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Allocating Channels and Flow Estimation at Flood Prone Area in Desert, Example from AlKharj City, Saudi Arabia

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Abstract : The rapid expansion of Alkarj city, Saudi Arabia, towards the outlet of Wadi AlAin is critical for the planners and decision makers. Nowadays, two major projects such as Salman bin Abdulaziz University compound and new industrial area are developed in this flood prone area where no channels are clear and identified. The main contribution of this study is to divert the flow away from these vital projects by reconstructing new channels. To do so, Lidar data were used to generate contour lines for the actual elevation of the highways and local roads. These data were analyzed and compared to the contour lines derived from the topographical maps 1:50.000. The magnitude of the expected flow was estimated using Snyder's Model based on the morphometric data acquired by DEM of the catchment area. The results indicate that maximum discharge peak reaches 2694,3 m3/sec, the mean is 303,7 m3/sec and the minimum is 74,3 m3/sec. The runoff was estimated at 252,2. 610 m3/s, the mean is 41,5. 610 m3/s and the minimum is 12,4. 610 m3/s.

Keywords : Desert flood, Saudi Arabia, Snyder's Model, flow estimation
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