ABSTRACT

Assessment of Changes in Urban Flood Hazard Due to the Implementation of Retention Ponds on the Bank of Pesanggrahan River (Cipulir Case Study, South Jakarta)

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High rainfall and river overflow can cause flooding. In Jakarta, many areas are flooded, one of which is the Cipulir area, which is located on Jalan Ciledug Raya adjacent to Pesanggrahan River. Retention pond planning is expected to be a flood control building. This study aims to examine changes in the level of flood threat based on the area and depth of flood overflow before the countermeasure and the countermeasure in the form of additional retention ponds. The method carried out in this research is hydraulics simulation using EPA SWMM 5.2 application by calibrating using RMSE and also HEC-RAS 6.3.1 application with 1D-2D Couled Model method using Nakayasu HSS with a return period of 10, 25, 50 years. The results of this study say the results of the retention pond capacity based on calculations made in the EPA SWMM 5.2 application at a depth of 0m is 0 m2. At a depth of 3m is 17844.0 m3 and at a depth of 5 m is 33166.7 m3. It can be said that the geometry conditions before and after the retention pond show different flood hazard maps based on the runoff area. The runoff that occurs before the retention pond and after the retention pond in the 50-year return period shows very significant results.

Keywords : *Flood, Retention Pond, EPA SWMM, HEC-RAS 1D-2D Coupled Mode*

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