

Abstract:

In regions that rivers and groundwater aquifers are used conjunctively, the ground water aquifer is considered as an appropriate case for the use of water sources when the rivers are shallow. The aim of this investigation was to prepare a model that, with an optimum conjunction of surface and groundwater, is able to give an appropriate pattern for use, especially in drought state. The research area of this investigation is the plain of Marvdasht-Kharameh of Fars province which its water need is provided by irrigation network, draining of the dam of Drudzan, Kor and Sivand rivers and the ground water aquifers. In first step, the system of river and aquifer was simulated numerically with both steady and unsteady states. The model has been calibrated for Aban 1386 in steady state and with the aim of hydraulic conductivity precision. Also, according to the available data and stresses to system, model was calibrated for a 4 year period (1383-87) with seasonal stress in unsteady state. This step of model, also, was calibrated to precise the recharge due to rainfall and specific yield factor. Acceptable coincidence between observed and calculated data in verification confirmed the model's capability to expect the groundwater quantity. The results indicated that the hydraulic conductivity varies from 0.42 to 88 m/day and the specific yield varies from 0.04 to 0.39. After ensuring the accuracy of the model, to scenarios were considered to optimize the management of aquifer. Simulation of the scenario of continuing the present situation showed that in current situation almost the maximum capacity of ground water aquifer is being used and increase in ground water level usage in future years, will lead to salient decrease of the ground water aquifer. Simulation of the decrease in using ground water sources in drought conditions indicated that there is no potential for excessing usage in the plain.

Key words: simulation, conjunctive use management, groundwater, surfacewater



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Conjunctive use Management of Surface and Groundwater Resources of Marvdasht-Kharameh Plain

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