

**INTRODUCTION**  
Significant flooding occurred throughout the Midwest and South during the storm of December 2 to 6, 1982. The storm of December 2 to 6, 1982, was the most destructive flooding event in the Midwest since the breaking flood season and discharge data in this area are primarily for this storm. The study area (fig. 1) includes approximately 25,000 square miles in southern Missouri and northern Arkansas.

These floods are documented for future hydrologic studies and to provide a basis for the development of flood basins, and to further the hydrologic knowledge of the region. This report includes hydrologic data including elevations, discharges, recurrence intervals, hydrographs, water-surface profiles, volumes, and peak discharges with frequencies (recurrence intervals). Flood discharges with frequencies (recurrence intervals) are given for 2, 5, 10, 25, 50, 100, and 200-year return periods. Current River, Description of the December 2 to 6, 1982, storm resulting from the rainfall of December 2 to 6 is given.

**DESCRIPTION OF STORMS**  
The storm of December 2 to 6, 1982, was caused by a low-pressure system moving from the southwest toward the lower Mississippi River basin. Low movement toward the southwest produced moderate and severe weather conditions over the study area. The storm of time (Sauer and Fulkert, 1983, p. 3). Large storm clouds moved from the southwest toward the study area (fig. 1) and it is believed that the storm was moving from the southwest toward the study area. The storm of time (Sauer and Fulkert, 1983, p. 3). Large storm clouds moved from the southwest toward the study area (fig. 1) and it is believed that the storm was moving from the southwest toward the study area.

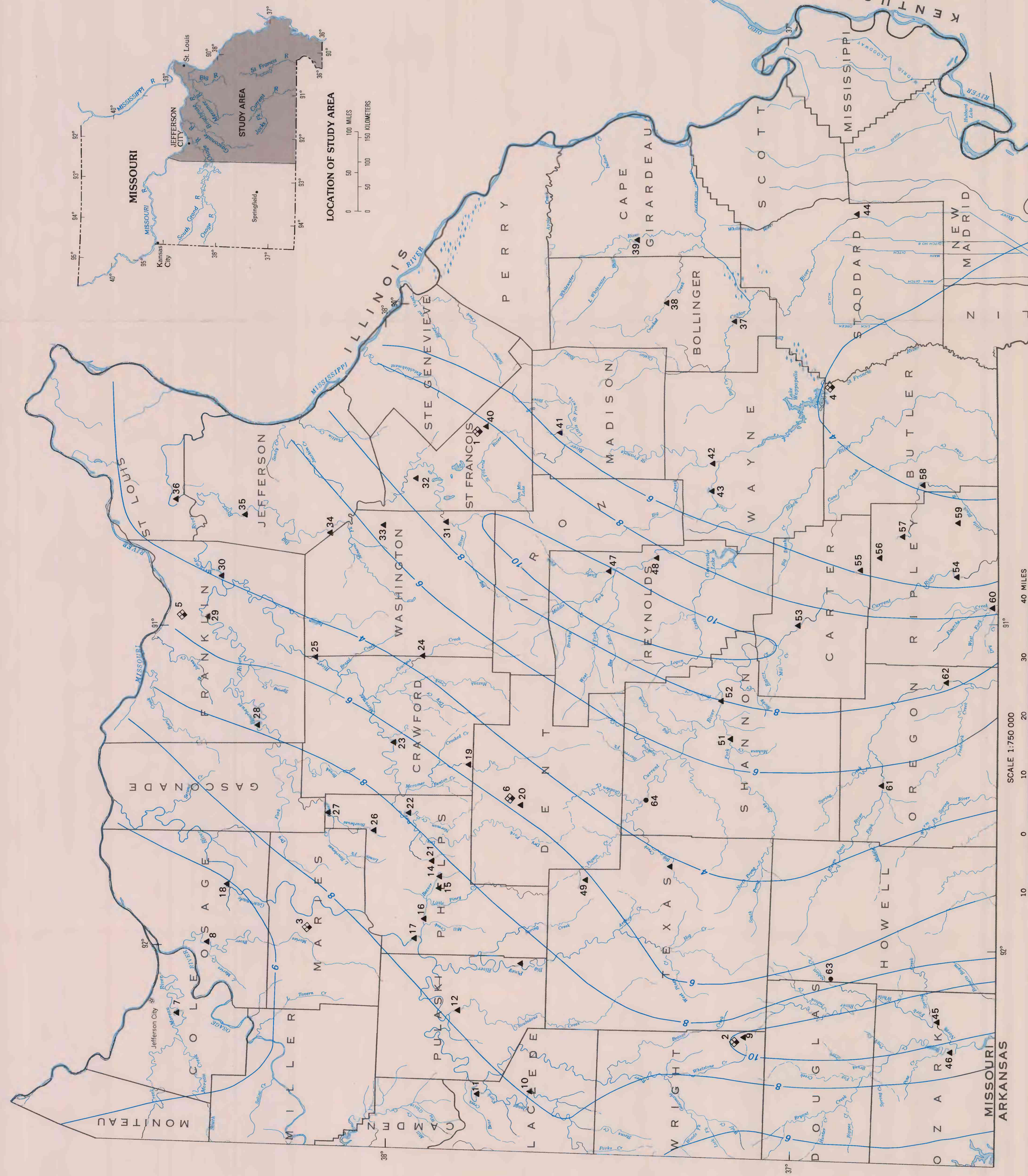


Figure 1.—MAP SHOWING LOCATION OF PRECIPITATION GAUGES, STREAMFLOW-GAGING AND MISCELLANEOUS STATIONS, WELL SITES, AND DISTRIBUTION OF PRECIPITATION, DECEMBER 2 TO 6, 1982

Table 1.—Precipitation totals and recurrence intervals for December 2 to 6, 1982 storm

| No. | Name                              | Elevation (ft) | Precipitation (inches) |         | Recurrence interval (years) |       |
|-----|-----------------------------------|----------------|------------------------|---------|-----------------------------|-------|
|     |                                   |                | Dec 2-6                | Dec 2-6 | 2                           | 5     |
| 1   | Meramec River near Jefferson City | 611            | 19.04                  | 14.2    | 100,000                     | 85    |
| 2   | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 3   | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 4   | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 5   | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 6   | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 7   | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 8   | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 9   | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 10  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 11  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 12  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 13  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 14  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 15  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 16  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 17  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 18  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 19  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 20  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 21  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 22  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 23  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 24  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 25  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 26  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 27  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 28  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 29  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 30  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 31  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 32  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 33  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 34  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 35  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 36  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 37  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 38  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 39  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 40  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 41  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 42  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 43  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 44  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 45  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 46  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 47  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 48  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 49  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 50  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 51  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 52  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 53  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 54  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 55  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 56  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 57  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 58  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 59  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 60  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 61  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |
| 62  | Meramec River near St. James      | 376            | 16.16                  | 30,000  | 85                          | 10,14 |

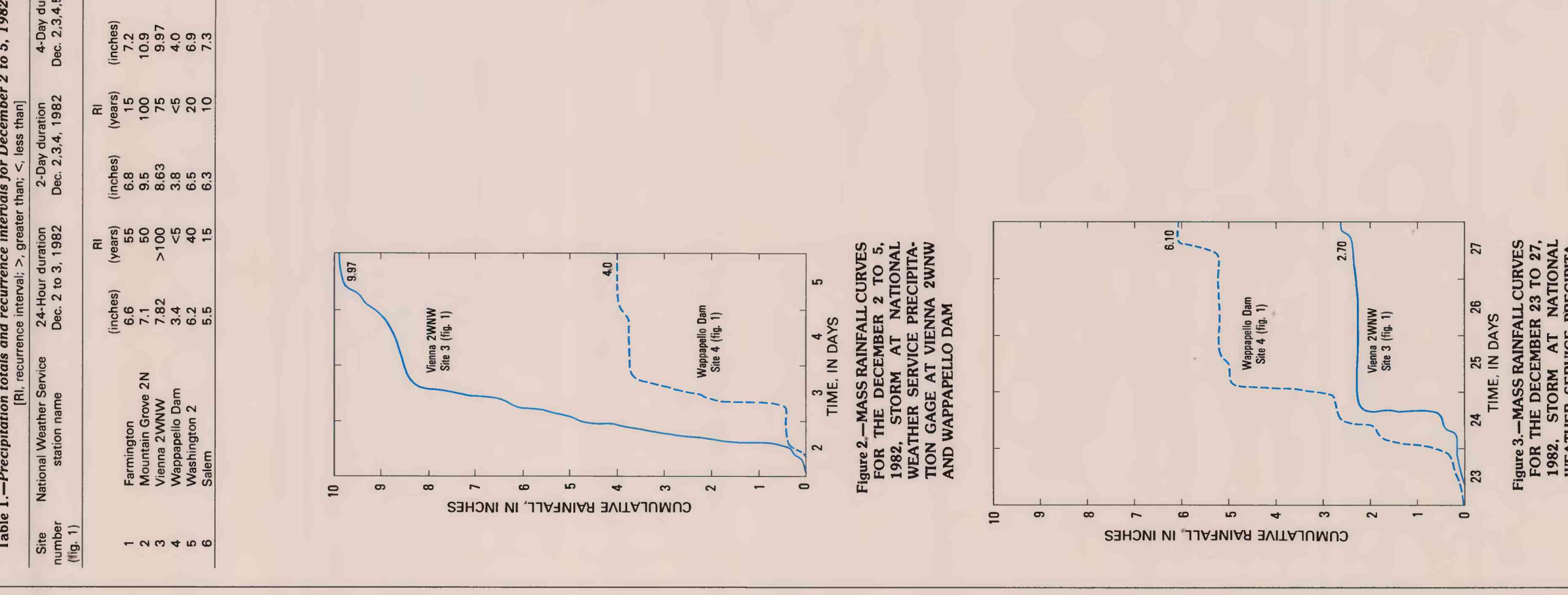


Figure 2.—MASS BALANCE CURVES FOR THE DECEMBER 2 TO 6, 1982 STORM. CURVES SHOW PRECIPITATION, INFILTRATION, AND RUNOFF. PEAK RUNOFF WAS 1.16 INCHES PER SECOND ON DECEMBER 4.

**RECURRENT INTERVAL**  
The knowledge of flood recurrence intervals is essential for the design of flood control structures where cost must be balanced against flood damage. The recurrence interval is the average number of years which will be equaled or exceeded on the average of once in 100 years. The recurrence interval is the average number of years which will be equaled or exceeded on the average of once in 100 years. The recurrence interval is the average number of years which will be equaled or exceeded on the average of once in 100 years.

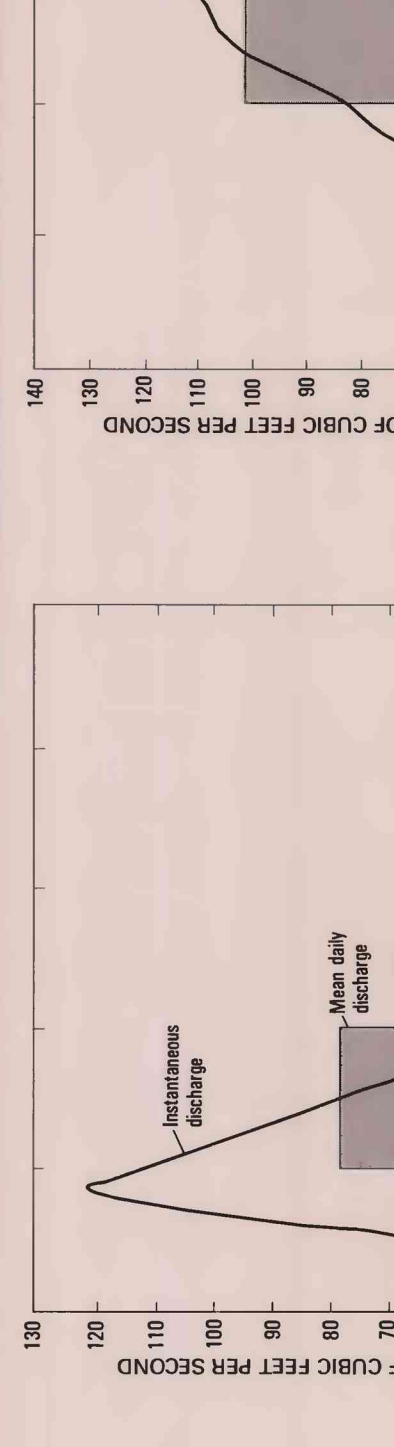


Figure 3.—DISCHARGE HYDROGRAPH AND VOLUME FOR U.S. HIGHWAY 21 AT DONIPHAN (0748600)



Figure 4.—DISCHARGE HYDROGRAPH AND VOLUME FOR U.S. HIGHWAY 21 AT MERAMEC RIVER NEAR EUREKA (0701900)



Figure 5.—DISCHARGE HYDROGRAPH AND VOLUME FOR U.S. HIGHWAY 21 AT GASCONADE RIVER NEAR JEROME (0693350)



Figure 6.—DISCHARGE HYDROGRAPH AND VOLUME FOR U.S. HIGHWAY 21 AT MERAMEC RIVER NEAR EUREKA (0701900)

**FLOOD DISCHARGE**  
The discharge hydrograph for the storm of December 2 to 6, 1982, is shown in figure 3. The discharge hydrograph for the storm of December 2 to 6, 1982, is shown in figure 3. The discharge hydrograph for the storm of December 2 to 6, 1982, is shown in figure 3.



Figure 7.—DISCHARGE HYDROGRAPH AND VOLUME FOR U.S. HIGHWAY 21 AT DONIPHAN (0748600)



Figure 8.—COMPARISON OF DECEMBER 2 TO 6, 1982, PEAK DISCHARGES TO UPPER LIMITS OF KNOWN FLOODS IN MISSOURI



Figure 9.—WATER-SURFACE PROFILE FOR BOURBEUSE RIVER, FLOOD OF DECEMBER 2 TO 6, 1982



Figure 10.—WATER-SURFACE PROFILE FOR MERAMEC RIVER, FLOOD OF DECEMBER 2 TO 6, 1982

**FLOOD DAMAGES**  
The flooding during the storm of December 2 to 6, 1982, caused extensive damage to property and infrastructure in the study area. The flooding during the storm of December 2 to 6, 1982, caused extensive damage to property and infrastructure in the study area.



Figure 11.—INUNDATION OF COUNTY HIGHWAY W NEAR POPLAR BLUFF, DECEMBER 5, 1982



Figure 12.—INUNDATION OF COUNTY HIGHWAY W NEAR POPLAR BLUFF, DECEMBER 5, 1982



Figure 13.—INUNDATION OF COUNTY HIGHWAY W NEAR POPLAR BLUFF, DECEMBER 5, 1982



Figure 14.—INUNDATION OF COUNTY HIGHWAY W NEAR POPLAR BLUFF, DECEMBER 5, 1982

**FACTORS FOR CONVERTING INCH-POUND UNIT TO METRIC (SI) UNIT**

|               |                        |
|---------------|------------------------|
| 1 inch        | 25.4 mm                |
| 1 foot        | 0.3048 m               |
| 1 square foot | 0.0929 m <sup>2</sup>  |
| 1 cubic foot  | 0.0283 m <sup>3</sup>  |
| 1 acre        | 0.0405 km <sup>2</sup> |
| 1 gallon      | 3.785 l                |
| 1 pound       | 0.4536 kg              |
| 1 ton         | 0.9072 metric ton      |



Figure 15.—INUNDATION OF COUNTY HIGHWAY W NEAR POPLAR BLUFF, DECEMBER 5, 1982



Figure 16.—INUNDATION OF COUNTY HIGHWAY W NEAR POPLAR BLUFF, DECEMBER 5, 1982



Figure 17.—INUNDATION OF COUNTY HIGHWAY W NEAR POPLAR BLUFF, DECEMBER 5, 1982



Figure 18.—INUNDATION OF COUNTY HIGHWAY W NEAR POPLAR BLUFF, DECEMBER 5, 1982