Article 59

Technical Note #42 from Watershed Protection Techniques. 1(3): 145-146

Performance of Sediment Controls at Maryland Construction Sites

Sediment traps or basins, common features at most construction sites, represent the last line of defense against soil erosion. Sediment particles that do not settle out in the trap or basin will soon reach a stream. Although sediment traps and basins have been used for decades, research on their actual field performance is scarce. Aren't these traps just "muddy water in, muddy water out, and a lot of money in between?"

Some answers to this question can be found in a study of six sediment traps and basins in Maryland. The construction sites were located in both the piedmont and coastal plain and were well served with erosion control measures (temporary seeding, perimeter controls such as dikes and silt fence, and construction phasing). Soils at each site were silt loams, and each trap or basin served a contributing drainage area of 11 to 35 acres. Construction site runoff entering the basin and traps was heavily laden with suspended sediment (median concentration of 680 mg/l, with a range of 24 to 51,800 mg/l). A particle size analysis indicated that sediment was very fine grained, primarily consisting of silts, clays and colloidal material. Ninety percent of all particles were less than 15 µm diameter, and no particles were found with a diameter >50 µm (coarse silt or fine sand).

Performance monitoring at construction sites is not an easy task. A construction site is never the same from month to month, and each storm creates an ever-changing series of channels and gullies that contribute runoff and

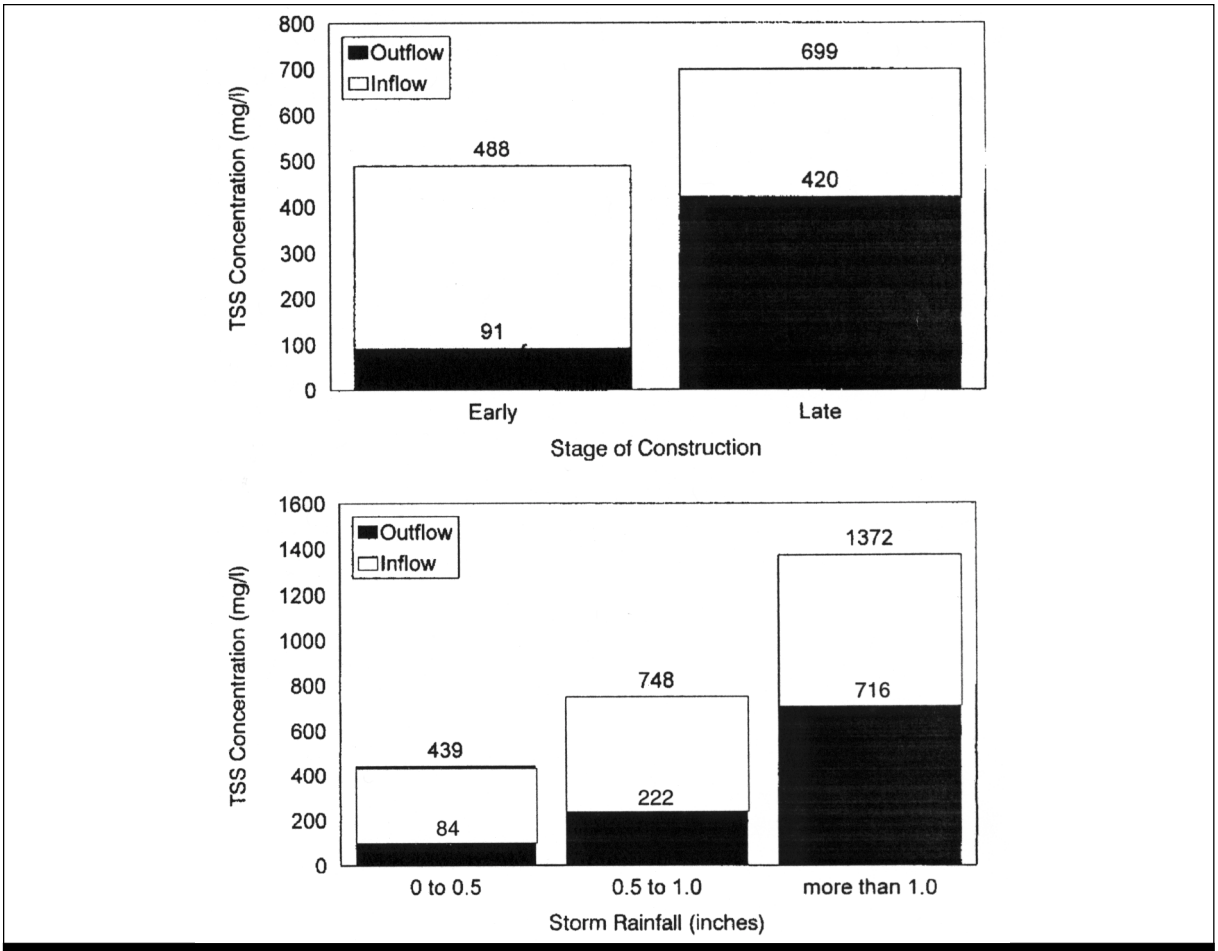

Figure 1: Effects of Construction Stage (a) and Storm Size (b) on TSS Levels in Sediment Traps and Basins