Use of Two-Dimensional Hydraulics Modeling for Design of Erosion Remedy

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Abstract : One of the main goals of river engineering is river training, which is defined as controlling and predicting the behavior of a river. It is taking effective measurements to eliminate all related risks and thus improve the river system. In some rivers, the riverbed continues to erode and degrade; therefore, equilibrium will never be reached. Generally, river geometric characteristics and riverbed erosion analysis are some of the most complex but critical topics in river engineering and sediment hydraulics; riverbank erosion is the second answering process in hydrodynamics, which has a major impact on the ecological chain and socio-economic process. This study aims to integrate the new computer technology that can analyze erosion and hydraulic problems through computer simulation and modeling. Choosing the right model remains a difficult and sensitive job for field engineers. This paper makes use of the 5.0.4 version of the HEC-RAS model. The river section is adopted according to the gauged station and the proximity of the adjustment. In this work, we will demonstrate how 2D hydraulic modeling helped clarify the design and cover visuals to set up depth and velocities at riverbanks and throughout advanced structures. The hydrologic engineering center's-river analysis system (HEC-RAS) 2D model was used to create a hydraulic study of the erosion model. The geometric data were generated from the 12.5-meter x 12.5-meter resolution digital elevation model. In addition to showing eroded or overturned river sections, the model output also shows patterns of riverbank changes, which can help us reduce problems caused by erosion.