

**CONTROLLED ENGINEERING OF FLOOD DISASTER RISK ON  
RESIDENCE AND AGRICULTURAL LAND IN GUNTING SUB-  
WATERSHED, JOMBANG DISTRICT, EAST JAVA**

**By:  
Agnindia Yulistria  
114110016**

**ABSTRACT**

One of the environmental problems often occurred in Indonesia is flood disaster. Flood is a rising volume of water which overflows the land. In addition, one of the regions has a risk of flood disaster is Gunting sub-watershed, Jombang District. The records show that flood happens in every rainy season. It is because the river in the area cannot intercept and retain the runoff discharge as the case happened on March 1<sup>st</sup>, 2017. This research aims to find out the risk level of flood on residence and agricultural land and decide controlled engineering that appropriate to flood risk in the research area.

This research uses survey, mapping, scoring and interview methods. The interview method used in this research is *judgment sampling* which the chosen respondents are selected based on the researcher's assessment. The parameter used for the research are puddle height, puddle duration, rainfall, soil texture, soil infiltration, land slope, house building, public facilities, population density, vulnerable groups, productive land width, Green Gross Regional Domestic Product (Green GDP), policies/rules, early warning, and alertness.

The result shows that the risk level of flood disaster risk in Gunting sub-watershed divides into four classifications; 1) the area with the lowest level of flood disaster risk is 331,3 Hs, 2) the area with low level of flood disaster risk is 193,8 Ha, 3) the area with medium level of flood disaster risk is 2071 Ha and 4) the area with the highest level of flood disaster risk is 3024,5 Ha. Structurally, the controlled engineering of flood disaster risk models is building the retention pond, elevating the river wall, normalizing the cross-section of the river body, gabion, and sediment controller. Meanwhile, for its non-structural models, it needs institutional and social approach.

**Keywords:** flood disaster, sub-watershed, risk, scoring, engineering