



# Three-Dimensional Groundwater Flow Model for Consortium of Indian Tribes

## Coachella Valley, California

A consortium of Indian Tribes living in the Coachella Valley near Palm Springs, California, was particularly concerned with the management of their water resources, particularly the maximum sustainable production of groundwater, or safe yield, from the valley's underground system. In response to their needs, the Horsley Witten Group, Inc. (HW) worked with the tribes to evaluate how much water could be withdrawn from the system without causing groundwater mining and eventual depletion.

HW examined the land uses found within wellhead protection areas to determine how they affect drinking water quality, and assessed the real and potential impacts of pumping too many wells in a local area and the resultant effect on groundwater resources. HW developed a three-dimensional groundwater flow model for the valley. The U.S. Geological Survey model, MODFLOW, was used to create the model and was built using existing data available on the valley's geology and hydrogeology, including the location, depth and rates of all known water withdrawals and artificial recharge sites.

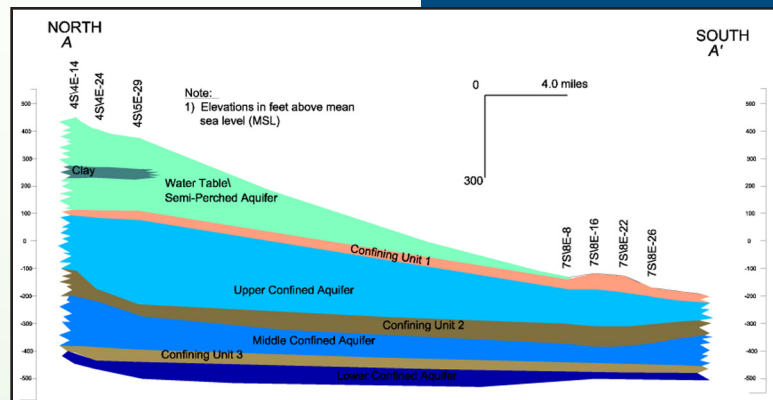
The incorporation of GIS technology allowed HW to further develop the models and to obtain more accurate results that can be integrated and used in a variety of scenarios for future monitoring and testing. The model has been used thus far to evaluate the water budget in the valley aquifer system and to quantify the current overdraft from municipal and agricultural withdrawals.

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