AN INVERSE PROBLEM IN AQUIFER PARAMETER IDENTIFICATION

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1. Introduction

By definition an aquifer is a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs. Aquifers, or water-bearing formations, can be characterised largely by two parameters: the storage coefficient S and the transmissivity T .

The storage coefficient is defined as the volume of water that a vertical column of aquifer with a unit area will release or take up if the piezometric surface changes by one unit. The coefficient is dimensionless involving a volume of water per unit volume of aquifer.

The transmissivity of an aquifer is defined to be the product of its thickness b by its hydraulic conductivity k , viz.

(1) $T = kb$.

As the dimension of k is $[LT^{-1}]$, the dimension of transmissivity is $[L^2T^{-1}]$.

Any project for development of groundwater resources in a given region requires a good knowledge of the aquifer's quantitiative and