

## WATER RESOURCES: GEOMORPHIC, HYDROLOGIC, AND HYDRAULIC ASSESSMENT SERVICES

Woodlot scientists and engineers have extensive experience performing geomorphic, hydrologic, and hydraulic studies. By integrating skills in geomorphology, hydrology and hydraulics with our core capabilities in ecological and biological sciences, Woodlot provides comprehensive services for the evaluation of hydrologic parameters pertinent to the function of riverine, lacustrine, palustrine, and estuarine systems.

Individually, these skills are used in support of permitting services, impact evaluation, and mitigation assessment. Collectively, these skills are applied in the evaluation, design, and implementation of our work. Our experience includes work in aquatic and riparian habitat restoration and enhancement, environmental remediation, wetland mitigation, greenway development, stream channel relocation, watershed evaluations, shoreline protection, and sediment load reduction.

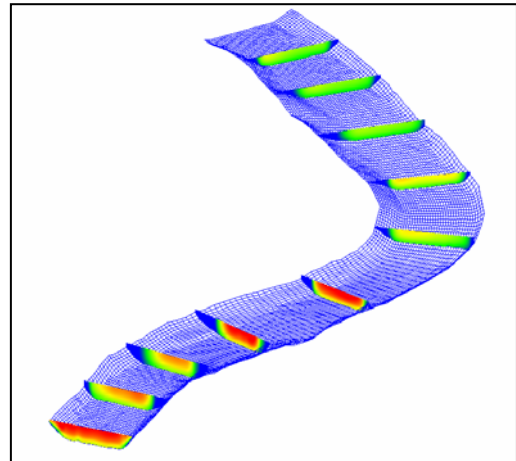
Woodlot's geomorphology, hydrology, and hydraulics services include:

### ◆ General Capabilities

- Specialized Experience In Natural Resource Management
- Water Resource Inventories and Monitoring
- Riparian Corridor Assessment
- Baseline Hydrologic Characterization
- Watershed Evaluations and GIS-Based Studies
- Numerical Hydraulic Modeling
- Erosion And Deposition Studies
- Measurement And Instrumentation
- Development of Industry-Standard Project Plans and Specifications
- Site Surveys
- Construction Oversight

### ◆ Specific Capabilities

- Estuarine/Tidal Hydrology and Hydraulics
- Fluvial Geomorphic Inventory And Classification Methodologies
- Hydrologic Assessment And Modeling Using HEC-HMS, NFF, PEAKFQ, and TR-20
- Hydraulic Modeling Using HEC-RAS, HEC-UNET, NWS FLDWAV, and WSPRO
- Computational Fluid Dynamics (CFD) Modeling Using SSIIM And *Flow-3D*®.
- Sediment Transport Analyses, SAM Modeling
- Flood Frequency Analyses For Gaged And Ungaged Watersheds
- Rapid Bio Assessment
- Bioengineering Design and Implementation



*Hydrodynamic modeling for river and dam projects provides insight into high-flow areas (red) within river channels. Our engineers use this data in restoration, bank stabilization and sediment transport studies.*



Woodlot's water resources group is comprised of a full-time, professional staff of engineers, morphologists, erosion control specialists, hydrologists, geologists, foresters, botanists, ecologists, and biologists. Our technical expertise in engineering and natural sciences allows us to provide innovative and cost-effective solutions for water resource projects. Woodlot's water resources group understands projects and objectives that are formulated based on biological and ecological constraints, and we are sensitive to the inherent differences between studies formulated to assess issues such as flooding or navigation, and those intended to address ecological and biological concerns.

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