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Polymers Plus Geotextiles

BMP combination increases water quality protection

How to prevent or stop erosion and sedimentation is of major concern to the erosion and sediment control industry, as it contributes significantly to turbidity in water. Traditional best management practices (BMPs) to reduce erosion and sedimentation include silt fence, rock check dams and erosion control blankets, to name a few. These methods indeed help prevent or stop erosion and sedimentation. When used in conjunction with polymers, they become exponentially more effective.

Silt fence is a great tool for preventing large particulates from leaving a site. Fine clay and silt particles, however, still can escape, causing contamination to nearby water bodies. Creating a sediment retention barrier by alternating layers of straw and soil-specific polymer powder between two rows of silt fence traps fine silts and clays as they flow through, resulting in better water quality.

Controlling erosion and sedimentation through soil stabilization is important on any site, especially where slopes are involved. Rolled erosion control matting is an excellent tool to provide protection to slopes during rain events. Applying soil-specific polymer powder or emulsion to the ground before the rolled erosion control matting is applied creates inexpensive soil stabilization that provides good structural support for a highly erosion-resistant surface.

This method can be used with any type of matting that is made of fibrous materials (e.g., straw, jute, coconut and other turf reinforcement matting). The use of soil-specific polymer will prevent solubility of the clay and thus stop erosion at the source.

A 2009 study conducted by Auburn University in Alabama concluded that when polyacrylamide and jute matting are used together on slopes, an effective erosion and sediment control measure results because both soil loss and turbidity are controlled effectively.

Like silt fences, dewatering bags capture large particulates, but they allow fine silts and clays to escape. These bags are a useful and convenient first step in a treatment train, but they will not fully address water quality. When using polymers to further clarify water, it is important that the polymer treatment come after the dewatering bag; otherwise, the bag may blind off with flocculated sediment if the polymer is used before the bag.

One way to create a treatment train is to surround the dewatering bag on three sides with wattles to concentrate the flow of water in one direction. Then form a dewatering ditch by installing floc logs and wattles or checks in staggering zigzag rows directly after the bag to create a mixing area. Follow this with a jute mat treated with polymer powder to create a dispersion or particle collection field that will capture the flocculated particles. This method creates an easy and effective way to use polymers with dewatering bags to assure good water quality.

These are just a few examples of how polymers can work hand in hand with geotextiles. Enhancing traditional BMPs with polymers makes them more effective, which saves time and money on erosion and sedimentation projects and, most importantly, allows clean, clear water to discharge from a site. SWS

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