

CEE3430 Engineering Hydrology

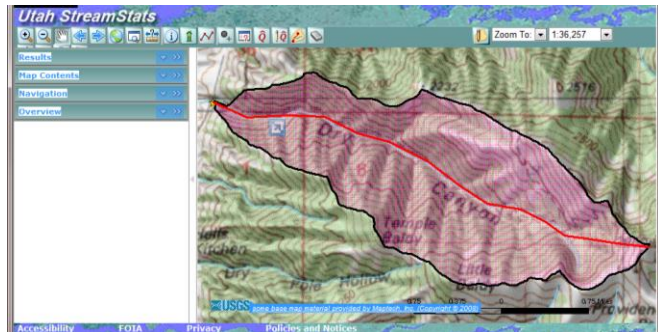
Homework 9. Routing and Hydrologic Modeling

Date: 4/7/14

Due: 4/14/14

Objective. To gain experience in hydrologic routing and to learn how to use HEC-HMS.

1. Mays 9.2.1
2. Mays 9.2.2
3. Solve Mays 9.2.2 using HEC-HMS
4. Mays 9.3.5
5. Mays 9.3.6
6. Consider Logan Dry Canyon with the following watershed properties determined from StreamStats from homework 7 and 8



$$A=3.58 \text{ mi}^2, L=4 \text{ mi}, L_{ca}=2 \text{ mi}$$

Assume $C_t=1.5$, $C_p=0.8$, hydrologic soil group C and land use with curve numbers as follows

Forest-range - Herbaceous (fair condition)	40 %	CN=80
Juniper-grass (fair condition)	60%	CN=73

Assume average antecedent moisture conditions. From the NOAA PDFS website (<http://hdsc.nws.noaa.gov/hdsc/pfds>) the 100 yr 30 min cumulative precipitation is 1.2 in and 60 min cumulative precipitation is 1.49 in. On the basis of these the hyetograph for a design storm is

Time	0-30 min	30-60 min
Rainfall	0.29 in	1.2 in

Use HEC-HMS to determine the following

- a) Excess precipitation in each time interval
- b) The outflow hydrograph using the Snyder Unit Hydrograph approach.

The standard lag referred to in the inputs (and on page 156 of the HEC-HMS manual) is t_p from equation 8.4.1. The peaking coefficient is C_p .

Compare your answers to the corresponding answers obtained by hand in Homework 7 and 8.