

GEOSTATISTICAL ANALYSIS AND INVERSE MODELING OF THE AVRA VALLEY AQUIFER

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ABSTRACT

The geostatistical method of kriging is used to analyze log-transmissivity data from aquifer tests conducted in Avra Valley. This analysis yields estimates of spatially averaged log-transmissivities over finite subregions of the aquifer, plus the variance of the error of each estimation, as well as the covariance of the errors of each pair of estimated values. This information together with measured groundwater level data form the input for the statistical inverse model. The output from the inverse model is a modified set of log-transmissivity estimates for each subregion plus the covariance matrix of the corresponding estimation errors. The magnitude of the errors derived from the inverse model is less than that derived from the kriging analysis. Thus, the modified log-transmissivity estimates can be used to model the aquifer with greater certainty than would be possible without the statistical inverse procedure.