應用 MUSIC 模擬 BMP 之除污效率

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摘　要　MUSIC（Model for Urban Stormwater Improvement Conceptualization）可用以模擬多種 BMP 設施之處理效率，其原理簡單、操作容易，適合應用於小集水區之最佳管理作業（Best Management Practices，BMPs）模擬。本研究將翡翠水庫集水區之永安地區劃分為三種土地利用型態，分別為林地、農地及住宅區，並將此區域之逕流導入所建置之三種結構性 BMP 設施，分別為草溝、草帶及滯留池，以處理非點源污染，並依據永安實驗區之水文資料及水質資料（懸浮固體物、總磷及氨氮），以 MUSIC 模擬 BMP 的不同組合及其處理效率。其結果顯示逕流經草溝後至上方草帶，再流經下方草帶，最後至滯留池之效果最佳。本 BMP 實驗區驗證結構性 BMP 設施對非點源污染確實有效，而 MUSIC 亦適合作為規劃設計工具；若能從小型結構性 BMP 示範區推廣到全部水庫集水區，則達到水質改善的目標必指日可待。

關鍵詞：非點源原污染控制措施（BMPs）、MUSIC 模式、平均事件濃度法（EMC）、進出水口總負荷法（SOL）。

Effectiveness of BMP Evaluated by MUSIC

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ABSTRACT　This study applies MUSIC (Model for Urban Stormwater Improvement Conceptualization) in the Yong-Ann watershed to divide into three kinds of land utilizing type attitudes, it is the forest land, farmland and residential area respectively, and three kinds of structural BMP (Best Management Practices) facilities, it is the grassed swales, vegetated buffer strips and detention ponds respectively. According to the hydrological data and the water quality samples and analyses item of Yong-Ann watershed: Suspended Solids (SS), Total Phosphorous (TP) and Ammonia Nitrogen (NH_3-N) result of analyzing, show that the concentration of water quality during storm is mostly higher than the concentration of water quality of the dry day, and the concentration of SS, TP and NH_3-N is apt to be higher than the class-A water quality standard, so it is necessary to establish BMP facilities for the clear decision of the Feitsui Reservoir Administration in the downstream place of the Yong-Ann watershed. Learn after making up with structural BMP of three kinds of

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schemes of MUSIC simulation, scheme one (grassed swales to upper vegetated buffer strips to lower vegetated buffer strips to detention ponds), scheme two (detention ponds to upper vegetated buffer strips to lower vegetated buffer strips to grassed swales) and scheme three (upper vegetated buffer strips to lower vegetated buffer strips to grassed swales to detention ponds) treated concentration of water quality, all smaller than the class-A water body water quality standard, among them, the best with getting rid of the result of scheme one. It is the important water quality protection zone of source of water in the Feitsui Reservoir watershed, Do a good job of nonpoint source pollution cuts down facilities can have demonstrate, propaganda and technology popularization function. This BMP demonstration area proves that structural BMP facilities have suitable getting rid of the efficiency to nonpoint source pollution, if utilize MUSIC to assess structural BMP and set up priority, and then popularize from small-scale structural BMP demonstration area to the comprehensive implementation of the reservoir watershed, can reach the improved goal of water quality.

Key Words: best management practices, MUSIC model, event mean concentrations, summation of loading.