

## **Study of Balancing Doomak Aquifer using Visual Modflow Premium 4.2 Model**

### **Abstract**

Doomak study area code 4627 is located 75 kilometers south of West Zahedan. Due to the increase in potholes unauthorized overdraft license use operation, harvesting more than the volume of renewable water, Picked long and non-replacement of water in aquifers, aquifer water level of the water year 68-69 to 94-95 as the cumulative Doomak 15. 86 m and 59 cm doesn't annual average has dropped, as well as tanks deficit over the 27-year annual average of 3.5 million cubic meters 96.21 and is thus plain from years 66 has been banned and that's why using a mathematical model for aquifer management is essential. In this study, outlining the latest Thiessen network of 10 observation wells, unit hydrograph Doomak drawings, and due to smaller fluctuations in water level in October 1390, the information was used this month to stable conditions. Considering the conceptual model of the aquifer and providing input files in the October 90, calibration models using visual Modflow premium 4.2 software for stable conditions in order to optimize the hydraulic conductivity was performed. Then calibrate the model for unstable conditions, in order to optimize the parameters of specific yield, harvesting exploitation wells and groundwater input to the range table for referring (November 1390 to October 1391) was conducted. The following sensitivity analysis and verification model for neonatal (November 1391 to October 1392) took place. The results show that the model's ability to perform forecasting and management. At first, the table in normal mode, for 10 years (October 1395 to October 1405) was drawn forecasting and flood it reflects declining water levels drop to 6.13 meters and the gradual drying of aquifers in the south-east and north. Then, by applying a 5% adjustment

plans in case of Not only will not increase, after 10 years the water level is not only not increase, but will be faced with a reduction of 15 cm. And continued the process after 20 years of design water level increase only 3.82 meters must That's according to 15/86-meter drop over the past 27 years has been low and not in the direction of Iran Water Resources Management Company policies The second strategy is defined with 20 percent adjusted butterflies That after 10 years the water level of 3.14 meters on average and to continue the process after 20 years of increase plan should increase the water level 11.32 meters Due to the drop in the past 27 years and convenient for the policies of Iran Water Resources Management Company. So the full implementation of 4 projects over the next 10 years on the surface of the water balance Doomak desert with 20% adjusted effective butterflies and to prevent the cumulative loss aquifer water quality and reduce water quality is essential.

**Key words :** Balancing, Modflow, Calibration, Verification, Prediction, Zahedan.



University of Zabol

Graduate school

Faculty of Water and Soil

Department of Irrigation & Drainage

**The Thesis Submitted for the Degree of M.Sc (The field of hydraulic engineering)**

# **Study of Balancing Doomak Aquifer using Visual Modflow Premium 4.2 Model**

**Supervisor:**

Dr. M. Tabatabaei

**Advisore:**

E. Bandani

**By:**

S.torshizi

Sep2016