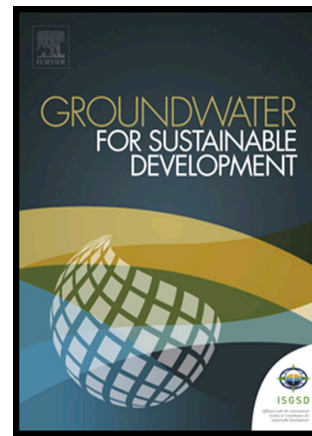


Author's Accepted Manuscript

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www.elsevier.com/locate/gsd

PII: S2352-801X(17)30061-9
DOI: <http://dx.doi.org/10.1016/j.gsd.2017.11.004>
Reference: GSD80

To appear in: *Groundwater for Sustainable Development*

Received date: 7 June 2017
Revised date: 14 November 2017
Accepted date: 22 November 2017

Cite this article as: Qassem H. Jalut, Nadia L. Abbas and Abdulrahman Th. Mohammad, Management of groundwater resources in the Al-Mansourieh zone in the Diyala River Basin in Eastern Iraq, *Groundwater for Sustainable Development*, <http://dx.doi.org/10.1016/j.gsd.2017.11.004>

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Management of groundwater resources in the Al-Mansourieh zone in the Diyala River Basin in Eastern Iraq

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Abstract

Al- Mansourieh zone is located in Diyala city-Iraq between the latitude 34.08° North and the longitude 44.96° East and consists of 244 wells. These wells are distributed randomly without dependence on the geological and hydraulic information. In addition, the absence of a mechanism to regulate the operation of these wells, it is necessary to manage these wells by determining the number of suitable daily operating hours to prevent their drying. In this study, a management of water usage of groundwater was investigated using Groundwater Modelling System (GMS) software. The area was divided into 92 grids with (500 m x 500 m) dimensions. The model was calibrated using the hydraulic conductivity ranging from 9 to 15 m/day with storage coefficient 0.15 to obtain a match between observed and computed heads. Three scenarios of operation times (12, 8 and 6) hours/day were taken to test the drawdown head of groundwater. The optimal management of water usage in the groundwater was selected based on the period of appearance the dry cells. The results show that the operation time of 6 hours/day was the optimal operation where the drawdown head does not exceed 8 m after the first year and

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