
Jeff Muirhead
Stantec Consulting Ltd.

Setting Standards for the Design of Stream Rehabilitation Project Evaluations: Updated Guidance from 10 Years of Monitoring in the Greater Toronto Area
Dean Young
Toronto and Region Conservation

The Importance of Understanding Channel Adjustments: 36 Years of River Channel Restoration Examples from the UK and Denmark
Andrew Brookes
Jacobs Engineering Group UK

What Does an Estimator See When He Looks at a Natural Channel Construction Project?
Jared Reinders
R&M Construction

Watercourse Projects, Lessons Learned
Julie Mulligan
Stantec Consulting Ltd.

A Software Platform for Integrated Monitoring and Modelling of Stream Restoration Projects
Doug Mulholland
University of Waterloo

Fabien Hugue
AECOM & Concordia University & Joanna Eyquem
AECOM

An In-Flood Monitoring System for Bedload Sediment in a Restored Riffle-Pool Morphology
Chris Muirhead & Bruce MacVicar
University of Waterloo
# Sessions - Thursday, May 24, 2018

<table>
<thead>
<tr>
<th>Room: 106</th>
<th>Room: 103</th>
<th>Room: 102</th>
<th>Room: 101</th>
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<tbody>
<tr>
<td><strong>T2A</strong> Communication: How Effective Communication Can Lead to Project Success&lt;br&gt;The Benefits of Regular Onsite Collaboration throughout the Permitting Process. Lessons Learned from the Framgard Channel Realignment. Charles Priddle &amp; Benjamin Davis Conservation Halton&lt;br&gt;One Size Does Not Fit All (or Even Most) - Lessons Learned in Effective Communication&lt;br&gt;Laura Lawlor GHD Limited&lt;br&gt;Rocky Ramp Case Study - Managing Socio-Political Expectations and Adverse Field Conditions&lt;br&gt;Matthew McCombs Matrix Solutions Inc.</td>
<td><strong>T2B</strong> Monitoring: Application of New Tools&lt;br&gt;Unmanned Aerial Vehicles as a Tool for Monitoring and Evaluating Natural Channel Designs&lt;br&gt;Bryce Molder GEO Morphix Ltd.&lt;br&gt;Exploring the Use of Unmanned Aerial Systems (UAS) in River Research and Monitoring&lt;br&gt;Scott Finucan Ontario Ministry of Natural Resources and Forestry</td>
<td><strong>T2C-1</strong> Young Professional Development&lt;br&gt;The Role of Young Professionals in River Restoration in Ontario&lt;br&gt;Cailey McCutcheon Aquafor Beech Ltd &amp; Jeffrey Muirhead Stantec Consulting Ltd.</td>
<td><strong>T2D</strong> Resilience: Exploring Response Time and Design Adaptation&lt;br&gt;Urbanization of Highland Creek: Morphological Response, Predictability, and Natural Channel Design&lt;br&gt;John McDonald Matrix Solutions Inc. &amp; Peter Ashmore Western University&lt;br&gt;Resilience in the Design and Construction of Highland Creek Valley Segment 4a&lt;br&gt;Harry Reinders R &amp; M Construction &amp; W J Snodgrass City of Toronto&lt;br&gt;The Time-Limited Resilience of River Morphology to Alteration: Examples from across Canada&lt;br&gt;Robin McKillop Palmer Environmental Consulting Group Inc.</td>
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**T2C-2** Environmental Flows: State of the Science<br>State of the Science, at Home and Abroad<br>Peter Lind GHD Aquatic Sciences Group<br>Environmental Flows - Underexplored Dimensions<br>Dr. Andrea Bradford University of Guelph
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<tr>
<th>Room: 103</th>
<th>Room: 106</th>
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<th>Room: 101</th>
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<tr>
<td><strong>T3A</strong> Collaborative Design: Complex Projects That Took a Multidisciplinary Team to Innovate Solutions</td>
<td><strong>T3B</strong> Monitoring and Lessons Learned: Investigating Ways to Improve Our Approach</td>
<td><strong>T3C</strong> Environmental Flows: Application of Techniques to Determine Environmental Flow Targets</td>
<td><strong>T3D</strong> Resilience: Examining Sediment Dynamics</td>
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<td>Planning for Change through the Use of Successional Vegetation Communities Tim McCormick &amp; Daniella Giovanatto Stantec Consulting Ltd.</td>
<td>Modelling Specific Stream Power and Associated Channel Morphologies Using Differential Scaling of Slope Generalisation Techniques Pamela Tetford University of Toronto</td>
<td>Bioenergetic Models as a Means to Evaluate Habitat Availability John Tweedie &amp; Jaclyn Cockburn University of Guelph</td>
<td>Linking Urban Hydromodification to Bedload Sediment Transport Elli Papangelakis University of Waterloo</td>
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<tr>
<td>A Little Fish and the Landscape Architect: Collaborative Design to Create a Better Place for Redside Dace Paul DiProfio NAK Design Strategies</td>
<td>Determining Erosive and Depositional Patterns in the North Saskatchewan River to Target Sediment Sample Locations Most Likely Impacted by an Oil Spill Shaun Toner &amp; Jocelyn Fetter Matrix Solutions Inc.</td>
<td>Ecological Response to an Experimental High Flow Release in the Upper Yarra River, Victoria, Australia Peter Lind GHD Aquatic Sciences Group</td>
<td>An Order of Magnitude Increase in Stream Power and Sediment Transport Potential Due to Urbanization of the Highland Creek Watershed Toronto, ON Dr. Roger Phillips University of Toronto</td>
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<td>Restoring the Connection between Creek and Lake: Fresh Water Estuarine Creation in Mississauga Joffry Doucette GHD Limited &amp; Kenneth Dion Toronto and Region Conservation</td>
<td>Monitoring Extreme Events: The Trials and Tribulations Patricia Huynh University of Waterloo</td>
<td>Environmental Flow Negotiations for Proposed Waterpower Sites in Northeastern Ontario 2005-2015 Rich Pyrce Ontario Ministry of Natural Resources and Forestry</td>
<td>The Viability of Natural Channel Designs in Highly Active Fluvial Systems Scott Cowan &amp; Jeff Muirhead Stantec Consulting Ltd.</td>
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## Sessions - Friday, May 25, 2018

### 9:15 AM - 10:30 AM

<table>
<thead>
<tr>
<th>Room: 102</th>
<th>Room: 101</th>
<th>Room: 106</th>
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<tbody>
<tr>
<td><strong>F1A</strong> Policy: Establishing Sustainable Funding Mechanisms</td>
<td><strong>F1B</strong> Innovation: Employing Models to Improve the Robustness of Natural Channel Design</td>
<td><strong>F1C</strong> Panel Discussion: Advancing Professional Regulation</td>
<td><strong>F1D</strong> Resilience: Examining Sediment Dynamics</td>
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<tr>
<td>Restoration of a Confined Urban System - Funding and Design Linda McDougall City of London &amp; Heather Amirault Stantec Consulting Ltd.</td>
<td>Making the Bend: Demonstration of HEC-RAS2D to Support Hydraulic Design of Turning Vanes Robert Chlumsky Ecosystem Recovery Inc.</td>
<td>Join us to discuss how the disciplines that input to natural channel design are regulated 1. Introductory Presentations 2. Planned Questions 3. Questions from the Audience - please come prepared with your own questions to ask the panelists</td>
<td>Laboratory Modeling of Sediment Dynamics to Promote Resilient Streams Ryan Good University of Guelph</td>
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<td>Bridging the Gap: TRCA’s Restoration Opportunities Database as a Potential Compensation Bank Joel Smith &amp; Andrew Ramsebottom Toronto and Region Conservation</td>
<td>Vortex Rock Weirs: Assessing Fish Passage at Design and after Construction through Modelling and Measurement Paul Villard GEO Morphix Ltd.</td>
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<td>Experimental Study on the Impact of Keystones on Gravel Bed Morphology Chris McKie University of Waterloo</td>
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<td>The Evolution of DFO Habitat Banking: What We Have Learned So Far in the City of Kitchener Leah Walter City of Kitchener &amp; Brad Fairley Stantec Consulting Ltd.</td>
<td>Lessons Learned from Using a 3D Numerical Model and Suitability Analysis to Assess a Lake Sturgeon Restoration Project in the Ouareau River (Quebec) Andre-Marcel Baril GEO Morphix Ltd.</td>
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<td>Sediment Dynamics in Semi-Alluvial Urban Streams Peter Ashmore Western University &amp; Matilde Welber University of Trento</td>
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<td><strong>Moderator</strong> Mary-Louise Byrne Wilfred Laurier University</td>
<td><strong>Panelists</strong> Roger Phillips Association of Professional Geoscientists Ontario Richard Zytner &amp; Mark Hartley Professional Engineers Ontario</td>
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<td>Mark Schollen Association of Landscape Architects Ontario</td>
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<td><strong>F2A</strong> Policy: Innovative Application, Using Pre-Existing Legislative Tools to Manage Connected Systems</td>
<td><strong>F2B</strong> Innovation: Improving Natural Channel Design Procedures</td>
<td><strong>F2C</strong> Hydromodification: Understanding the Morphological Impacts of Urbanization and Examining Solutions</td>
<td><strong>F2D</strong> Resilience: Exploring the Concept of Resilience in Natural Channel System</td>
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<td>Policy Innovation: Using Existing Drainage Legislation to Create Healthier, Holistically-Functional Drainage Channels Sarah Fleischhauer Maitland Valley Conservation Authority</td>
<td>Improvements in Fluvial Modelling to Support the Assessment and Restoration of River Reaches with Eroded Banks Yannick Rousseau Concordia University</td>
<td>Experience from the Chesapeake Bay - Regenerative Stormwater Conveyance Principles and Adaptations in Urban Stormwater Retrofitting and Stream Restoration Glenn Muckley Stantec Consulting Services Inc.</td>
<td>Geomorphic Resilience: An Argument for a Modified Definition Kayla Goguen Western University</td>
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<tr>
<td>The Drainage Act - in Mississauga? How a Rural Regulatory Tool Was Used to Address Urban Flooding Bill Trenouth Credit Valley Conservation</td>
<td>Examining Slope Instability Dynamics along a Small Bank Slope Using Tree Ring Growth Anomalies in Central New York State, USA Matthew Vetta Credit Valley Conservation</td>
<td>Resiliency to Resiliency: A Sociogeomorphic Approach to Rivers Danielle Barr Western University</td>
<td>Pocket Wetlands as Additions to Stormwater Treatment Train Systems: A Case Study from a Restored Stream in Brampton, ON, Canada Jason Krompart Credit Valley Conservation</td>
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Sessions - Friday, May 25, 2018

1:45 PM - 3:25 PM

Room: 102

F3A
Policy: Tools and Approaches to Protect and Restore Natural Channel Systems

Restoring Degraded Urban Rivers in the Quebec Policy Context, Proposing Non-Structural Solutions and Convincing Decision Makers
Geneviève Marquis & Hugues Lachance
J.-F. Sabourin and Associates

Development of a Rehabilitation Strategy over Multiple Subwatersheds to Support the Implementation of Large-Scale Development Projects in Regulated Redside Dace Habitat
Imran Khan
Beacon Environmental & Emily Funnell
Ontario Ministry of Agriculture, Food and Rural Affairs

Mitigation Approaches to Fund Stream Restoration Projects
J George Athanasakes
Stantec Consulting Ltd.

Monetizing Fish Habitat Credits
Brad Fairley
Stantec Consulting Ltd.

Room: 106

F3B
Innovation: Forward Thinking, New Approaches for a New Day

Planting Design Considerations for a Changing Climate as It Relates to Natural Channel Design
Amy Bennewies
Into the Woods

Refining Policies Regarding Setbacks for Surface Water Features in the City of Ottawa
Jennifer Boyer
City of Ottawa
& Cynthia Levesque
Kilgour & Associates Ltd.

Connecting the Dots: Natural Channel Restoration Based on Communal Approaches to Urban Drainage
Shannon Malloy & Karen Chisholme
Credit Valley Conservation

Emergency Response Leads to Bank Stabilization Needs in Prince Albert, SK - Introducing Natural Channel Techniques to a New Region
Amber Garrett & Heather Amirault
Stantec Consulting Ltd.

Room: 101

F3C
Stream Restoration Projects: Finding Harmony Where Infrastructure Meets the Streams

Collaborating to Protect Municipal Infrastructure and Restore Redside Dace Habitat
Matt Johnston
Toronto and Region Conservation

Channel Design at Road Crossings: Design Constraints and the Consideration of Fluvial Geomorphic Processes
Mark Wojda
Matrix Solutions Inc.

Barefoot Box Culvert
Christopher Pfohl
R.J. Burnside & Associates Limited

Room: 103

F3D
Stream Restoration Projects: Systems over Silos, Taking in the Whole Picture Approach

Critical Relationships between Streams and Their Floodplains: Implications for Stream Restoration Project Design
Fred Dobbs
Nottawasaga Conservation Authority
& Paul Villard
GEO Morphix Ltd.

Erosion and Runoff Mitigation for Water Quality Enhancement for a Rural, Northern Ontario Community
Ed Gazendam
Water’s Edge
& John McDonald
Matrix Solutions Inc.

In the Wake of the Ash Borer: Collaborative Ecological Restoration and Erosion Mitigation in Oakville’s Taplow Creek
Anna Howes & Ash Baron
Aquafor Beech Ltd.

Managing the Relationships between Watercourses and Riparian Wetlands
Cara Hutton
GEO Morphix Ltd.
& Nyssa Hardie
Natural Resource Solutions Inc.