



University of Zabol  
Graduate School  
Faculty of Water and Soil  
Department of Water engineering

**The Thesis Submitted for the Degree of Master of Science  
(in the field of Water Resources Engineering)**

# **Operational assessment of Kardeh Mashhad dam under different management plans using WEAP model**

**Supervisor  
Dr. M. tabatabaei**

**Advisors  
Dr. o. mohammad reza poor  
M. a. shams goshki**

**By  
Yoosef akbari**

**October 2013**

**Abstract:**

Proper planning and optimal operation of dam reservoir is essential for under water crisis situation and increasing demands for water in Iran. In this regard, taking the best exploitation programming of existing resources is useful. Evaluation of the different operational scenarios and their effects on different consumption sectors using simulation techniques along with comprehensive planning of water resources have been analyzed in this research. Different models have been developed in the world to simulate water planning and management of the basin area. Among them the WEAP model has been chosen for this study because of its universality in terms of the physical, hydrological, and management processes. The main objective of this research, is a comprehensive programming and management of Karde dam reservoir, located in Mashhad, Iran, in order to make an optimal use of the available water resources, and to meet the water demands for different sectors of agriculture, industrial and drinking, attention based on their growth demand in future. Karde dam reservoir is simulated in WEAP software environment for seven different scenarios of development plans, in addition to the basic situation. Results show that, the dam can not meet the municipal demand of the considered time horizon completely, unless operating under the form of scenarios, which reduce water demands in different sectors. These scenarios are demand management, irrigation efficiency, combination of them, and changing the crop pattern. Finally, results reveal that the deficit irrigation scenarios along with the increasing efficiency at the same time the water unmet demand decreases by the amount of 37% and, the reservoir storage volume increases 25% relative to the reference scenario.

**Keywords:** Evaluation, Water resource system, Karde dam, Simulation, WEAP software.