



WATER RESOURCES RESEARCH GRANT PROPOSAL

Title: College Brook Ecological Restoration

Stream chemistry reflects the physical, chemical, and biological conditions in a watershed. Because it is responsive to disturbance or restoration of biotic functions, stream chemistry provides an integrated description of a watershed's ecological conditions (IvIcDowell and Asbury 1994, McDowell et al. 1995). Stream chemistry in College Brook, which passes through the heart of the UNH campus, will be used as one measure of the success of an ecological restoration project to be initiated in 2000.

Previous work on College Brook in the early 1990's shows that the UNH campus had a severe impact on water quality and was negatively affecting stream biota and the intensity of downstream ecosystems; the restoration program is an attempt to reverse this situation. The overall restoration effort is funded by the privately endowed UNH Sustainability Program.

Matching funds provided by the UNH Sustainability Program will fund a long-term restoration program in the College Brook watershed. As part of this project, the UNH WRRC will take water quality samples monthly at 7 stations and analyze them for BOD, organic nutrients, and inorganic constituents. BOD will be analyzed using standard incubations and changes in dissolved oxygen using a membrane probe. Dissolved organic carbon (DOC) will be analyzed using high-temperature catalytic oxidation (Shimadzu TOC 5000). Dissolved organic nitrogen (DON) will be measured as the difference between total dissolved N (using high temperature catalytic oxidation and chemiluminescent NO detection; Merriam et al. 1996) and inorganic nitrogen. Flow injection analysis will be used to measure phosphate (molybdate blue method), ammonium (phenol hypochlorite method) and silica (molybdate blue method). Major cations and anions will be analyzed using ion chromatography. Analyses will be conducted in the WRRC's Water Quality Analysis Lab. Data will be posted on the WRRC web site to provide an ongoing public examination of ecological sustainability in the College Brook watershed.

One role of the WRRC in this project will be to administer the Water Quality Analysis Laboratory within which all chemical analyses will be conducted. A second role will be to provide a link between the technical analysis of water quality samples and assessment of the effectiveness of the ecological restoration program. This is an issue of interest to the University community and the public at large in southern New Hampshire.