INFLUENCE OF CHANNELS TOWARD SUSPENDED SEDIMENT TRANSPORT CHARACTERISTICTS BY CURRENT AND WAVES

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Abstract: Genelly, design of navigation channels concern with choosing aligment, dimension, predict of volume of capital dredging, and maintenance dredging. In predicting volume of maintenance a study is need to predict siltation from suspended sediment. Study of siltation is very infortant, because matenance dredging activities need high cost.

This research was intended to study the influence of channel for suspended transport caused by current and wave effects conducted by physical experiment. Parameters measured in labolatory consisted of current, sediment concretation, height and period of wave, sediment gradation, sediment falling velocity, and temperature. Analysis of measured data were conducted to know the flow phenomena which characterized sediment passing a channels. Analysis of transport rate of the suspended sediment was aimed to illustarated the sedimentation or erosion occurred, and the amount of silting up during certain time span.

The result showed that flow characterictcs and suspended sediment concretation were reduced when passing through channels and increased again up on leaving the channels. Concecquently, the rate of sediment transport generally follws similar trend. Comparison of measured transport rate was made using Lane and Kalinske method. Result of comparison test showed maximum deviation of 7.5% in upper course of channels (location-1) and 6.7% in the middle of the channels (locations-5). Wave height variety H/L = 0.0236, 0.0189, and 0.0142 increased sediment transport relative by 0.42%, 0.30%, and 0.21% compared with sediment transport relative without wave. Drecease in flow speed decrease the sediment transport relative by 0.042% and 0.128% for the decrease in Froud Number (Fr) from 0.10 to 0.093 and 0.069. Variety of initial concretations increased sediment transport relative by 0.424%, 0.59%, and 0.439% for a decrease in initial concrentation from Co = 1.5 g/L to Co = 1.2 g/L, 1.00 g/L, and 0.75 g/L.

Keyword : *Flow, Wave, Concrentation, Sediment Transport, Siltation.*

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