



UTC Project Information – Project #C5.2018	
Project Title	Leveraging High-Resolution LiDAR and Stream Geomorphic Assessment Datasets to Expand Regional Hydraulic Geometry Curves for Vermont: A Blueprint for New England States
University	University of Vermont
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Funding Source(s) and Amounts Provided (by each agency or organization)	Federal: \$70,622.00 Univ of Vermont: \$70,622.52
Total Project Cost	\$141,244
Agency ID or Contract No.	69A3551847101
Start and End Dates	6/1/2019 – 8/31/2021
Brief Description of Research Project	Regional hydraulic geometry curves (RHGCs) for Vermont have been updated through development of additional observations and use of newly-available high-resolution lidar and stream geomorphic assessment data to improve the prediction ability and reduce estimation uncertainty of bankfull channel dimensions for ungauged sites. Through literature review and data compilation, we have identified 10 additional observation sites with sufficiently robust geomorphic assessment data and co-located streamflow monitoring records. Application of RHGCs has been expanded to cover drainage areas up to 396 (from 194) square miles. Stratification of the curves by channel slope at a threshold of 0.1% improved prediction of bankfull width as a function of drainage area. Targeted geomorphic assessment field work and establishment of temporary streamflow monitoring stations under future funding would enable further expansion of RHGCs to better address very-low-gradient channels and add coverage for steep-gradient streams.
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	Updated regional curves are publicly-available for use by transportation departments of the New England states, as well as engineers and scientists working at private firms, non-governmental organizations and state and federal agencies.
Impacts/Benefits of Implementation (actual, not anticipated)	Updated curves will support sizing of stream crossing structures as well as flood recovery efforts along road embankments to restore river cross sections of sufficient width to convey bankfull flows. Geomorphically-compatible structures will have greater resilience to extreme flood events and will support aquatic and terrestrial organism passage objectives.
Web Links	<ul style="list-style-type: none"> • Reports • Project website