



Estimation of NPS pollutant properties based on SWMM modeling according to land use change in urban area

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ABSTRACT

The amount of non-point pollutants discharged into rivers is greater in urban regions than forests and farmlands due to a higher population density and a larger impermeable area. The analysis and research of non-point pollution in urban areas have been focused upon monitoring the basin outlets, and estimating the environmental loads as well as the unit load. However, the estimation based on the measurements of a single representative spot in the large basin is often calculated, compared to the measurements based on the area and the land use. A less credible method to estimate the load cannot be effectively used in quantifying the non-point pollutant loads caused by the individual land uses. Therefore a method that segments the basin according to the land use in the urban region is required. This is the key to a credible quantified analysis of non-point pollutant loads and enables a rational and scientific estimation of significance, cut rate, and establishing reduction plans. The goal of this research was to estimate the load with segmenting the urban region into different sections based on the land use and constructing a model that reflects the traits of each section. The data was compiled by observations of the Busan City separated into residential districts, business districts, industrial districts, and greens. SWMM was used to simulate the target area, while attempts to compare it with prior researches were made to evaluate the validity and applicability of this research and to ensure its credibility.

Keywords: Non-point source pollutant loads; Land use; Urban area; SWMM

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