

CWR 3540 – WATER RESOURCES ENGINEERING – Fall 2024

Study Material: Modules 4 and 5

Homework Set No.7:

Due on Thursday, November 21, 2024, at the start of the lecture

[This homework set can be solved either individually or in teams of up to 2 (two) students. If you work in a team, both team members may present only one hard copy of the solution and must include their full names and signatures in the uppermost right side of the first page. Both individual and team effort are graded on the same basis.]

Required Problems (A and B) below:

Problem A. The hydrograph shown herein below resulted from a 2-h duration rainstorm, which was recorded over a drainage area of 8,000 acres.

a) Using the simplest method (i.e., Method 1), separate the baseflow from the direct runoff. Next determine and report the volume of surface runoff and the average depth of runoff over the entire drainage area *in inches*.

Problem B. In reference to Example 9.8 of our textbook (p. 368), evaluate the sensitivity of the synthetic unit hydrograph to the duration of the storm, t_r . Do notice that information about the drainage area is presented in the problem statement of Example 9.7 (p. 366). In order to assess that sensitivity you may, at least, repeat the text solution of Example 9.7 (which is only for $t_r = 4$ hours) for t_r values of 2 and 6 hours. Then compare, at least, the difference among all the determined Q_p values for those three t_r values.

Recommended Practice Problems:

9.1, 9.2, 9.4, 9.8, 9.12, 9.14, 9.16, and 9.18, among all others that are available in Chapter 9 of our textbook.

Final Exam: Tuesday, December 10, 2024

