

Reasonable Distance between the Groynes on the Concave Bank

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Abstract: One of the effective techniques to prevent riverbank from erosion, to control of mainstream, to improve fluvial landscape ecology and to stabilize the nature-friendly river, is to construct a groyne system on the concave bank of a meandering river which the purpose of pushing the mainstream leaving away. However it is challenged to determine the longest distance between two adjacent groynes so that the flow between them is subcritical, circulated, its velocity is low enough and does not erode the concave bank. The literature results indicate a wide range of the distance which is inappropriate to create subcritical and circulated flow between the two adjacent groynes.

This research performed a numerical experiment with two dimensional horizontal flow mathematical model to find the reasonable distance between any two adjacent groynes; and the influence of meandering radius to distance determination of them. These are the preliminary results, the work should be investigated further using a physical models.

Keywords: Groyne, erosion, meandering radius, concave bank, 2D horizontal flow model

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