

Temporal and spatial distribution of salinity in Gaza Coastal Aquifer deduced from observations since 1972

Ashraf M. Mushtaha^{1,2} and **Kristine Walraevens**²

¹Director of Environmental and MIS Departments, Gaza Strip – Palestine

²Laboratory for Applied Geology and Hydrogeology, Ghent University, Krijgslaan 281-S8, 9000 Gent, Belgium

ABSTRACT

Groundwater is the only source of water supply in the Gaza Strip, where more than 1.8 million inhabitants are living within 365 km². Gaza aquifer has been exposed to severe overexploitation to meet the human needs for water supply. This exploitation has resulted in lowering the groundwater level and exposing the aquifer to contamination from seawater intrusion and inland saline upconing in the south-middle and south-east of the Gaza Strip.

This paper will present the fact sheet for the aquifer chloride status since 1972, where seven cross sections have been developed from actual lithological data. These cross sections will be used to present the aquifer chloride data in 1972, 1980, 1990, 2000, 2010 and 2017. Chloride contour lines are presented based on sample data from different wells.

The results show that seawater intrusion, lateral inflow from the east and upconing phenomena are the main cause of high chloride concentration in the aquifer. The clay layers which are subdividing the aquifer have caused a difference in sub-aquifer chloride data. Before the year 2000, the domestic wells were placed far away from the sea and no seawater intrusion was noticed especially in Khan Younis and Rafah area, while afterwards domestic wells appeared within 2 km from the Mediterranean Sea. From then on, seawater intrusion has been taking place due to heavy wells abstraction. Also lateral inflow with chloride concentrations of more than 1000 mg/l is well noticed during the different years and that could be due to intensive agricultural practices outside the eastern political border of the Gaza Strip.