Abstract

One of the most important factors in recognition of river morphology is determining stable cross section. Knowing the regime of rivers and determining the sustainable dimensions in alluvial rivers is one of the important aspects in river engineering studies. Different methods have been proposed to define the stability of the rivers and determine the geometric dimensions and longitudinal slope of the stable canals. These methods are mainly divided into empirical, analytical, or combined methods. Sistan River originates from the watershed of Afghanistan and after long distances it enters Iran. This river is considered as a seasonal river. Sistan River is the only source of water supply in the plain of Sistan. In this research for investigation of the stable section, the hydrological data of the hydrometric station of the Kohak and geometric data of cross sections of the Sistan River in 1395 are used. Empirical methods used in this research are methods of Lacy, Simons Albertson, Blench and minimal energy. The flow data of the period of 1360-95 was used to determine the dominant flow rate of the Sistan River. Finally, the best method for estimating the cross section and the dimensions of the stable section for Sistan River were determined. Based on result of this research, the dominant depth and flow rate were determined 3.5 m and 298.77 m^3/sec respectively with return period of 2.23 years and finally stable width, depth and slope in Sistan river based on Simons Albertson relations were determined 98.6 m, 4.7 m and 0.0006 respectively.

Keywords: Alluvial Bed, Regime Theory, Stable Section, Sistan river

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Study of Regime Relations and Determination of the Best Stable Cross Section in Sistan River

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