



Figure 5.11. Isohyetal profiles for standard area sizes at 37° N, 89° W (Hansen and others, 1982)

the basin should be developed. Outside the PMP storm area the residual precipitation should continue to decrease. For the study in the eastern United States (Hansen and others, 1982), the tendencies from the nomograms for the first three increments were used to develop a nomogram (not shown) for computing isohyetal labels for residual precipitation for the remaining increments. A single nomogram was used for all nine increments.

5.2.7.5 Selection of area of PMP storm for drainage

The selection of area of the PMP storm pattern is based on maximizing the volume of precipitation within the drainage. The maximum volume is a function of the PMP storm-pattern centring, of the irregularity of the basin's shape, and of the area size of PMP distributed over the drainage. The pattern centring is a decision of the meteorologist or others determining the individual drainage estimate. If there are no meteorological or topographical controls on the placement of the pattern, it is recommended that the pattern be centred so as to place as many complete isohyets within the drainage as possible. The irregularity of the drainage is fixed, and the area of the PMP storm pattern is the remaining variable. This optimum area is determined by a series of trials. A first step is to choose areas that are near those of a standard isohyet (section 5.2.7.2) in an idealized pattern (Figure 5.5)

and that are both larger and smaller than the area size of the drainage. Next, the volume of precipitation for each of the three greatest 6-hour increments of PMP for the area sizes chosen are computed and the total volume of rainfall over the drainage is determined. Then, additional areas on either side of the area size that gave the maximum volume are chosen and the volume corresponding to each of these is evaluated. By this trial process, and by plotting the results as area size (selected) versus volume (computed), the area size in which the volume reaches the maximum can be determined.

5.2.7.6 Stepwise procedure

The procedures developed for determining maximum volume over the drainage utilizes the sum of the volumes for the largest three 6-hour increments of PMP. The example given below shows the procedure for the greatest increment. The procedure for the other two increments is the same.

(a) 6-hour incremental PMP:

- (i) Depth-area-duration data is obtained from generalized study (such as those represented in Figure 5.3) for the location of the drainage.
- (ii) The data in (a)(i) is plotted on a semi-logarithmic graph (area on the log scale) and a smooth curve through points for common duration is drawn.