

THE APPLICATION OF HEC-GeoRAS MODEL FOR SEGMENT FLOOD EVALUATION AT WINONGO STREAM IN TEGALREJO DAN JETIS DISTRICT, YOGYAKARTA SPECIAL REGION

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A Flood occurred at Winongo River in March 2016 has caused many of residence in Yogyakarta inundated. The Flood caused considerable material losses for communities who live along the riverbanks. One of the effort to reduce the flood disaster impact is to create a flood hazard map using hydrological modeling. The creation of flood hazard map at river areas was done by using HEC-GeoRAS Modeling that able to illustrate the area and the depth inundation in the study area. The output from the modeling would be overlaid with land use map into the flood hazard map.

The necessary data in HEC-GeoRAS modeling are consisted of flood peak discharge, Digital Elevation Model (DEM) and Manning Roughness Coefficient. The flood peak discharge data was calculated by using unit hydrograph method, the DEM data was obtained from the extraction of aerial photographs, and the Manning's roughness coefficient data are collected from the actual calculations and field observations. Flood hydrograph of Winongo Streamline on the 2nd, 5th, 10th, and 25th year of return periods have discharged peak water value of 108.89 m³/s, 160.28 m³/s, 196.30 m³/s and 243.40 m³/s in a row. DTM data are collected from aerial-photograph. The results of this research showed the same patterns and the insignificant differences.

Keywords: Flood Hazard Mapping, HEC-GeoRAS, Winongo River