

CWR 5125 – GROUNDWATER HYDROLOGY
HOMEWORK No. 6 – Fall 2023
Instructor: Professor Fuentes

Required homework is graded over 100 and all problems have same value.

Reading Assignment: Module 4 (*Chapter 6, 7 and 8 Selected Sections and Handout*)

Required Problems: 8.2.5 and 8.7.1

Problem A. An accidental spill from a point source introduced 10 kg of contaminant mass to an aquifer. The seepage velocity in the aquifer is 0.1 ft/day in the x-direction. The longitudinal dispersion coefficient $D_L = 0.01 \text{ ft}^2/\text{day}$, the lateral and vertical dispersion coefficient, $D_y = D_z = 0.001 \text{ ft}^2/\text{day}$.

a) Calculate maximum concentration at $x = 100 \text{ ft}$ and $t = 5 \text{ years}$. What would you answer be if the D_L could be 25% higher?

b) Calculate the concentration at point $x = 200 \text{ ft}$, $y = 5 \text{ ft}$, $z = 2 \text{ ft}$, 5 years after the spill. If the water quality standard is 0.001 mg/L, would you conclude that the site is contaminated?

(Due Date: Thursday, November 30, 2023, or best any day earlier)

Final Exam: December 5, 2023, 5:00 PM at EC 1114