

Approach the Saline Intrusion in Chaouia Coastal Aquifer by Groundwater Budget Analysis

F.Z. Benfarji¹, J. Filali-Moutei², I. Kacimi³, and B. El Mansouri¹

¹ University Ibn Tofail, Faculty of Sciences, Lab. Applied Geosciences

² Hydraulic Administration, Rabat

³ University Mohamed V, Faculty of Sciences, Rabat

The unconfined aquifer of the coastal Chaouia area, between Casablanca and Azemmour, is formed essentially of the primary fractured shales, the calcareous marl of the Cenomanian and the calcareous sandstone of the Plio- Quaternary. This aquifer is characterized by shallow groundwater level: about 8 and 30 m, what encouraged the implantation of wells to agricultural ends and the development of the market cultures along the sea, generating an overexploitation of the aquifer.

Since 1980, an anarchical exploitation of the groundwater accompanied by periods of successive drought generated the decrease water level of 0,5 m/an. This causes dewatering in part and a marine intrusion very marked and that spreading on 2 km the long the coast. What reduced the degree of exploitation and the abandonment of several pumping wells. A hydrodynamic 2D model has been achieved by the use of the MODFLOW code. The fitting of this model in steady and transient state permitted to calculate the permeability and the storativity coefficients. The analyse of the groundwater equilibrium budget show he balance showed entries of water of sea and the Oum Er Rbia river.

This model also permitted to simulate some situations of management, especially to make move back the saline intrusion by artificial recharge. In fact, the simulation of an artificial recharge of 0.5m³/s , which come from the Oum Er Rbia river chows that the saline intrusion move back 5 m from the coastal line and the piezometric level can reaches 11 to 13 m.

Key words: Coastal Chaouia aquifer, MODFLOW, saline intrusion.