

APPENDIX K: HYDROGRAPH RISE TIME

The hydrograph Rise Time (T_r) is determined in the following manner:

- a. For $T_c \leq 60$ minutes, read the corresponding value for T_r from Table K-1.
- b. For $T_c > 60$ minutes, determine T_r from the following equation:

Equation K.1
$$T_r = \frac{0.7869 P_n T_c}{P_c}$$

Where;

- T_r = hydrograph rise time, in hours;
- T_c = time of concentration, in hours;
- P_n = *n-hour precipitation depth, in inches; and,
- P_c = **precipitation depth at T_c , in inches.

*n-hour refers to the 2-, 3-, 6-, 12-, or 24-hour precipitation depths, where "n" should normally be the smallest of these values which is greater than T_c .

** P_c is calculated by linear interpolation between the calculated rainfall depths which bracket T_c . (e.g., if $T_c = 2.5$ hours then P_c is halfway between the 2-hour and 3-hour rainfall depths).

Hydrograph Rise Times for $T_c \leq 60$ Minutes
 (T_c and T_r are in minutes)

T_c	T_r	T_c	T_r
5	13.6	33	31.9
6	14.2	34	32.3
7	15.0	35	33.0
8	15.8	36	33.5
9	16.6	37	34.2
10	17.5	38	34.7
11	18.1	39	35.2
12	18.7	40	36.0
13	19.4	41	36.6
14	19.9	42	37.2
15	20.7	43	37.8
16	21.3	44	38.4
17	21.9	45	38.7
18	22.5	46	39.3
19	23.1	47	40.0
20	23.7	48	40.4
21	24.5	49	41.1
22	25.0	50	41.8
23	25.7	51	42.2
24	26.2	52	42.9
25	27.0	53	43.3
26	27.6	54	43.7
27	28.1	55	44.5
28	28.8	56	45.0
29	29.3	57	45.4
30	29.9	58	46.3
31	30.7	59	46.7
32	31.3	60	47.2

Table K.1 Hydrograph Rise Times for $T_c \leq 60$ minutes