

# **Assessment of Soil Characteristics of a Biofiltration Swale System in South Farm, Mississippi State University**

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## **EXTENDED ABSTRACT**

The United States Environmental Protection Agency (EPA) prescribes regulations for residual storm water quality in farms to reduce impacts on the environment. Best Management Practice (BMP) is a series of techniques including activities, processes, treatments and structures that are applied to a unit of land for treating storm water discharges. The EPA agency determines acceptable levels of storm water quality in different states. Approximately 39% of the nation's rivers and streams are impaired, meaning they do not meet basic water quality standards. In Mississippi, more than 500 water bodies were listed as impaired by the Mississippi Department of Environmental Quality (MDEQ), many of which are located in farm areas. In 2007 a selected swale in Mississippi State South Farm was fenced and seeded with buttonbush for assessing best management practices in cattle areas. Several studies have determined the effectiveness of vegetated swales in improving water quality. This research will continue understanding the relations between environmental parameters and a BMP biofiltration swale system, including soil texture, particle analysis and water retention capacity. Soil texture, particle analysis and permeability are determined using the standard USDA (U.S. Department of Agriculture), and the water retention will be determined using the Soil Water Retention Curve (SWRC). This research aims to understand the relationship between the physical properties of the watershed and BMP soils, and the water quality characteristics at the outlet of the biofiltration swale-system (BMP). This understanding is necessary in order to assess the effectiveness of the BMP system, and also necessary to improve the design and future installation of more BMP structures in South Farm.