

Flood Risk Analysis Considering the Effect of Multi-functional Weir Failure

Jae Kyung Son¹, Tae Hyung Kim¹ and Kun Yeun Han²

¹*Researcher of Kyungpook National University, Daegu, Korea And Researcher of research center of flood defence technology for next generation*

²*Professor of Civil Engineering, Kyungpook National University, Daegu, Korea And Principal of research center of flood defence technology for next generation*

The condition of Nakdong River is changed by dredging the river bottom and building the multi-functional weir. It is aiming the enhancement of flood safety and to secure water volume. The eight multi-functional weirs are planning to build in Nakdong River, and designed to be equipped with fixed weir and movable weir. During the dry season, the gate of movable weir is closed to secure water volume, and during flooding season, water elevation is controled by optimum gate operation to maximize flood mitigation effect. The weir is constructed by concrete and overflow structure, but because of large scale and complex shape, it can be collapsed by uploft pressure occuring at bottom of weir, and combination of another loding. In this study, the impacts on upstream and downstream river by failure of multi-functional weir are anaylized, and flood risk is estimated by investigating the failure discharge, water elevation, and flow velocity variation. FLDWAV is used to analyze multi failure of weir, and estimated flood risk area. Chilgok weir and Nakdong River Barrage is applied to upstream and downstream boundary respectively, and various discharges are considered to analyze the flood event.

Keywords: multi-functional weir; failure of weir; FLDWAV.

References

- [1] Fred, D. L., and Lewis, J. M. (1998). NWS FLDWAV Model, Hydrologic Research Laboratory, Office of Hydrology, National Weather Service, NOAA, Silver Springs, MD, 20910
- [2] J. Eaket, F. E. Hicks, and A. E. Peterson.(2005). "Use of Stereoscopy for Dam Break Flow Mesurement" Journal of Hydraulic Engineering, ASCE, Vol.131, Bo.1,pp24-29.