



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2004PA30B

Title: Nitrogen dynamics in the Spring Creek watershed (Pennsylvania, USA):
Evaluating stream retention of point and non-point source loadings

Project Type: Research

Focus Categories: Nutrients, Non Point Pollution, Ecology

Keywords: Nutrient loading, nutrient retention, trophic transfer

Start Date: 03/01/2004

End Date: 02/28/2005

Federal Funds: \$15,000

Non-Federal Matching Funds: \$30,000

Congressional District: 5th of PA

Principal Investigator:
Hunter Carrick

Abstract

This project will assess the quantitative effect that point and non-point watershed source loads (as estimated by stable isotope ratios and traditional wet chemistry) has on the retention of nutrients within the body of the Spring Creek ecosystem. Characterization of the sources of stream nitrate through analysis of stable isotopes and inorganic chemistry is expected to allow estimation of the relative magnitudes of various nitrogen sources at key locations within the streambed of the ecosystem. Finally, first order evaluation of the fate of N-loadings to Spring Creek will be accomplished by measuring the biomass, nutrient stoichiometry, and growth of resident biota. In this manner, I can evaluate the relative contribution of anthropogenic sources to the overall production of new (net) periphyton biomass within the streambed, and the transfer of this material to the next, step-wise trophic level in the food chain. The relative comparison of up and downstream sites can be used to, not only evaluate the addition of unique loads within the watershed, but the cumulative effect of loading on the stream ecosystems.