CN RUNOFF AND HYDROGRAPH

AGSM 335
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CN Runoff Method

\[ S = \frac{1000}{CN} - 10 \]

\[ Q = \frac{(P - 0.2S)^2}{P + 0.8S} \quad \text{for} \quad P > 0.2S \]
**CN Runoff Method**

- Varies greatly with land cover
- Be careful to choose appropriate land cover for CN

![Graph showing runoff for varying land covers](image)

- *Crop (straight row)*
- *Crop (contour)*
- *Pasture*
- *Wooded*
CN Runoff Method

For 1000 acres (~1.6 mi²), 2 inch rainfall

Wooded = 3.26 acre-ft
Crop, straight row = 40.37 acre-ft

Difference = 37.11 acre-ft
CN Hydrograph

- Slope and hydraulic length can greatly affect time of concentration and time to peak flow

↑ Slope, ↓ Tp

↑ Hydraulic Length, ↑ Tp
CN Hydrograph

- Peak flow is also affected by slope and hydraulic length
  - \( \uparrow \) Slope, \( \uparrow \) q-peak
  - \( \uparrow \) Hydraulic Length, \( \downarrow \) q-peak

![Graph showing the relationship between hydraulic length, slope, and peak discharge.](image-url)
Lab 6

• Today we are going to use Excel to calculate the runoff from Brushy Creek watershed and create hydrographs.

• Compare the amount of runoff and hydrographs between existing and developed land cover.

• Print 2 copies of your Excel spreadsheet
  1. With formulas (Formulas tab → Show Formulas)
  2. With answers