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Configuration of the limestone groundwater aquifers in the middle part of Egypt by using electrical measurements.

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Carbonate rocks constitutes about 450,000 Km^2 of the total surface of Egypt. Nile Valley plain extended from north to south and split these rocks into two plateaus. Both of them represent the natural expansion for much agriculture, industrial and civil projects in the country, which depends essentially on the groundwater. In the middle part of Egypt where the Eocene limestone are the mainly sediments, vertical electrical sounding were measured to delineate the configuration of the groundwater aquifers and identify hydrostratigraphic and hydrostructural units and their associated boundary conditions. The electric data were interpreted where the resistivity and gamma logs as well lithological information used as constrained factor during interpretation process. The subsurface configuration for this part of the plateau consists from four lithologic units. The first one composed from sand and gravels of quaternary age, followed by Eocene fractured limestone called Samalut Formation with thickness ranged between 30 and 70 m. It considers the main aquifer in the study area and the third unit composed from massive limestone of El Minia Formation which reflects high resistivity range. The fourth unit consists of clay sediments acts as barrier between the Quaternary aquifer recorded in the Nile Valley and filling the graben which formed in the limestone as result of two fault system recognized in the area. This deduced model will guide us during drilling and pumping program, and allowed for the development of a conceptual model for the aquifer that could be used to assess the applicability of a variety of analytical models. This saves money and efforts which consumed in drilling no effective and non productive wells.