

Application Package
2008-09 TWRI Mills Scholarship Program

1. Name of Student

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2. Contact Information

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4. Description of Research

I am currently researching *Escherichia coli* and nutrient concentrations from Carter's Creek in the Bryan/College Station area to gain a better understanding of the geographical source and pattern of in-stream nutrients and bacteria. I am taking grab samples twice monthly at 15 nested sites for one year, and testing the samples for *E. coli*, DOC, DON, nitrate, ammonium, phosphate, and several other anions and cations. In addition to this monitoring study, I want to do a chemical source tracking project using fluorimetry on at least one of the stream reaches to identify possible bacterial sources at a higher geographical resolution. Another field project I want to develop involves a flow-through biological nutrient reduction setup in which algae would take up nutrients in a more controlled setting, reducing the potential for eutrophication downstream. I also intend to carry out a DOC biodegradability lab study to compliment the field data.

My research takes a closer look at common water quality problems in Texas surface waters. Carter's Creek, like many other streams and river reaches in the region, are identified in the TCEQ 303(d) list as impaired for contact recreation because of bacteria and for healthy aquatic life because of high nutrient concentrations, specifically nitrate. Over the course of my research I hope to identify contaminant sources as a step toward creating best management practices in the Carter's Creek watershed and in watersheds across Texas.

5. Proposed Use of Funds

As a graduate student with no additional job to augment my research assistantship, I am not in a position to purchase extra equipment or materials out of my own pocket. If I am awarded this scholarship I would use the funds to purchase equipment for conducting research in the field or to analyze samples in the laboratory.

The biological nutrient reduction project, for example, will probably require a custom-built setup involving a constant flow of creekwater to a downhill “slide” for the water to flow down and feed the algae. The laboratory analysis also requires various supplies, chemical reagents, sample vials, and external standards to ensure a clean working environment and sound results comparable to other labs.

6. Career Path

After I finish my master’s degree, I intend to pursue a career that upholds conservation and more efficient use of soil and water resources. For example, I could see myself working on groundwater remediation or perhaps working to improve storm water systems for a municipality. I hope to bridge the apparent gap between the need for environmental preservation and the demand for developmental progress for a beneficial, sustainable solution.