

Fluvial Geomorphology

Across Canada, AECOM's fluvial geomorphologists provide nature-based solutions to clients in the transportation, water, and energy sectors. We have a team of licensed professional geoscientists in Ontario and British Columbia and fluvial specialists providing support in an ethical manner on all project work.

Overview

Fluvial Geomorphology is the study of river form and processes, serving as the foundation for identifying 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 a multidisciplinary team, working on stormwater, erosion control, watercourse restoration, and environmental management projects. Our specialized Natural Channel Design group is a multidisciplinary group of fluvial geomorphologists, aquatic ecologists, landscape architects, and water resource engineers. Together we are a passionate and innovative group, applying nature-based solutions for sustainable river restoration and watershed management to deliver resilient infrastructure that promotes biodiversity and regenerative ecosystems.

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 modelling outputs: impacts on sediment regime and fish habitat
- Enhancing resilience to climate change: vulnerability assessment, design of adaptation measures, natural flood management

Services

- Physical habitat and erosion monitoring: river form and function
- Characterization of sediment dynamics: supply, transport, and deposition.
- Delineation of hazard risk zones: Meander Belt Width Assessment; bed scour assessments for underground infrastructure; shoreline assessments.
- Nature Based Solutions approach for natural channel design and restoration, culverts and bridges
- Erosion control and monitoring solutions
- Stormwater management: erosion threshold analysis for receiving waters.
- Dam removal: passive and active restoration

of rivers, sediment management

- Construction supervision; watercourse Monitoring, watercourse inventories.
- Technical Study reviews.
- Headwater Drainage Feature Assessments.
- Environmental flow needs for water taking/release.
- Ecological flow needs for fish habitat.

Project Highlights

Detailed Design Services for the Highway 400 – Highway 404 Link (The Bradford Bypass) Geomorphological Assessment
Ministry of Transportation of Ontario

Wolfedale Creek Erosion Control and Rehabilitation – from Burnhamthorpe Road West to the Credit River
The City of Mississauga (Ongoing)

Highway 413 – Preliminary Design Phase – Stage 2
Ministry of Transportation of Ontario (Ongoing)

Mud Creek Phase 2 Detailed Design and Tendering
City of London (ongoing)

Gardiner Expressway Rehabilitation/ Replacement Project
City of Toronto

Flood Hazard Assessment – French Creek Pollution Control Center –Fluvial Geomorphological Assessment
Regional District of Nanaimo

Basement Flooding Protection Program 4 DDCA 15 Design, Fluvial Geomorphology and Erosion Threshold Assessment of Humber Creek
City of Toronto

Detailed Design for the New Credit River Active Transportation (AT) Bridge, Fluvial Geomorphological Assessment/ Scour Assessment
City of Mississauga

BC Parks Engineering Services, 2023 Fall Flood Recovery Manning Park Fluvial Geomorphology and Meander Belt Width Assessment
B.C Parks

Peel Wastewater Treatment Plant Headwater Assessment
Region of Peel

Billy Bishop Toronto City Airport Runway End Safety Area EA. Marine Physical Assessment.
Ports Toronto

Don Mills Channel Flood Control Facility Channel Design and Two Culvert Replacement Designs
City of Markham









