

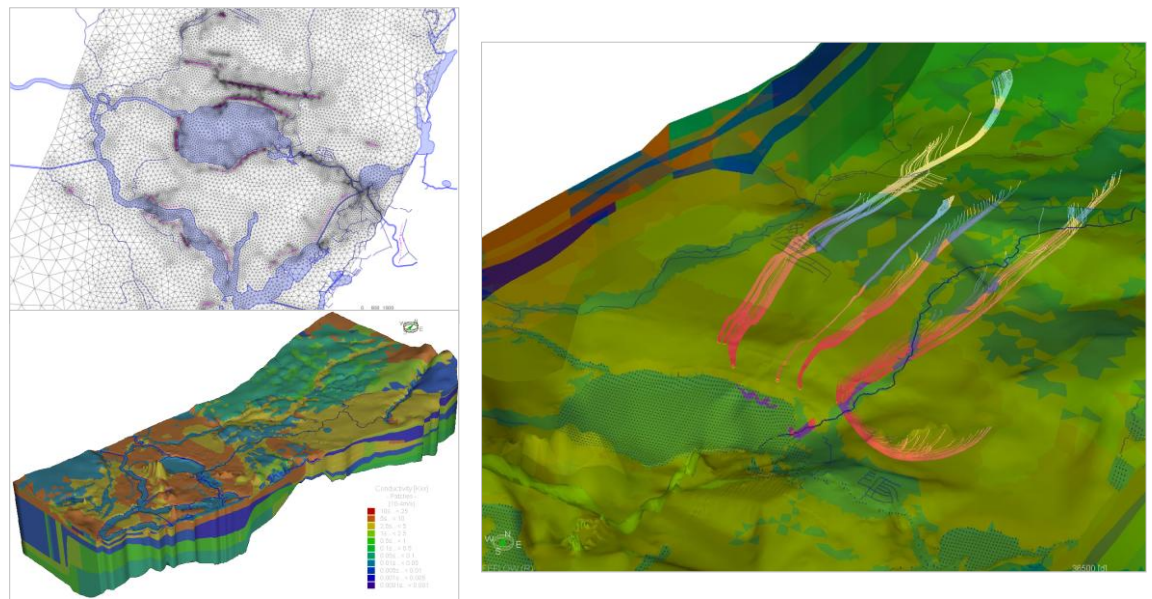
## A 3D Regional Groundwater Model for Waterworks Operation

(2009-2010)

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<b>Location</b>	Berlin-Friedrichshagen, Germany
<b>Type of project</b>	3D variably-saturated model for regional groundwater flow
<b>Client</b>	Berliner Wasserbetriebe, Germany

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**Objective** The Friedrichshagen waterworks in Berlin, Germany, seeks an effective and efficient model-based tool for the optimum operation of the waterworks. Of particular interest are support of water-resources management decisions and environmental impact assessments within the project area.

**Approach** A three-dimensional FEFLOW<sup>®</sup> regional groundwater flow model was built for the catchment area of the Friedrichshagen waterworks. The model extends over three aquifers and three aquitards and also includes several surface-water bodies, twelve well fields with a total of 280 wells, and five additional waterworks located in the project area. To accurately represent the partially saturated conditions in the upper aquifer, the model domain was considered variably saturated with flow described by the nonlinear *Richards* equation using modified *van Genuchten* soil-hydraulic relations.

**Benefit** The entire groundwater system of the project area is represented in the FEFLOW<sup>®</sup> model which has become an effective tool to evaluate groundwater management scenarios, assess groundwater-related activities in the project area, and facilitate planning and decision-support for the long-term waterworks operation.