as the pool elevations would be available for satellite transmission to the Rock Island District Water Control Center. Consistent computation of reservoir outflows would then be determined from the flows though the gates and over the spillway.

VII. Skunk River Basin

A. Basin Description

The Skunk River basin extends from near the north central region of Iowa to the Mississippi River in the southeast. The drainage area is 4,355 square miles, as shown on Plate 84. The topography within the basin is gently rolling with elevations ranging between 518 feet and 1,200 feet. Nearly all of the basin land is farmland, with 77 percent used as cropland. The general shape of the basin is long and narrow with a length of 180 miles and a maximum width of 40 miles. The average width is 24 miles.

The Skunk River splits into two main channels in Keokuk County forming the North Skunk and the South Skunk rivers. From Ames to the eastern Mahaska County line, the Skunk River floodplain is relatively wide, reaching a maximum width of about two miles in Polk County. In Keokuk, Washington, Jefferson, Henry, Des Moines and Lee Counties, the river meanders through a narrow floodplain. Upstream of Ames, the river has not been altered, and the floodplain is relatively narrow.

B. Hydrology/Hydraulics

1. Description of Flooding

The flooding in the Skunk River basin was catastrophic in Ames, Iowa. The total precipitation at the Ames NWS station for May, June, July and August 1993 compared to the average for each of those months is shown on Plate 85. A tributary to the Skunk River, Squaw Creek, reached record heights and flooded Iowa State University's Hilton Coliseum with 14 feet of water. Plate 86 shows the stage and flow hydrographs for the storm that flooded several Iowa State University buildings. Squaw Creek rose from a stage of 5 feet to a stage of 18.5 feet in eight hours. Table 24 is a summary of the top five floods of record in the Skunk River basin.

Table 24
Skunk River Basin Top 5 Floods of Record

Station	Flood Stage (feet)	Date 1	Stage 1	Date 2	Stage 2	Date 3	Stage 3	Date 4	Stage 4	Date 5	Stage 5
South Skunk River at Ames	7.0	8/16/93	14.23	5/20/84	13.90	6/10/54	13.66	6/13/47	11.95	6/17/93	11.84
Squaw Creek at Ames	9.0	7/9/93	18.54	6/17/90	15.97	6/4/18	14.50	3/27/75	14.00	6/13/84	12.97
South Skunk River at Oskaloosa	15.0	1944	25.80	7/15/93	24.78	6/23/90	22.98	2/7/73	22.52	6/19/84	21.76
N. Skunk River at Sigourney	16.0	6/20/90	25.37	3/31/60	25.33	7/6/93	24.68	6/14/66	23.85	4/25/76	22.80
Skunk River at Augusta	15.0	4/23/73	27.05	4/3/60	25.00	9/24/65	24.90	7/10/93	23.70	5/20/43	23.00

Basinwide flooding on the Skunk River seldom occurs. This may be due to the shape of the basin and its orientation relative to the storm tracks. Historical statewide flooding occurred in 1851, 1881 and 1903; however, there are few details on these floods for the Skunk River basin. The most noteworthy basin flood occurred in 1944. Basinwide floods of a lesser extent occurred in 1947 and 1960. The wettest three-month period occurred in March through May 1973. Notable floods occurred in the upper basin of the Skunk River in June 1918, June 1954 and June 1975.

2. Stream Data

A stage hydrograph for the South Skunk River gaging station at Oskaloosa, Iowa, shown on Plate 87, extends from March 1993 through September 1993. At Oskaloosa, flooding began in March. The South Skunk River was above flood stage in March, April, May and June. It remained above flood stage for all of July, most of August and half of September. Flood stage is at 15 feet. The peak stage reached during this event was 24.78 feet in mid-July.

The stage hydrograph for the Skunk River gaging station at Augusta, Iowa, is shown on Plate 88. Flooding in March, April and May was rapid and relatively brief. The Skunk River went above the 15 foot-flood stage once each month and remained there for a few days. In June, the river went above flood stage twice for a short period of time. In July, however, the river remained above flood stage for almost the entire month. For the months of April through September 1993 the runoff depth at Augusta, Iowa, was 24.3 inches. The mean runoff depth for the months of April through September for the period of record (78 years) was 4.6 inches.

3. Hydraulics

High water profiles of the Skunk River and Squaw Creek show the 1993 Flood compared to other notable historical floods. The Skunk River profiles, shown on Plates 89 through 96, extend from the mouth, at the confluence with the Mississippi River, to Story City, Iowa. Downstream of the county line (Plates 89 through 90) the 1993 Flood was not as severe, and it ranked fourth or fifth highest. Upstream of the Washington-Keokuk County line (Plates 91 through 96), the 1993 Flood ranked the highest of record.

The water surface profiles for Squaw Creek are shown on Plate 97. The profiles extend from the mouth, at the confluence with the Skunk River, to the Hamilton County-Boone County line. The 1993 event ranked highest of record along the entire profile.

VIII. Rock River Basin

A. Basin Description

The Rock River headwaters originate in the lake region of Fond du Lac County in southeastern Wisconsin. Flow is generally southward toward the Wisconsin-Illinois State Line where it flows in a general southwesterly direction, then flows into the Mississippi River downstream from Rock Island, Ill. The drainage area is 10,700 square miles as shown on Plate 98. The topography varies from flat and gently rolling farm land to steep and uncultivated forest land.