BAE 590-601: DRAINMOD Spring 2011

Homework 4: Surface Storage and Drainage Coefficient

Due by 5PM EST on Friday, February 11, 2011

FILES TO SUBMIT

- **NOTE: Skip Abstract, Problem Statement, and Methods sections for this assignment**

  Report in .doc or .docx format and named as shown below. Replace LastName with your last name.

  - ✓ LastName.590.2011.HW04

- Spreadsheet in .xls, .xlsx, .xlsm format and named as shown below.
  - ✓ LastName.590.2011.HW04

- Zip file(s) including DRAINMOD inputs (PRJ, GEN, SIN, RAI, and TEM). Name your PRJ and GEN file as shown below.
  - ✓ YourInitials_hw04

    - For example, my PRJ file would be named: bdp_hw04.prj
    - If you use different project files for each drain depth, label similar to the following scheme:
      1. bdp_hw04_90cm.prj
      2. bdp_hw04_120cm.prj
      3. Etc…
    - As long as your PRJ and GEN files begin with YourInitials_hw04, a naming scheme is up to you
    - If you use the *Backup* button from within DRAINMOD to zip your project, the zip file generated should reside in your inputs folder.

- PDF's of any referenced material not distributed in the course (when possible)

HW INFORMATION

- Total possible points: 50
- Use the report template – minus Abstract, Problem Statement, Methods
- Post questions to the *Homework Q & A* forum
- Problems 1 and 2: Unless stated otherwise, inputs are the same as in HW 3, Problem 3

PROBLEM STATEMENT

1. (30 pts) **Surface Storage**: Refer to HW3 - Problem 3.

   Drains are spaced 20 m apart and 1.0 m deep. Determine the effect of surface drainage on the two objective functions: working days and SEW_{30}. Perform simulations for surface storages of **5.0**, **3.0**, **1.5**, and **0.5** cm. Kirkham's depth is ½ surface storage.

   Repeat the analysis for drain spacing of 100 m.

   ► Tabulate workings days and SEW for each surface storage for each drain spacing (1 table)

   ► Plot working days vs. surface storage for each spacing (1 plot)

   ► Plot SEW vs. surface storage for each spacing (1 plot)

   ► What is your conclusion regarding the effect of surface drainage?

2. (20 pts) **Drainage Coefficient**: Again consider HW3 - Problem 3.

   Drains are spaced 20 m apart and 1.5 m deep. Surface depressional storage is 1.5 cm. Determine the effect of drainage coefficient (DC) on the two objective functions: working days and SEW_{30}. Perform simulations for DC values of **0.1**, **0.25**, **0.5**, **1.0**, **1.5**, **2.0**, and **2.5** cm/day.

   ► Tabulate working days and SEW based on DC (1 table)

   ► Plot Working days and SEW vs. DC (1 plot)

   ► Compare the results

NOTE: Don't forget to discuss results for each problem.