

Fluvial Geomorphology

AECOM's fluvial geomorphologists successfully apply research, innovative approaches and new technologies to identify sustainable river management strategies and solutions for our clients.

Overview

Fluvial geomorphology is the study of river form and processes and provides the basis for delineating lands susceptible to river hazards, characterizing channel stability and sensitivity to disturbance, and designing natural channels that restore fluvial processes and enhance aquatic habitat.

Our Approach

AECOM's fluvial geomorphologists are a fully integrated part of our multidisciplinary team, working on stormwater, erosion control, watercourse restoration, and environmental management projects with a focus in Southern Ontario. Our specialized natural channel design team includes fluvial geomorphologists, aquatic ecologists, landscape architects, and water resource engineers. Together, we are passionate actively look for opportunities to apply research, innovative approaches and new technologies to identify sustainable river management solutions for our clients.

In Ontario, AECOM's fluvial geomorphologists carry a professional designation through the Professional Geoscientists Ontario and have the ability to stamp/sign off on design drawings. Our fluvial geomorphologists work in a professional and ethical manner on all project work.

Advanced Solutions

- Application of UAV technology: habitat characterization, topographic survey, erosion monitoring, thermal imaging
- Remote sensing of fluvial environments: earth observation data, hyperspectral analysis, artificial intelligence
- Collection of georeferenced field data: use of GIS-enabled tablets
- Use of 2D, 3D hydraulic modeling outputs: impacts on sediment regime and fish habitat
- Enhancing resilience to climate change: vulnerability assessment, design of adaptation measures, natural flood management

Services

- Characterization of streams: form and function
- Characterization of sediment dynamics: supply, transport, deposition
- Delimitation of zones of fluvial risk: meander belt width assessment/ freedom space
- Sustainable design of watercourse crossings: culverts, bridges and underground services
- Erosion control and monitoring solutions
- Stormwater management: erosion threshold analysis for receiving waters
- Natural channel design and stream restoration
- Dam removal: passive and active restoration of rivers, sediment management
- Physical habitat and erosion monitoring: river form and function
- Construction supervision and monitoring

Contact Us!

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Fluvial Geomorphology Project Highlights

<p>Highway 413 – Preliminary Design Phase – Stage 2 Client – Ministry of Transportation, Ontario (Ongoing)</p>	<p>A total of 144 fluvial features investigated along 52 kilometres to support the proposed transit corridor in Ontario. Recommendations for crossing (bridge and culverts) opening provided to the design team based on meander belt calculations and watercourse conditions.</p>
<p>Battlefield Creek Erosion Maintenance Detailed Design and Construction Supervision Client – City of Hamilton</p>	<p>A multidisciplinary approach was executed with hydraulic, geomorphological and ecological specialists.</p>
<p>Mud Creek Phase 2 Detailed Design and Tendering Client – City of London</p>	<p>Guided by the principles of natural channel design, ecology, and hydraulics, a design that mitigated upstream flooding was prepared.</p>
<p>Gardiner Expressway Rehabilitation and Replacement Client – City of Toronto</p>	<p>A 2D hydraulic assessment was completed including identification of constraints and opportunities and recommendations for the Lower Don River reconfiguration and rehabilitation of the Gardiner Expressway.</p>
<p>Panhandle Regional Expansion Client – Enbridge Gas Inc.</p>	<p>A watercourse bed scour assessment was completed to provide to provide technical input on proposed pipeline crossing locations.</p>
<p>Preliminary Design Services for the Bradford Bypass Geomorphological Assessment Client – Ministry of Transportation, Ontario</p>	<p>A preliminary design study was executed for the Highway 400 to Highway 404 link.</p>

