

Long-term monitoring and characterization of non-point source pollution from various land-use types in Korea

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ABSTRACT

This study investigated the long-term runoff characteristics of non-point source (NPS) pollutants from various land-use types through analysis of the event mean concentration (EMC) and peak concentration (PC), to determine management methods for different NPS pollutants by land-use type. For this study, NPS runoff long-term monitoring project data for the period of 2008–2016 were used, which were collected by the preliminary survey project on the environment at the Four Major Rivers Environment Research Centres. As a result of the EMC analysis by land-use type, biochemical oxygen demand (BOD) showed the highest values in commercial areas at 35.6 mg/L, suspended solids showed the highest values in other cultivated areas at 1,731.4 mg/L, and the highest total nitrogen and total phosphorous EMC were observed in fields at 11.68 and 4.79 mg/L, respectively. However, in the case of forests, the EMC of all pollutants analyzed were the lowest at BOD 1.2–1.5 mg/L, SS 8.5–22.5 mg/L, and TP 0.03–0.09 mg/L. The analysis showed that the land-use type and rainfall characteristics had significant effects on the results. Analysis using the PC concept, showed that >90% of high-concentration pollutants could be reduced by treating 20 mm of rainfall in urban areas and 50 mm of rainfall in other areas.

Keywords: Event mean concentration (EMC); Land-use; Long-term monitoring; Non-point source (NPS); Peak concentration (PC)

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