7. Our analysis in class showed that $K \propto \rho gd^2/\mu$. Therefore, because oil has a slightly lower density and a much higher viscosity than water, its hydraulic conductivity will be smaller.

8. Remember that Darcy’s law applies for low Reynolds number. To be safe, require $Re < 1$. Also, the velocity scale in the Reynolds number is the specific discharge $Q/A$, not the average linear velocity $Q/(n_eA)$.

9. Most groups obtained a correct numerical value. I did want you to think about the data. For example, the point at $t = 10 \text{d}$ seems to be too high.

11. The most common error here was to omit some of the requested information—for example, some comment about the match between the theory and the heads predicted by the model. Also, doubling $K$ doubles the flow in and out of the constant head boundaries, but since the heads are fixed, they do not double. (What does that mean about calibrating the hydraulic conductivity to match measured heads?)

12. When I ask you to explain an answer (e.g., ”Explain the differences in the gradients in soils 1 and 2.”), I am looking for a physical answer. In this case, with a constant flow the gradient will be larger in the soil with the smaller conductivity because Darcy’s law says that to get the same flow, the driving force would need to be larger.

13. All terms except aquifuge could belong in the set of aquifers since they all bear water. However, you could argue that aquitards do not belong in the set of aquifers because they do not transmit water in sufficient quantities for wells. Confined aquifers and artesian aquifers are identical. Similarly, unconfined aquifers and phreatic aquifers are identical. All perched aquifers are unconfined.