CHANGES OF DOWNSTREAM CHANNEL MORPHOLOGY OF KABAUNG CREEK AFTER THE CONSTRUCTION OF DAM IN BAGO REGION

PHD DISSERTATION

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ABSTRACT

With the major economic system changes, many new developments are observed in every sector of Myanmar. In the agriculture sector, many dams were constructed. This research studies downstream channel morphologic changes of Kabaung Creek, after the construction of the multipurpose dam. The Kabaung Creek is a tributary of the Sittaung River which originates from the Bago Yoma. Kabaung Creek has an area of 1711.39 sq.km (660.77sq.mile) watershed. The highest elevation in the watershed area is 595.61m (1954.095 ft) above the mean sea-level and the confluence is less than 17.44 m (57.22 ft). The shape of the basin is compact. Lower part of the watershed area experiences monsoon floods annually. Kabaung Multipurpose Dam is an operation in the watershed, regulating flow while distributing irrigation water and hydroelectric supplies, and providing flood control. Dams are well-known for influencing channel flow and environmental dynamics downstream, but the focus of this inquiry is on distinguishing effects of land use and channel responses to the impoundment. Data used in this research are derived from field survey for channel morphology and structured interviews were conducted to the creek bank residents to assess human environmental aspects. Temporal channel planform changes are studied with digital globe photos taken from 2007 to 2012 and measures of channel activity is carried out by using GIS technology. Principle Component Analysis and regression statistics have been used to examine which landscape parameters that dominate the channel morphologic changes. Results of multiple regression model shows land cover, discharge, canopy cover, runoff, rainfall, commercial land use, erosion, slope, bank vegetation variables that contribute to changes of downstream channel morphology of Kabaung Creek. In conclusion, this geomorphic investigation discovered that the operation of dam and other land use patterns jointly influenced the spatial and temporal changes in downstream channel morphology of the Kabaung Creek which significantly affects the basin environment.

Key terms: Planform, Principle Component Analysis, Multiple Regression Model

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