

# Supplemental Tools for Natural Channel Design

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**Reference:** McDowell RJ, CA Pruitt, RA Bahn (eds.), *Proceedings of the 2015 Georgia Water Resources Conference*, April 28-29, 2015, University of Georgia, Athens.

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**Abstract.** The Natural Channel Design (NCD) approach promoted by the U.S. Environmental Protection Agency and others is strongly dependent on the quantification of the bank full flow rate and associated channel geometries of a given stream. In an urban setting, the determination of bank full flows is often a difficult prospect given the complex nature of urban hydrology, the highly modified morphology and hydrology of urban streams, and the often subjective indicators of bank full stage that can be observed in the field. This presentation will describe the application of continuous simulation modeling (CSM) to supplement bank full flow interpretations on urban streams. CSM involves the application of a continuous record of historical precipitation data to hydrologic and hydraulic models for a given watershed. This technique is useful for the estimation of the frequency of flows of a given magnitude, such as the bank full flow, as well as the evaluation of the potential impact of future hydro-modification within a watershed. Another difficulty that arises in the use of NCD in urban settings is the need for reference reach data. Reference reach data are intended in part, as a means to evaluate the long term dynamic stability of the restored reach. Given the degree of anthropogenic impacts to urban watersheds and their receiving streams, a suitable reference reach may be difficult to identify. This presentation describes the application of 2D modeling techniques to supplement the use of any available reference reach data.