Artit Panichnava 2012: The Study of Kaeng Krachan Dam Break. Master of Engineering (Water Resources Engineering), Major Field: Water Resources Engineering, Department of Water Resources Engineering. Thesis Advisor: Mr. Jirawat Ganasut, D.Eng. 130 pages.

Kaeng Krachan dam is a large earthfill dam and located near the Phetburi river with reservoir capacity at 887.741 million cubic meters. It's spillway is uncontrolled type. In the year 2006, there was heavy rain at water source which caused flooding to the Kaeng Krachan dam. So the Royal Irrigation department had to speed up draining by siphoning method. In this study, it considers 2 cases of dam break initiation which comprises of Overtopping case with failure shape as trapezoidal breach and Piping case with 3 kind of failure shapes including trapezoidal, rectangular and triangular breach shapes. Flow of the last stage of current at the Kaeng Krachan dam was studied from hydrograph at return period with 100 1,000 10,000 years and Probable Maximum Flood (PMF) by applying HEC-RAS program.

From the study result, it found that collapse feature occurred from the Piping failure is more severe than the Overtopping failure. The most excessive impact was occurred from the Piping failure with trapezoidal breach shapes that made water level in the Kaeng Krachan dam rapidly decreased. It caused flooding with the highest flow rate in the Phetburi river and the fastest current. The subordinate severe came from the square shape and the triangle breach shape, respectively. In comparison of the severities from each hydrograph at different return period flow, there were slightly differences because volume of flood flowing into the dam was only a few portion compared with volume of water collected in the Kaeng Krachan dam.

For the dam break from the piping failure with trapezoidal breach shapes, it causes the Probable Maximum Flood (PMF) with the highest violence which leads to flooding area about 89,907 rai. The area which got the highest brutal impact is Kaeng Krachan which is located on the right side of the river with 1 k.m. far from the Kaeng Krachan dam. It would have flood depth at 20.53 meters. The flood current would take 1 hour and 6 minutes after the dam break starts. While, the left side of the river at Song Pee Nong, A.Kaeng Krachan with 12 k.m. far from the Kaeng Krachan would have flood depth at 15.80 meters. The flood current would take 2 hours and 52 minutes after the dam break starts. In finally, the flood current would arrive the Phet dam in 9 hours and 22 minutes. The study result can be applied to determine the flooding areas at downstream as a guidelines for evacuation planning and management.

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