AOGS 2005

Sensitivity Analysis for Optimization Model for Groundwater Development in Coastal Areas

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A four-stage strategy (Park et al., 2004) is proposed as a guideline to maximize the benefit of ground water development in coastal areas while minimizing the develop cost (Hong et al., 2003). A simulation-optimization model is developed to aid decision making processes in the first part of the strategy (Park et al., 2003). The model is very flexible in that it can optimize not only the distribution of pumping rates and locations, but also control measures to prevent/reduce saltwater intrusion.
This presentation discusses the result of the sensitivity analysis for the model. The purpose of a sensitivity analysis is to quantify the uncertainty in the calibrated model caused by uncertainty in the estimates of aquifer parameters, stresses, and boundary conditions (Anderson et al., 1992). In this work the influence of hydraulic conductivity, recharge rate and aquifer thickness on the ratio of optimal pumping rates and optimal well location is studied (Figure 1).

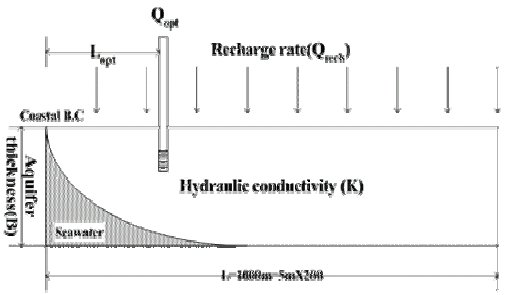

Figure 1: The schematic diagram of unconfined aquifer

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