Innovative polymer application using geotextile dewatering bags

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Abstract. Geotextile dewatering bags have been a construction industry standard for several decades. Erosion control supply companies often recommend them as a solution to achieve clean water for discharge compliance on project sites. The bags are effective at containing coarse sediments from pumping activities. They are not very effective at capturing fine particulate matter and often require additional measures to produce clean water that meets compliance limits for stormwater discharge activities. The inclusion of polymers in the dewatering process can effectively treat the fine particulate matter and produce very clean discharged water. Standard practices have introduced the polymer into the bag during pumping activities. The idea is that the polymer will react with the sediment laden water and be retained in the bag. Unfortunately, this often results in the bag becoming severely clogged. This restricts pumping flow rates and accelerates containment failure of the geotextile bag. Contractors must then use many more bags at a reduced flow rate to treat the needed water volume. An alternative method for polymer application is to introduce it after passing through the geotextile bag. The bag is then used as a pre-filter and a way to convert concentrated flow into sheet flow. A simple containment is built around the dewatering bag and is used to direct the water flow over polymer blocks for treatment. This treatment consists of a soil-matched polymer (optimal results), mixing area with contact time, and a particle capture area to remove polymer treated sediment.

1 Geotextiles in PAM Applications

When properly designed and constructed, this system has consistently demonstrated the ability to treat highly turbid water and release product as clear as drinking water. Treatment costs for polymer and containment/capture materials have been an order of magnitude cheaper than alternative chemical and filtration systems.

This presentation will discuss differences in polymer types and applications currently in use. The main emphasis will be on PAM applications with geotextile dewatering bags in current construction projects in North America.

The synergistic effect of the geotextile bag and anionic polyacrylamide is currently meeting dewatering criteria in numerous states and provinces in construction applications. Correct application of the polymer after the dewatering bag is critical for success with the

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pipeline and construction industry. Results of this are applicable across all aspects of land development activities. This is a Best Management Practice (BMP) that benefits industry and the environment.

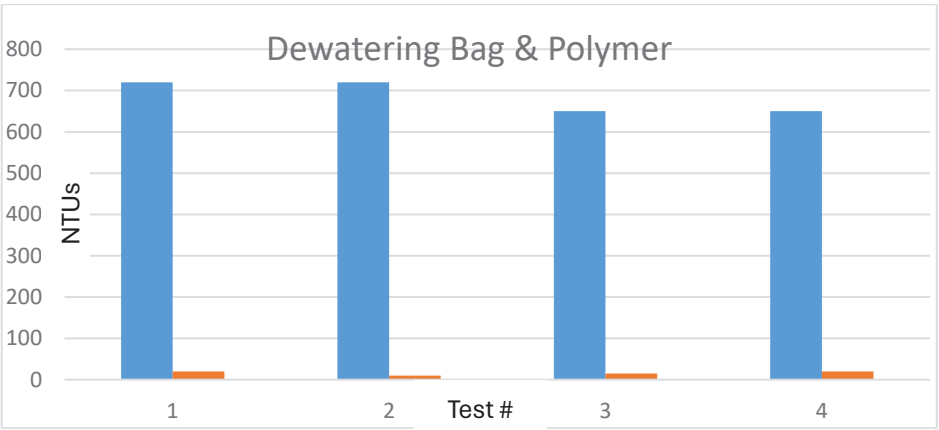

Fig. 1. Turbidity measurements

Fig. 2. Images from BMP testing.