Article 52

Feature article from Watershed Protection Techniques. 2(3): 393-403

Muddy Water In - Muddy Water Out?

Construction is considered the most damaging phase of the development cycle for streams and other aquatic resources. Many communities have responded to the many impacts caused by construction sites by enacting erosion and sediment control (ESC) ordinances. Typically, the ordinances require developers to submit a plan that contains measures to reduce soil erosion (erosion prevention) and practices to control sediments that have already eroded (sediment controls). In addition, the plan may restrict or require phasing of the clearing or grading needed to prepare a development site. Once an ESC plan is reviewed and approved by the local or state authority, the ordinance then requires the developer or contractor install and maintain specified measures and practices throughout the construction phase. A construction site may be inspected for compliance, and if found lacking, an inspector may issue a permit violation, stop-work order, fine or other measure to compel action.

Theory Collides with Reality

How well do these ESC programs work in the real world? Not very well, according to six recent surveys of local and state ESC experts and administrators. Consider these statistics:

- Paterson's (1994) investigation of 128 North Carolina construction sites revealed that 16% of the ESC practices prescribed in the plan were never installed. Of the ESC practices that were actually installed, 16% were not installed correctly and failed to perform. An additional 18% of ESC practices failed because of a lack of maintenance. Combining these three sources of failure together, Paterson found that half of all practices specified in the ESC plans were not implemented properly.
- Mitchell (1993) surveyed state highway erosion control experts, and reported that 30% of respondents noted that at least half of the ESC practices specified in highway ESC plans were never actually installed. While 83% of the respondents indicated that they required a preconstruction meeting with the contractor to discuss ESC plan implementation, only 29% scheduled a pre-wintering meeting. The state highway ESC experts cited five major problems in achieving better highway ESC control: lack of inspectors, weather, lack of contractor cooperation, lack of state leadership, and contractor ignorance (in rank order).
- North Carolina ESC surveys by Patterson *et al.* (1993) found that contractors actually spent only half the estimated cost to install the ESC controls outlined in their plan. In addition, local governments expended three to six times more effort reviewing plans than actually inspecting them. Despite the fact that a majority of ESC staff spent time in the office, they received very little training nor did they train contractors. Training comprised only one tenth of one percent of local ESC program budgets.
- According to a survey of 24 ESC local programs in Northeastern Illinois by conducted by Dreher and Mertz-Erwin (1991), less that 45% of ESC plan reviewers had received formal training in ESC techniques. In addition, while a slightly higher number of inspectors were trained in ESC techniques (55%), most training consisted of informal field mentoring by more experienced staff. The researchers also reported a wide range of inspection frequency. For example, 25% of communities only conducted inspections in response to citizen complaints, and 10% inspected construction sites less frequently than one time a month. More positively, half the Illinois programs reported construction site inspections were done weekly or on a more frequent basis.
- Corish's 1995 national survey of 40 local ESC programs documented poor plan implementation. For example, 67% of survey respondents indicated that ESC controls were inadequately maintained. Soils were not adequately stabilized within the prescribed time limit in 44% of ESC programs, and 56% of programs encountered chronic problems with inadequate temporary soil stabilization (grass or mulch cover).

  Nearly half of the local program respondents noted that sensitive areas adjacent or within construction sites (such as stream buffers and wetlands) were inadequately protected from sediment or were actually cleared. Trees and forest areas "protected" under the plan were in