

Name: \_\_\_\_\_

## EAS 303 – Hydrology

### Problem Set 5

Due: Tuesday, December 7<sup>th</sup>, 2010

**Directions:** Answer the following word problems, showing all work. No partial credit will be given for unsupported answers.

1. Read Chapters 11 & 12! There will be materials from Chapter 12 on the 3<sup>rd</sup> Exam!
2. From Chapter 11 of your text (Ward and Trimble, p. 321-338), complete the following problems: 11.1, 11.2, and 11.4. NOTE: The explanation for the Chapter 11 problems STARTS on page 337!
3. What is the Transmissivity of a multi-layer aquifer system with the following characteristics:
  - a. Layer A → thickness (b) = 23m, Hydraulic conductivity (K) = 0.2 m/day
  - b. Layer B → b = 4.2m, K =  $1 \cdot 10^{-6}$  m/day
  - c. Layer C → b = 2.4m, K = 0.5 m/day
  - d. Layer D → b = 9.0 m, K =  $1 \cdot 10^{-8}$  m/day
  - e. Layer E → b = 470 m, K =  $1 \cdot 10^{-2}$  m/day
4. A confined aquifer is 33m thick and 7km wide. Two observation wells are located 1.2km apart in the direction of flow. The head in well 1 is 97.5m and in well 2 is 89.0m. The hydraulic conductivity is 1.2m/day. What is the total daily flow of water through the aquifer?
5. A piezometer is screened 723.4m above mean sea level. The point-water pressure head in the piezometer is 17.9m and the water in the aquifer is fresh at a temperature of 20°C.
  - a. What is the **total head** in the well at the water table?
  - b. What is the **total head** in the aquifer at the point where the piezometer is screened?