

# **PENGARUH PERUBAHAN TATA GUNA LAHAN TERHADAP LIMPASAN LANGSUNG PADA DAS JANGKOK NUSA TENGGARA BARAT**

**Ahlul Waktu**  
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**Pembimbing Utama**  
**Dr. Ir. Budi Wignyosukarto, Dipl.HE**

**Pembimbing Pendamping**  
**Dr. Ir. Radiana Triatmadja**

**Anggota Dewan Penguji Lain**  
**Dr. Ir. Rachmad Jayadi, M.Eng**

## **ABSTRACT**

The increasing peak discharge, resulting higher floods, have been experienced in most river regions in Indonesia. Some experts say that the increasing of peak discharge is resulted from a climate change as well as the land use change which modified the curve number. River Jangkok is one of the great rivers which pass through Mataram city, the capital city of West Nusa Tenggara province. In a few last year, the annual floods inundated rice fields and residences around Mataram city and generated huge material losses.

The increasing flood discharge was probably caused by the change of land use at upstream, where forest had been turned into rice field and other plantation farm. To evaluate the influence of land use change and consequently the curve number hydrologic simulations are conducted using software HEC-HMS (Hydrologic Engineering Center-Hydrologic Modeling System). By using the land use data, rainfall data and peak discharge in year 1992 and year 2000, the simulations were carried out by HEC-HMS to find the composite curve number ( $CN_{composite}$ ) in the pertinent year. With each  $CN_{composite}$ , and certain input of floods hydrograph of the return period 25 years rainfall, the maximum discharge that happened in Jangkok catchment area at the year 1992 and year 2000 land use were compared.

During the last 9 years, there has been a change of land use in Jangkok catchment area, wide forest have decreased by 8,63 %. Some of the forest areas was turned into plantation farm, rice field and bushes. The plantation areas are mounting to 5,55 km<sup>2</sup> (6,67 %) while the rice field areas to 2,09 km<sup>2</sup> (2,51 %). The changes cause the raise of composite curve number ( $CN_{composite}$ ) to 1,08. The simulations of calibrated parameter in the year 1992 and 2000, with the return period 25 years rainfall, indicated the raise of peak discharge to 4,82 % increasing the floods volume to 7,07 %. The hydrograph discharge in year 1992 and year 2000 show no significant difference. Result of simulations, that have been conducted, indicated that the land use change in Jangkok catchment area up till now has insignificant effect to the peak discharge.

**Keywords** : *Land use, Runoff coefficient*