Calibrated Hydraulic Conductivity (Figures 8a through 8g)
Southern New Castle County, Delaware

The spatial distributions of hydraulic conductivity within model layers was determined by gridding observations and estimates of hydraulic conductivity (K), spatial averaging of results into zones of similar K values, and conditioning by calibration for all nine layers, which are illustrated in Figs. 8a - 8g. Two of the nine layers, 6 and 8, are not shown because hydraulic conductivity for these layers had a uniform value. Sedimentary deposits typically exhibit anisotropic hydraulic properties — specifically, they are more permeable in the horizontal direction than they are in the vertical direction (Anderson and Wiesmeier, 1992). The magnitude of anisotropy is poorly understood for the study area. As a result, an initial anisotropy ratio of K (horizontal Kx : vertical Kz) was adjusted during the calibration process. This ratio is poorly understood for the study area. As a result, an initial anisotropy value was adjusted during the calibration process.

Hydraulic conductivity for layers representing confining units (layers 2 and 4) vary from very low values in the southwest to higher values in the northeast. Areas with lower K values represent locations where confining units are thick; areas with higher K values represent locations where an individual confining unit is missing due to erosional truncation or stratigraphic pinch out. To avoid numerical instabilities due to sharp changes of K, several transition zones were added in which K values vary gradually (Figs. 8b, 8d).

Reference Cited
