Qara-Chai River sediment survey of the Markazi province numerical model HEC-RAS.4

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ABSTRACT: Estimate the amount of sediment load and transfer it to a lot of land and water resources projects such as the removal of a river bend, narrowing rivers, flood control, navigation, water went, and the design of dams and reservoirs to store surface water is necessary. The purpose of this study was to estimate and calculate sediment transport capacity of the Qara-Chai river in the Markazi province. After the interval length of 31 km of the river and provide basic information such as cross sections, Information about the geometry of the river, at different levels of roughness coefficients, information about the sediment, suspended sediment and river bed granulation, information about the hydrology of the river system hydraulic boundary conditions and sediment discharge and flow model using HEC-RAS was estimated. The results showed that the equations Englund Hansen, Peter Meyer - Muller, and Toffaleti the measured data is closer than other relations One of these methods is recommended in the river. Also part of the diagram Halstrum and Shields River at the deposition and erosion of the part

Key Words: Erosion, Sediment transport, Qara-chai River, HEC-RAS.4.1

INTRODUCTION

Due to the complexity of the phenomenon of hydraulic and sediment in rivers and usually can not be solved by analytical equations, "Numerical methods are used. Several studies using different versions of HEC-RAS model to study the erosion and deposition in rivers and reservoirs was undertaken Among them was the al Kanflyd studies using HEC-RAS model of scour and sediment accumulation in the Cedar River were Krandh model [6]. The model also predicts Hole Rsbrn and fine sediment dynamics along the mountain rivers studied [11]. And HEC-RAS model for the study of Gibson and colleagues studied the river sediment transport calculations [8]. Several researchers in the interior of this model for the study of sediment transport in rivers and reservoirs which are used for example to research Behrangi et al [3]. Emamgholi Zadeh and colleagues [2], followers and colleagues [4], Hosseini [5], Asadi et al. [1] mentioned.

MATERIALS AND METHODS

Watershed Qara chai river, located in Markazi, Hamedan, Qom province Qara-Chai River passes in the cities of Astana, shazand, Arak, Hamedan, Tafresh, Saveh, Qom. The river is the most important from the basin. Branches of these rivers originate in the mountains shazand And flows northward And continues to Salt Lake. Saveh dam built on the river and has operated since 1370. Qara chai river Length 540 km and 2300 meters altitude is the main source. Water consumption of Qara chai river is from cities and villages around the river reached And the surplus goes into salt lakes. River study area is From the shazand to the lower doab bridge The coordinates of longitude 49.24 And a width of 36.2 starts And to coordinate the longitude 49.49 And within 36.3 continues. Along the river in the study area is approximately 31 km. Plan map of the study area (Figure 1) is shown. In this paper, some parameters of Qara-Chai River metasediments in the Markazi province of perennial rivers were studied. Thus, an area 31 km in length using HEC-RAS model was simulated and studied. After entering the data of geometry and Manning coefficient in the region study, Daily flow hydrograph Doab Bridge station by years 1357-1391 were used as data flow quasi unsteady. The information in the sedimentary of the results of 26 sediment samples at different substrate materials were used for grading and sediment rating curves in Doab Bridge station was considered as a boundary condition.