Lesson 23: Changing Unit Hydrograph Durations

S-Hydrograph Method

Definition: The S-hydrograph is the DRH resulting from the continuous generation of rainfall excess at a rate of 1 unit (inch or cm) per hour.



Computing an S-Hydrograph

Using a t_r -UH:

1. Multiply the t_r -UH by the duration in hours.

 t_r -UH x t_r (known as the t_r -hr hydrograph)

- 2. Repeatedly lag this hydrograph by t_r .
- 3. Sum hydrographs from above steps (at least to a time $t \ge t_b$).

The resulting S-hydrograph may need to be interpolated to a finer time step.

Computing the *t_r**-UH

Using the S-hydrograph:

- 1. List the S-hydrograph values (in a table v. time).
- 2. Lag the S-hydrograph by a duration t_r^* .
- 3. Subtract the lagged S-hydrograph from the original S-hydrograph.
- 4. Divide the step 3 result by the new duration $(1/t_r^*)$. The final result is the t_r^* -UH.

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Computing the t_r *-UH from an S-Hydrograph Method

