Worksheet 2: Runoff curve number and runoff

Project	By	Date
Location	Checked	Date

Check one: ☐ Present ☐ Developed

1. Runoff curve number

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1/] Table 2-2	CN [1/] Figure 2-3	CN [1/] Figure 2-4	Area ☐ acres ☐ mi² ☐ %	Product of CN x area
					Totals ➡	

[1/] Use only one CN source per line

CN (weighted) = $\frac{\text{total product}}{\text{total area}}$ = _____ = _____ ; **Use CN ➡** ☐

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency	yr			
Rainfall, P (24-hour)	in			
Runoff, Q	in			

(Use P and CN with table 2-1, figure 2-1, or equations 2-3 and 2-4)

Worksheet 3: Time of Concentration (T_c) or travel time (T_t)

Project	By	Date
Location	Checked	Date

Check one: ☐ Present ☐ Developed

Check one: ☐ T_c ☐ T_t through subarea

Notes: Space for as many as two segments per flow type can be used for each worksheet.
Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to Tc only)

	Segment ID	
1. Surface description (table 3-1)		
2. Manning's roughness coefficient, n (table 3-1)		
3. Flow length, L (total L † 300 ft) ft		
4. Two-year 24-hour rainfall, P_2 in		
5. Land slope, s ft/ft		
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t hr	+	=

Shallow concentrated flow

	Segment ID	
7. Surface description (paved or unpaved)		
8. Flow length, L ft		
9. Watercourse slope, s ft/ft		
10. Average velocity, V (figure 3-1) ft/s		
11. $T_t = \frac{L}{3600\ V}$ Compute T_t hr	+	=

Channel flow

	Segment ID	
12. Cross sectional flow area, a ft^2		
13. Wetted perimeter, p_w ft		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r ft		
15 Channel slope, s ft/ft		
16. Manning's roughness coefficient, n		
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V ft/s		
18. ~~Flow~~ length, L ft		
19. $T_t = \frac{L}{3600\ V}$ Compute T_t hr	+	=
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) Hr		

Worksheet 4: Graphical Peak Discharge method

Project	By	Date
Location	Checked	Date

Check one: ☐ Present ☐ Developed

1. Data

Drainage area ..... A_m = _____ mi^2 (acres/640)

Runoff curve number .....CN = _____ (From worksheet 2)

Time of concentration ..... T_c = _____ hr (From worksheet 3)

Rainfall distribution ..... = _____ (I, IA, II III)

Pond and swamp areas sprea throughout watershed ..... = _____ percent of A_m (_____ acres or mi^2 covered)

	Storm #1	Storm #2	Storm #3
2. Frequency ..... yr			
3. Rainfall, P (24-hour) ..... in			
4. Initial abstraction, I_a ..... in (Use CN with table 4-1)			
5. Compute I_a / P			
6. Unit peak discharge, q_u ..... csm/in (Use T_c and I_a / P with exhibit 4– _____)			
7. Runoff, Q ..... in (From worksheet 2) Figure 2-6			
8. Pond and swamp adjustment factor, F_p ..... (Use percent pond and swamp area with table 4-2. Factor is 1.0 for zero percent pond ans swamp area.)			
9. Peak discharge, q_p ..... ft^3/s			

(Where $q_p = q_u A_m Q F_p$)