

ABSTRACT

Muke River is an ephemeral river located in District of Timor Tengah Selatan, Nusa Tenggara Timur Province. Flood occurs during rainy season inundating farm land and residential area. Previous work has been done by Petrus G Bay (2007) indicated that flood levee and river normalization, could not prevent flood from flowing into river bank around Oebelo and Toineke villages.

Present work deals with flood prevention by the use of retention area to reduce peak discharge and/or flood water level. Flood simulation was performed by the aid of HEC-RAS mathematical model.

The result of simulation show that the main cause of flood retention is the limited flow capacity of the river. Under existing condition and $Q_{10}=575 \text{ m}^3/\text{s}$, river bank overflows occurs in 83.4% of entire river reach. Three retention areas of 3 x 50 ha are proposed along Muke River. These can reduce the peak flow by 73% and river bank overflow by 69%.

Key word: Flood Retention, Flood Prevention, Retention Area