ABSTRACT

Direct surface runoff is water flowing over the surface soil due to full capacity of soil infiltration. To calculate direct surface runoff at least 4 (four) main factors ie rainfall depth (P), soil type, land cover and land treatment. Currently, many models have been developed to analyze runoff from rainfall data commonly known as rainfall-runoff model. One model that simplified the complex hydrological cycle is known as the Soil Conservation Service (SCS) Curve Number (CN) or SCS-CN method has developed by United States Department of Agriculture (USDA) to estimate direct surface runoff and peak discharges in Watershed. Some researches suggest that to use this method outside the development site still needs adjustment its parameters.

This research aims to modify SCS-CN method parameters in accordance with watershed conditions in Indonesia, with the following stages; (1) converting soil type based on Soil Mapping Unit (SPT) into the Hydrology Soil Group (HSG) from USDA; (2) comparing land cover class based on SNI 2010 into land cover class at USDA; (3) Determine CN matrix based on result between converting soil type and comparing land cover class, (4) Specify the maximum retention coefficient value (λ) on SCS-CN method.

The results of this research conclude that determinants factors in estimation of direct surface runoff are as follows: 1) SPT conversion based on soil taxonomy in Indonesia at sub-group level, there are 7 (seven) sub-groups of soil type at research location, (2) Land cover class from USDA to land cover class according to SNI 2010 is from 66 classes to 125 classes, (3) result of matrix formulation CN value with land cover type in accordance with SNI (2010) and HSG, obtained 500 pairs of land cover types and HSG, (4) Direct surface runoff separation method using Straight Line Method dan Master Depletion Curve Method. and (5) λ value in Indonesia is 0.11, with CN composites at reseach location is 57.7.

Keywords: curve number, direct surface runoff, land cover, land treatment, maximum retention coefficient value, soil type.