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# Relationships between Hydraulic Parameters of the Nubian Aquifer and Wells in El Shab Area, South Western Desert, Egypt (A Case Study)

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## ABSTRACT
For proper water management in the new reclaimed areas, hydraulic parameters of both aquifer and wells related to transmissivity, specific capacity, well loss, formation loss, and water entrance velocity, as well as the relationship between these parameters are the main target after construction of production wells. In El Shab area, the Nubian Sandstone aquifer has a large range of transmissivity (from 483.12 to 1489.24 $m^2$/day) and, also, specific capacity (from 203 to 486.32 $m^2$/day). Relationship of specific capacity and transmissivity is constructed and the established empirical equations can be used to predict the transmissivity of the Nubian aquifer in all new proposed sites for well drilling at which the specific capacity measured without performing pumping tests. On the other hand, the drilled wells in El Shab area exhibit relatively high well losses (25%). The causes for high well losses (entrance velocity (Vn) through water well screen and the distance from the point of water entrance in the well to the point of intake in the pump) are discussed and the relationships are constructed, which seem a positive linear correlation. Relationships between well losses constant for 30 wells with transmissivity and specific capacity, are constructed. These relationships are useful for estimating hydraulic characteristics that are needed for the designs of wells and well fields and for preliminary water-resources management.

## KEYWORDS
Nubian Sandstone Aquifer; Transmissivity; Specific Capacity; Well Loss; Entrance Velocity; Well Efficiency

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