

# Effects of Exurbanization in the Upper Little Tennessee River Basin: Sedimentation is Predictable, Flow and Specific Conductivity are Not

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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.** From late summer 2010 through early fall 2011, hydrology and water chemistry were monitored in 12 watersheds varying in spatial distributions of human land use. Monitoring included continuous recording of water level and specific conductivity, regular baseflow sampling, and stormflow sampling with an automated sampler. Rating curves were developed to convert the stage time series into flow time series. The 12 watersheds included two fully forested watersheds, three watersheds with small farms and rural residences in the valleys (classic S. Appalachian land use), three watersheds with small farms and rural residences in the valleys but also with homes built on the hillslopes and ridges (mountain-side development), one urbanized watershed draining the City of Franklin, NC, and three mainstem river sites. We analyzed these data to test the following hypotheses: 1) More developed streams would have higher peak flows and flashiness indices; 2) More developed streams would have higher TSS values and steeper TSS/discharge rating curves; and 3) More developed streams would yield more sediment on a per hectare basis and have higher specific conductivity values.