**WATER RESOURCES RESEARCH GRANT PROPOSAL**

**Project ID**: ID4501

**Title**: Factors Controlling the Availability of Phosphorous for Transport into Surface Waters from Manure Amended Soils in Southern Idaho

**Focus Categories**: Water Quality, Non Point Pollution

**Keywords**: Phosphorous-Index; Eutrophication; Manure Disposal

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**Federal Funds**: $13,557

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**Congressional District**: 1

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**Abstract**

In Idaho crop and animal production are the primary economic industries. These activities have made Idaho one of the top food producers in the nation (e.g., currently #6 in dairy production in 1999) (Gerhardt and Kurtz, 2000). However, to maintain this productivity it is critical that the impacts of agriculture on the natural environment be minimized. For example, in southwestern California many of the dairy farms are leaving the region because the costs for reducing pollution became too great. Recently the U.S. Geological Survey (1999) and EPA (1996) identified eutrophication as the most ubiquitous water quality impairment in the U.S. (Sharpley, 2000). Eutrophication is caused by excess nutrient loading into surface waters, in particular phosphorus (P) and nitrogen (N). Phosphorus is often found to be the limiting nutrient in eutrophication because it has a decreased mobility compared to N. However, due to intensive animal manure and fertilizer application onto soils, P transport into the surface waters has increased.

The goal of this study is to investigate the availability of P as a function of its molecular form and soil type. There are two species of P that are commonly found in soils, inorganic (Pi) and organic (Po). Most research has focused on Pi. Recent research suggests that the two P forms have unique sorption and transport properties (Reddy et al., 1998). Since manure is a significant source of Po, and Idaho has an intensive cattle industry, it is imperative that the factors controlling P availability from manure amended soils be understood. In southern Idaho precipitation of Ca-phosphates are important P retention mechanisms, however, the factors that affect the formation and dissolution of these minerals are poorly understood. Thus, the results from this study will provide valuable information that can be used to better manage manure application to soils and reduce non point P pollution.