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**RUNOFF TREATMENT FOR MIXED DEVELOPMENT AREA THROUGH VEGETATED LAYER MIXED COMPOSITE BIORETENTION MEDIA: BOD REMOVAL**

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# Abstract

Bioretention system has become one of the common Best Management Practices (BMPs) for storm water management in Malaysia. As Biochemical Oxygen Demand (BOD) was one of the three major pollutants detected in main rivers in Malaysia, a bioretention mesocosm study was conducted to assess the performance of Biochemical Oxygen Demand (BOD) removal in bioretention systems. Natural runoff from a mixed development area that consists of residential, commercial and urban agricultural areas was used as influent to compare the effluent quality from two types of enhanced bioretention media using mixtures of shredded newspaper and crushed cockle shell (uniformed mixed and layer mixed) and standard bioretention media. Comparison between vegetated and non-vegetated mesocosm has concluded that mesocosm with vegetation demonstrated better BOD removal. Results showed that enhanced bioretention media, especially vegetated layer mixed media is able to lower the BOD in effluent up to below 1mg/L, which is class I (conservation of natural environment) under National Water Quality Standards for Malaysia. Throughout the 16 weeks of study, the vegetated layer mixed media has performed 40% better than standard bioretention media, which indicates its great potential in application to target on nutrient rich runoff treatment.

(Number of words: maximum 1000 words, 2 pages (including figures, single spacing, font type Times New Roman, size 12pt),

**Key Words:** Best Management Practices (BMPs), Biochemical Oxygen Demand (BOD), Bioretention Media, Stormwater Treatment, Water Quality (5 key words)