

Optimal combined operation of production and barrier wells for the control of saltwater intrusion in coastal groundwater well fields

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Received 29 August 2010; Accepted in revised form 18 December 2010

ABSTRACT

This study develops a methodology based on simulation-optimization to derive optimal combined operation plans for the management of production and barrier wells in a coastal aquifer in order to ensure the sustainable use of the fresh water resource. A numerical model for the simulation of saltwater intrusion process, a neural network based meta-model and a multi-objective genetic algorithm are used in a linked simulation-optimization approach to develop the management model. The pumping strategies derived using the management model was found to be effective in finding optimal and sustainable operation strategies for coastal well fields by controlling saltwater intrusion.

Keywords: Optimization; Groundwater; Coastal aquifer

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