CSREES National Water Quality Program

Title: Working to Reduce Construction Site Impacts on Water Quality

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Organization: NCSU Soil Science

State: NC **Region:** Southern **Year of Funding:**

Theme: Pollution Assessment and Prevention

Situation: Sediment and turbidity are a major impact on water quality in areas where construction projects are abundant. We investigated several methods for reducing off-site movement of sediment and turbidity in runoff.

Objectives: The objective of the project was to determine if modifications to sediment basins and the addition of polyacrylamide (PAM) could substantially improve their performance.

Methods: We tested several different types of baffles in test basins by introducing simulated storm flows of up to 30 L/s with up to 2,000 kg soil added per event. In addition, we tested the use of standard stone outlets compared to a skimmer outlet. We conducted tests both with and without PAM to see if turbidity was reduced. PAM logs were very effective if maintained in a moist condition. Baffles, especially porous jute/coir material, were also effective in increasing sediment retention.

Partnerships: The results from our tests conducted at our experimental field site (Sediment and Erosion Control Research and Education Facility; SECREF) have generated interested by both government agencies and private developers. We are currently implementing this technology on both NC Department of Transportation sites and on a private development in our mountains. Our workshops to demonstrate these systems have attracted large numbers (>100 each time) of professionals interested in improving the performance of erosion and sediment control systems that they design or regulate.

Research: The original intent was to determine the effectiveness of skimmers and PAM logs since they were being sold and installed on construction sites with little research data to support their use. As we gained knowledge about them, particularly PAM, I presented the information to various audiences, including engineers and landscape architects responsible for designing erosion and sediment control systems for construction sites. We also initiated a semi-annual workshop.

Resources: Several grants were obtained from different state agencies to provide partial funding for staff and graduate students. The result was sufficient staffing for all of the projects. In addition, contributions from the agencies and private contractors have also increased the impact of these projects.

Results: We have established the principals of improving sediment and turbidity controls through changes in sediment basin design and the addition of PAM. Our current effort is in implementing these technologies on actual construction sites, which includes both technical and educational hurdles. Our experience so far indicates that both aspects of implementing new technologies are important, but enforcement may also be critical.