

Recommendation for: Harris County Rainfall Patterns in HEC-HMS (Revised 02/13/2002)

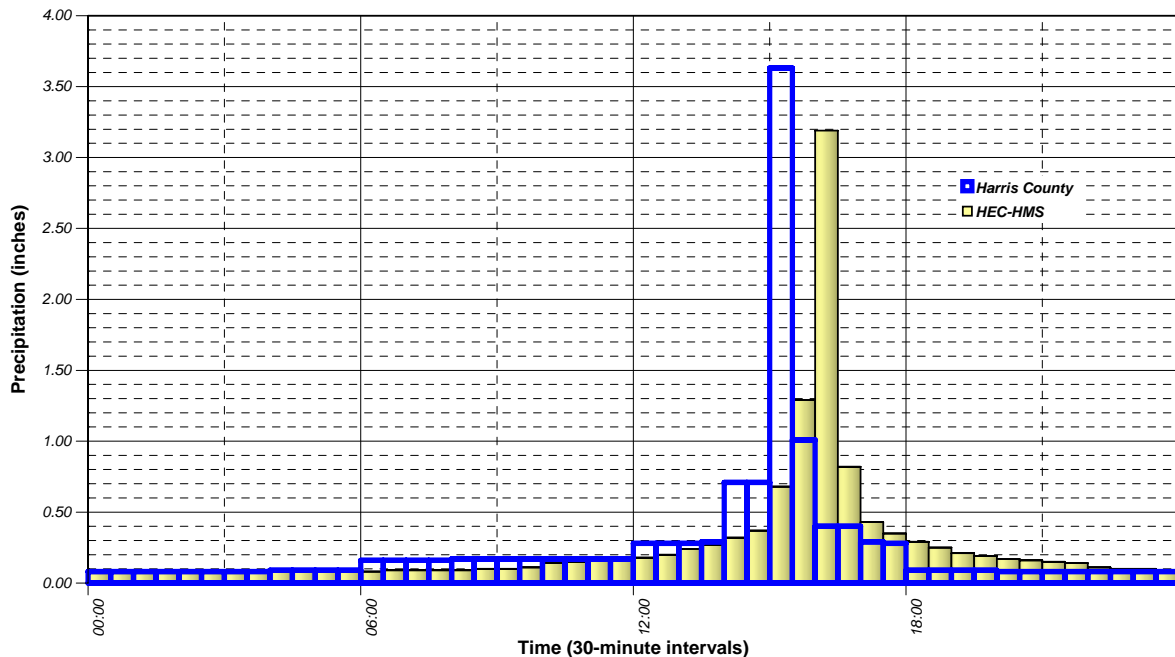
Goal: To determine whether the frequency-based rainfall pattern available in HEC-HMS provides an adequate substitute to the Harris County traditional rainfall pattern. The frequency-based rainfall in HEC-HMS allows the user to shift the peak of the storm from 50% of the storm duration (center-peaking event similar to HEC-1) to 25%, 33%, 67%, or 75% of the storm duration.

Recommended Procedure: It is recommended for ease of input that the 67% peak be used as an alternative to the traditional Harris County rainfall pattern. To do this, the following steps should be taken:

1. Determine the 15-minute, 60-minute, 2-hour, 3-hour, 6-hour, 12-hour, and 24-hour rainfall amounts for the rainfall event in question (i.e., 2-year, 10-year, 100-year, etc.).
2. Open a new meteorological file, choose the frequency-based rainfall option, and insert the data from Step #1 in the appropriate cells.
3. In the cell marked defined as "Peak Center," choose 67%.

Assumptions: The traditional (standard) Harris County rainfall can be adequately represented using the frequency-based rainfall options available in HEC-HMS. Figure 1 shows the differences between the two hypothetical storm patterns.

Figure 1: Harris County vs. HEC-HMS Rainfall



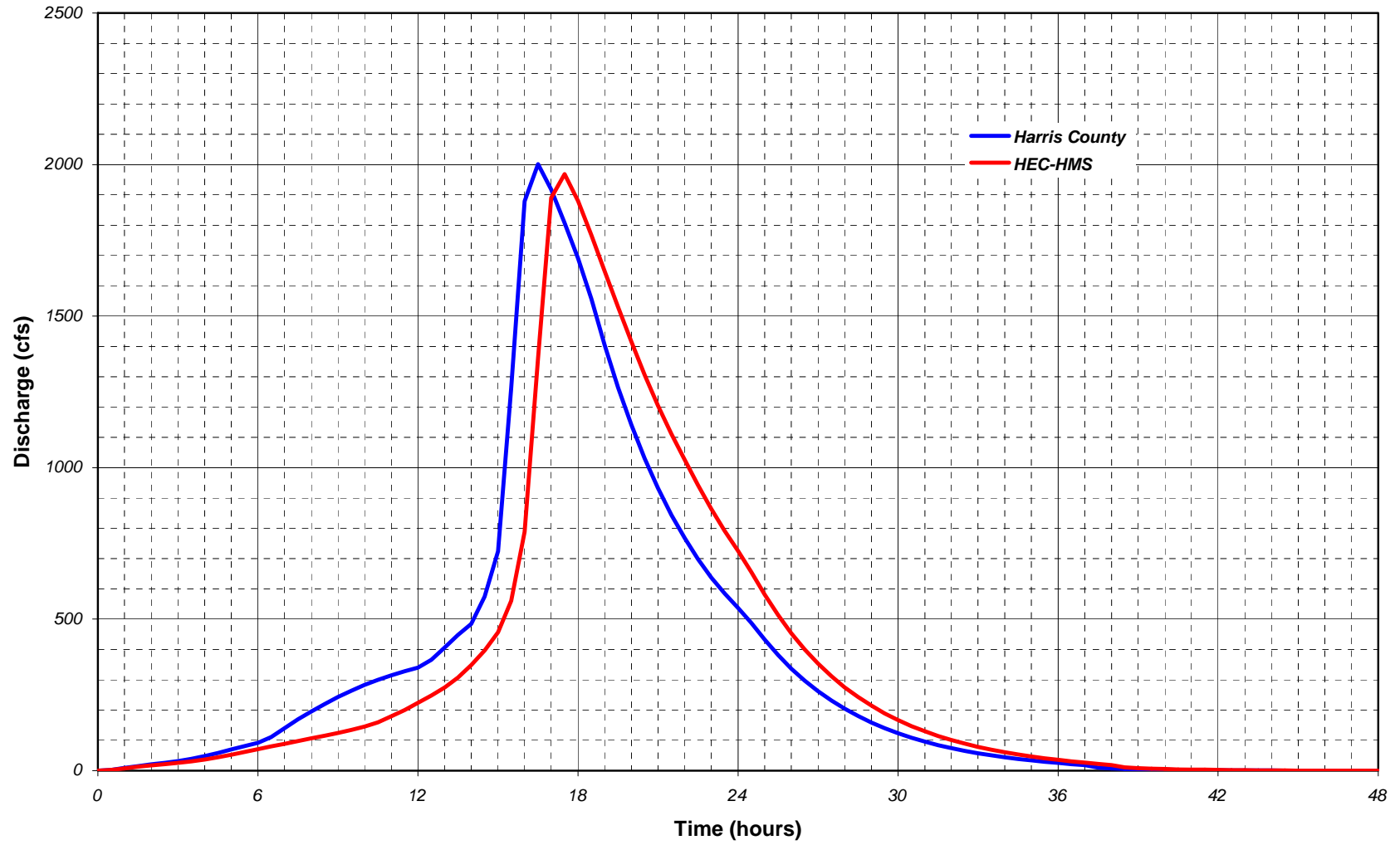
Testing Procedure: In order to evaluate the possibility of using this HEC-HMS option, a portion of the White Oak Bayou watershed (above Jersey Village) was analyzed using both the standard Harris County rainfall pattern and the HEC-HMS substitute. A comparison was then made for two subareas (E100C and E127A) as well as a combination point (E100#7). The two subareas had drainage areas of 2.22 and 2.18 square miles, respectively, and the combination point had a total drainage area of 20.22 square miles.

Test Results: The attached graphs indicate that while there is a change to the timing of the hydrographs (i.e., the HEC-HMS method produces peaks which are about an hour later than the standard Harris County method), the peak discharges appear to be very similar in magnitude (within 2%). The change in timing is expected due to the one hour difference in peak rainfall timing. Based on the results from this testing, it would appear that the HEC-HMS method would provide an adequate substitute with simpler input than the standard Harris County rainfall pattern.

Final Notes: No additional notes.

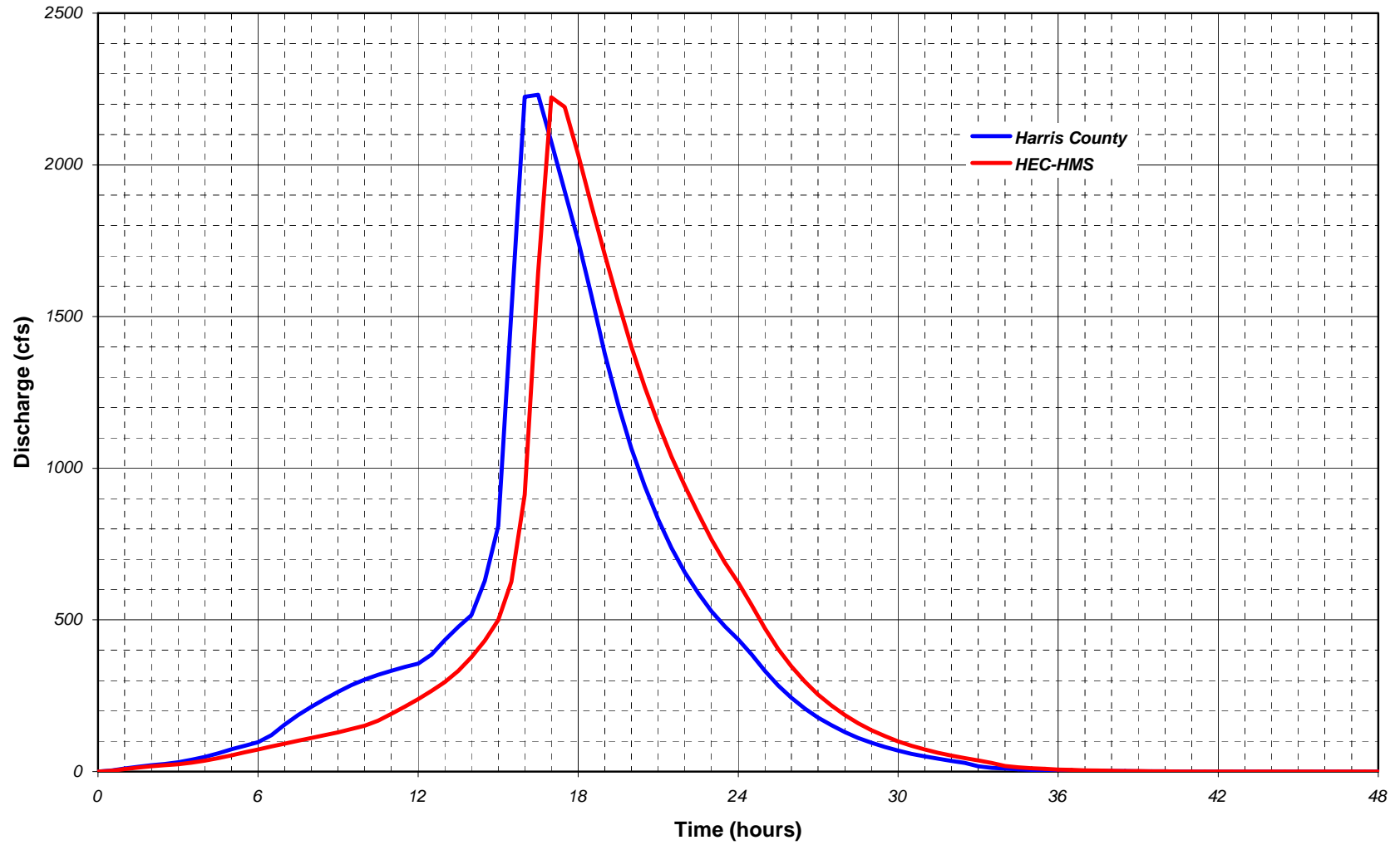
Committee Resolution: Use the frequency based distribution in HMS with the peak at 67%.

Effects of Different Rainfall Patterns on Hydrographs E100C



Effects of Different Rainfall Patterns on Hydrographs

E127A



Effects of Different Rainfall Patterns on Hydrographs

E100#7

