Investigating the health status of Shadegan wetland in terms of environmental water supply using HEC-EFM model

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Abstract

Shadegan wetland is the largest wetland in Iran and is one of the most important international wetlands located in the basin of the Jarahi River and in the north of Persian Gulf. This wetland with high biodiversity plays an important role in the hydrological functions of the region and Persian Gulf. In recent years, the wetland regime has been subject to quantitative and qualitative changes due to drought, water extraction for high development projects, drainage of sugarcane units and irrigation. In addition, the minimum inflow into the wetland influences the quality of water in the wetland and the dissolved oxygen in the wetland. In this research, in order to study the health status of Shadegan wetland in terms of supplying the environmental water requirement using the HEC-EFM model, two statistical periods including natural conditions (before the construction of the Maroon dam) from April 1991 to September 1999 and controlled conditions It was selected by Maroon dam (after dam construction), which was from October, 1999 to September 2008. The results show that if the environmental water requirement of Shadegan wetland is more than 4.7 m3/s and less than 7.4 m3/s, then Shadegan wetland has not been in optimal condition during the period before the dam construction (natural flow regime), but after construction of the dam in desirable conditions are in terms of supplying environmental water requirements. But if the water requirement of Shadegan wetland is more than 7.4 m3/s, the condition of the wetland in the conditions before and after the construction of the dam is not desirable. Also the regime of inflow into the wetland during the critical time of the wetland has improved in terms of the need for environmental water after the construction of the Maroon dam over its absence. Therefore, Maron Dam has had a positive effect on the supply of environmental water during the crisis of the wetland.

Keywords: Wetland health, biological water requirement, HEC-EFM model, Shadegan wetland.

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