

Figure 5.20. Nomogram for depth-duration relations for 24-hour PMP storms, Tennessee River basin (Zurndorfer and others, 1986)

- For 6-hour rainfall increments in a 24-hour storm, the four increments should be arranged with the second-highest next to the highest, the third-highest adjacent to these two, and the fourth-highest at either end. This still allows various arrangements, and the most critical is that which would yield the most critical streamflow.
- For 1-hour increments in the maximum 6-hour increment, any arrangement is acceptable, so long as it keeps the two highest 1-hour amounts adjoined, the three highest 1-hour amounts adjoined, and so forth.

5.3.2.8 PMP for specific basins

PMP for specific basins is estimated by the following steps:

- The basin on Figure 5.19 is outlined, and the mean 6-hour 2.6-km² PMP for the basin is determined.
- Figure 5.20 is used to obtain PMP for durations up to 24 hours.

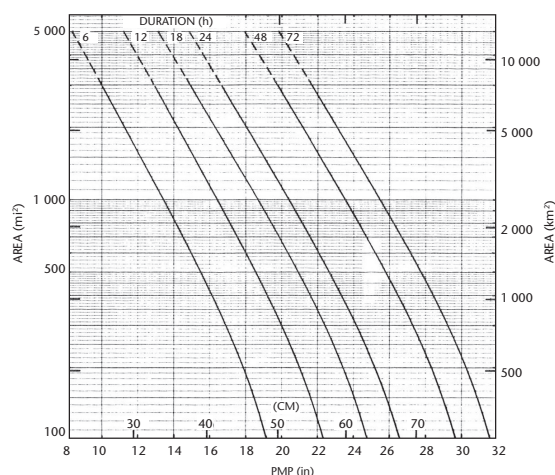


Figure 5.22. Non-orographic PMP at Knoxville, Tennessee (Zurndorfer and others, 1986)

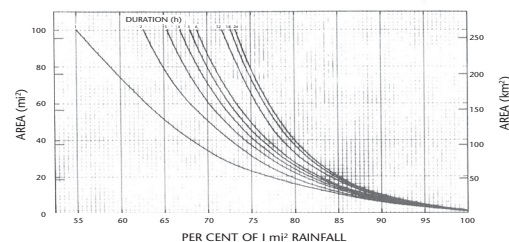


Figure 5.21. Depth-area relations for small basin estimates, Tennessee River basin (Zurndorfer and others, 1986)

- Figure 5.21 is used to adjust 2.6-km² PMP for basin size.
- A smooth enveloping depth-duration curve is constructed from data obtained in (c), and 1-hour increments are determined for the four 6-hourly increments of the 24-hour storm.
- Suggested critical time sequences (section 5.3.2.7) include: (i) hourly increments in the maximum 6-hour period: 6, 5, 4, 3, 1, 2, where 1 refers to the maximum 1-hour increment; and (ii) 6-hourly increments in a 24-hour storm: 4, 2, 1, 3, where 1 now refers to maximum 6-hour increment. Spatial distribution of rainfall is usually not required for basins of less than 259 km². If needed, the techniques discussed in section 5.3.3 can be used to distribute the rainfall.

5.3.3 PMP for drainages from 259 km² to 7 770 km² in the Tennessee River basin

The discussion which follows refers only to the Tennessee River basin above Chattanooga, Tennessee (Zurndorfer and others, 1986). The topography and moisture sources were discussed above, and topographic classifications are shown in Figure 5.14.

5.3.3.1 Derivation of non-orographic PMP

PMP was derived in the manner described in section 3.4.2. Storms for the eastern part of the country were maximized in place and enveloping isohyets constructed, thus applying an implicit transposition. PMP maps like that of Figure 3.20 were constructed for a number of area sizes and durations, with isohyets not only enveloping the data on each chart, but also showing smooth progression with varying area size and duration. Values read from these charts for the location of Knoxville, Tennessee, were used to develop the basic PMP depth-area-duration relations of Figure 5.22. The 24-hour 2 590-km² chart (not shown) was converted