

# **IMPACT OF LAND COVER ON NITROGEN CONCENTRATIONS IN TRIBUTARIES OF THE ENOREE RIVER**

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Increasingly scientists have been attributing the major sources of water pollution to non-point sources. The major non-point sources of nitrogen in surface water are agricultural inputs and atmospheric depositions. The study investigated the impact of land use on nitrogen concentrations by comparing tributaries of the Enoree River located in forested, urban, agriculture, and mixed land use areas. A total of 129 sites in nine tributary watersheds were analyzed for nutrient concentrations over seven week periods during the summers of 1999 and 2000. Each sample was analyzed for major ions and dissolved silicon. Nutrients analyzed include nitrate, nitrite and phosphate. Of the three nutrients analyzed, only nitrate was consistently of measurable quantities. Phosphate was only found in association with point source discharge from a sewage treatment plant. The average nitrate concentrations in tributaries where forested land exceeded 70% of total land use did not exceed 1mg/L. The concentrations of nitrate that exceeded 2.5 mg/L were found in tributaries where land use was predominantly urban, agricultural, or a mixture of two uses. Concentrations of nitrate were highest, as much as 30 mg/L nitrate, at a sample locality downstream of a sewage treatment plant during drought conditions. The data collected indicate that, based on land use, the largest nitrogen loads were in mixed watersheds and the smallest loads were in forested watersheds. Streams in the urban watersheds with high percentages of impermeable surfaces such as pavement and lawns, have the highest concentrations of nitrate. Forested watersheds utilize nitrates, and may receive lower inputs of atmospheric deposition, resulting in lower concentrations in the streams. The nitrate concentrations in streams from forested watersheds in the Enoree River basin, however, are an order of magnitude higher than concentrations in "pristine" streams. The data suggest that the increasing urbanization of the Enoree River basin will lead to increased concentrations of nitrates.

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