

VARIATION IN HYDROLOGIC AND SEDIMENT TRANSPORT BEHAVIOR AMONG THE NINE INTENSIVELY MONITORED WATERSHEDS IN THE UPPER LITTLE TENNESSEE RIVER BASIN

Robert A. Bahn

AUTHORS: University of Georgia – School of Forestry and Natural Resources, Athens, Georgia 30605

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Abstract. From late summer 2010 through early fall 2011, hydrology and water chemistry were monitored in nine 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 ISCO automated sampler. Rating curves were developed to convert the stage time series into flow time series. The nine 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), and one urbanized watershed draining the City of Franklin, NC. We analyzed these data to test the following hypotheses: that different land use distributions would produce different hysteretic behavior of sediment concentrations during storms, that the slope of the sediment rating curves would increase with increased valley and mountainside development, and that the high and low flow durations would become more extreme with increased valley and mountainside development.