ABSTRACT

Juwana River is a river in Indonesia that is vulnerable to flood. It is caused by the relatively flat slope of Juwana River, which is around 0.00001, and it is influenced by the narrowing of its channel. The narrowing of the cross-sectional capacity causes floods in rice fields and residential areas.

This study used ArcGIS 10.2 application to determine the topography, HEC-RAS 4.1 application for modeling the river flow or river analisys system (RAS), and HEC-GeoRAS 10.2 application to process RAS results into the ArcGIS application. The technique used was modeling the river geometry based on the contour data as well as inputting the upstream and lateral inflow boundaries. The analysis used was unsteady flow analisys with the return period of 50 years.

The results show that the extent of flood due to the discharge of Juwana River was 37406 ha in Kudus and Pati districts. Areas affected by flood in Kudus District were 449.1 ha of fields, 8772.6 ha of rice fields, and 628.8 ha of settlements. For Pati District, the areas affected by flood were 1339.8 ha of fields, 17187.6 ha of rice fields, 6713.7 ha of ponds, and 2314,4 ha of settlements.

Keywords : Flood, Flood Mapping, Juwana Valley