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Determination of bankfull discharge on mountain streams' stretches with multi-thread and incised channel-reaches

Summary:

Bankfull discharge (Qb) is a direct factor which impacts upon equilibrium of river channels. Its value can help devisers understand projected flows such as dependable flow and catastrophic flow. Closer understanding of bankfull discharge allows better comprehension of channel forming processes.

Bankfull discharge determination process requires choosing a suitable method, however, it is helpful to employ several different methods while calculating Qb. Depending on the type of the cross section, both morphometric and biological methods can be applied to calculate bankfull discharge. First group of methods is made of either calculations based on empirical formula or calculations putting graphical methods to use. Methods based on biological indices form the second group.

In this thesis, an analysis of bankfull discharge determination on five mountain streams was conducted. For each mountain stream, sections with different morphologies were selected, particularly reaches with incised channel-reaches and multi-thread channels. There is a new method of bankfull discharge determination based on paleo-marks displayed in the thesis. High Water Marks Method allows establishing water reach after freshet wave. This analysis allowed stating that it is feasible to determine bankfull discharge in incised channel-reaches.

One of the conclusions that can be drawn after the research is that the new method of bankfull discharge determination can assist in calculating bankfull discharge in mountain streams for incised channel reaches, specifically in cross sections located in narrow and deep reaches.

Key words: multi-thread channel, incised channel-reaches, High Water Marks Method, bankfull discharge

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