CHAPTER 6

More on Sources and Sinks

COMMON MODELING ERRORS

- The modeler specifies the wrong sign when the discharge rate of a well is input causing injection of water instead of pumping. The modeler should check simulated head contour lines and the computed water budget to verify that pumping is appropriately represented.
- The modeler uses a code that includes procedures for reducing well discharge in unconfined layers affected by a seepage face along the well bore but fails to realize that the code reduces modeler-specified pumping rates in response to the formation of a seepage face. Hence, the simulated well discharge is less than specified by the modeler. The modeler should always check discharge rates reported in model output to make sure that simulated wells are pumping the correct volume of water.
- Recharge is specified for only the top layer of the model when the water table also occurs in lower layers (e.g., see Fig. 4.6). The amount of water input to the model is less than the modeler intended because the code did not rout recharge to the water table in the highest active layer.
- Dry cells or inactive cells above water table nodes (e.g., see Fig. 4.6) prevent application of recharge to the water table because the code does not allow water table cells below inactive cells to receive recharge. The amount of water input to the model is less than the modeler-intended because the code could not rout recharge to the water table in the highest active layer.
- Ephemeral streams are simulated as HDB conditions allowing unrealistic volumes of water into the model. The modeler should use drain nodes or a code that allows stream cells to go dry (e.g., the SFR Package in MODFLOW) to simulate ephemeral streams.
- Drains are used to simulate features that lose appreciable water to the groundwater system under field conditions. Drains are inappropriate when simulating features that recharge the groundwater system. The modeler should use another type of HDB condition.
- Incorrect values of lakebed leakance are input to the Lake Package in MODFLOW but go undetected because the modeler neglected to check the listing of lakebed properties in the code's output.

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