

Thesis Title	Estimation of Base Flow Component for Hydrograph Synthesis
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### Abstract

To estimate the base flow components of flood hydrographs for Ping, Wang, Yom and Nan river basins, a number of hydrographs from each river basin was analyzed. Some basic base flow characteristics, namely: the recession constant ( $K_r$ ) and the time from flood peak to the end of surface runoff (N) were established for each basin as functions of the basin and soil parameters. Three models for base flow estimation were proposed, namely: (1) the fixed average base flow model, (2) the time-varying base flow model, and (3) the base flow model for in the HEC-1 flood hydrograph package of the US Army Corps of Engineers.

From the results of the study, the base flow recession constants for all the river basins under study were found to vary between 0.805 to 0.971 per day. The parameter N was found to vary with the basin characteristics and soil parameters, and the predictive equations were given for each river basin. The three proposed base flow models, when combined with the surface runoff component predicted from the actual storms on selected medium-sized catchments (area less than 500 square kilometers) by the unit hydrograph theory, were found to give conservative estimates, with the predicted flood peaks being 24 to 94 percent (about 46 percent on the average) higher than the observed values.

Keywords : Base Flow / Base Flow Recession Constant / Base Flow Model /

Flood Hydrograph