

## **Flood Events**

### **The Largest Flood**

According to National Weather Service records, the largest flood on the lower Arkansas River occurred on May 18, 1877 when Wichita was little more than a village. The Arkansas River at Wichita reached a stage of 21 feet; flood stage is 12 feet.

### **Twentieth Century Flood Events**

The second largest flood on the river occurred July 8, 1904. It reached a stage of 20.3 feet. This particular flood caused more damage than the 1877 flood because Wichita was more populated in 1904. In addition, the flooding was more widespread in Wichita because of backwater and overflow of the Little Arkansas River and Chisholm Creek as they entered the narrow channel of the Arkansas River in Wichita. The six pile bridges crossing the Arkansas River at the time collected drift that retarded flood causing overflow. Approximately 30 percent of Wichita was submerged on July 8 resulting in \$30,000 in damages, which was almost \$600,000 in 2005 dollars. (Murphy et al, 1905, p. 110-112).

In June 1923, the drainage area between Hutchinson and Arkansas City received excessive rainfall. As a result on June 8 and 9, Wichita reported 7.06 inches of rainfall. Excessive precipitation fell over all of the Little Arkansas, Ninnescah, and Chikaskia River Basins as well as the Arkansas River Valley, and major flooding occurred on all of the affected streams. Wichita and Arkansas City were severely damaged. In Wichita, six square miles were inundated. At Arkansas City, two lives were lost, and property damage was estimated in the millions (Kansas Water Resources Board, 1960).

### *The Corps of Engineering Era*

In the 1940's the U.S. Army Corps of Engineers developed a plan for a massive floodway that would relieve the city from flooding by the rivers. Between 1948 and 1958, the Corps, the City of Wichita, and Sedgwick County completed the Wichita-Valley Center Floodway and made provisions for its perpetual maintenance. The main goal of this project was to control the large-scale floods that have historically caused the major damages to the City's core area.

In 1944, the lower Arkansas River Basin and Chisholm Creek suffered an abnormal precipitation. The most severe flood that year occurred at Wichita and downstream to Arkansas City as a result of rains on April 21 to 23. On April 22, Wichita received 6.03 inches of rain. The merging of the flows from the Arkansas and Little Arkansas Rivers in Wichita resulted in the flooding of about 200 homes and businesses in the city. The damages were estimated at nearly \$5 million (Kansas Water Resources Board, 1960). Floodwaters inundated the North Industrial District and residential areas bordering the Wichita Drainage Canal. After this flooding, construction plans were prepared in 1947 for the Wichita-Valley Center Flood Control Project.

The highest stage along the Arkansas River during 1951 occurred near Coolidge and Garden City due to an intense storm on May 1951. However, in July 1951 a major inundation took place in the Wichita area when the Big and the Little Slough Creek experience flooding. Flood-damage estimates compiled by the U.S. Army Corps of Engineering for the May-July 1951 flooding total \$2,868,000 along the main stem of the Arkansas River (USGS, 1952, p. 40). On the other hand, the total loss in dollars added to \$8 millions when taking into account the floods of years 1944, 1945 and 1951.

Beginning in 1950, the City-County Flood Control Office started to keep records of all flood events, which exceeded bankfull on those streams, which were tributary to the Wichita-Valley Center Flood Control Project, such as Arkansas River, Little Arkansas River, Cowskin Creek, Wichita Drainage Canal, Chisholm Creeks and Big Slough Creek.

### *The USGS Era*

Likewise, since early 1950's Wichita's effort to gathering and analyzing storm runoff, stream flow and flooding has greatly improved. In 1959, grants from USGS produced a Hydrologic Investigation Atlas showing "floodplain" areas throughout Wichita. This publication was a guide for design and planning until the Flood Insurance Study was completed and the FEMA maps of 1986 were adopted by the City of Wichita.

Precipitations after April 30, 1957 and high soil moisture content set the stage for flooding on May 16 and 17, 1957, in the Arkansas River Basin in south-central Kansas. The State Highway Commission (currently Kansas Department of Transportation, KDOT) reported 45 road closures in the area. Also, extensive crop damage was left behind by floodwaters. In the City of Wichita the newly completed Big Slough-Cowskin floodway successively diverted one-third of the peak flow and the Arkansas River in Wichita gage and prevented more serious flooding in the City (USGS, 1963, p. 44-46).

The Dry Creek as well as the Gypsum Creek flooded in 1958, twice in 1959 and 1960, once in 1963 and 1964. The flood that occurred in August 24, 1960 took place in Joyland Amusement Park near the confluence. It was a record eight feet flooding, but five feet of flooding occurred in Dry Creek. Furthermore, three feet of this flooding occurred upstream of the confluence of Gypsum and Dry Creek on Gypsum Creek. The flood was originated by four to six inches of rainfall. This flood caused damages of approximately \$70,000. At the time, several homes were located on the floodplain.

In the year 1962, a major flood damaged the northern Wichita area adjacent to Park City. Even though the Wichita-Valley Center Floodway was completed at the time, it was not designed to protect the area from such an unusual rainfall.

Excessive precipitation fell across south-central and southeastern Kansas from May to September 1993 with more than the annual average rainfall during the five-month period. May thunderstorms produced precipitations, which caused flooding in the lower Arkansas River Basin and its tributaries. USGS streamflow-gaging stations on the

Arkansas River at Arkansas City had notable maximum discharges. During the latter part of July, maximum peak discharges for the period of record were recorded at 10 streamflow-gaging stations, including Walnut Creek, Arkansas River near Maize, and the Arkansas River at Derby. Damage in the area added to approximately \$6.5 million with two lives lost (Studley, 1998). Two hundred fifty-four houses were damaged, several thousand head of livestock were lost, more than 120,000 acres of crops were damaged, and nearly \$1 million worth of farm machinery was destroyed (Federal Emergency Management Agency, 1993).

### *The 1998 Halloween Flood*

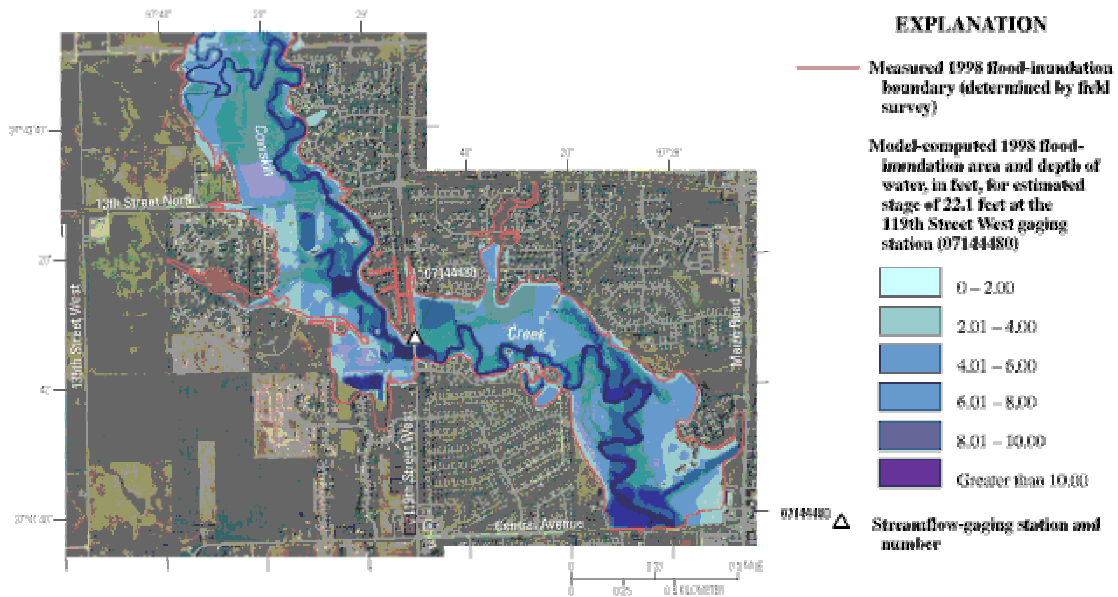
In Wichita there were two major “Halloween” floods the first one in October 31, 1979, where minimal damage was reported; and the second one in October 31, 1998. The last flood caused great damage among the residents of the area along Cowskin Creek.

On Halloween 1998 leaving a two-day deluge of more than six inches of rainfall over a 20- county area. Some locations received almost a foot of rain that led to flash flooding as well as historic flooding of rivers draining the region. Nearly one-third of the USGS streamflow-gaging stations in Kansas recorded water levels above flood stage during the first week of November 1998. Documentation stated that this was the largest area flooded in Kansas since the 1993 floods. Six USGS gaging stations on the Arkansas and Little Arkansas Rivers were above National Weather Service flood stage between October 31 and November 3, 1998 (Perry and Putnam, 1998).

The October 31, 1998 flood of Cowskin Creek in Wichita caused millions of dollars in damages and loss of lives. Approximately 170 homes and businesses along the Cowskin Creek and its tributaries reported about \$4 million in flood damage (Schminke and Wolf, 2001). Cowskin Creek is located on the Western edge of Wichita in Sedgwick County. This creek has a total drainage area of 221 mi<sup>2</sup>.

Wichita’s Doppler radar estimated a rain event of one to three inches of rainfall, with isolated higher amounts upwards of five inches. The heavy rainfall resulted in numerous reports of flash flooding, with several area rivers exceeding flood stage as well. The National Weather Service in Wichita measured 2.79 inches. Minor to moderate flooding occurred along portions of the following: the Cowskin Creek in West Wichita, the Ninnescah River, the Little Arkansas River, the Arkansas River, the Whitewater River, and the Walnut River.

## Aerial Photo of the 1998 Flood



The following are images showing flooding from different locations along the Cowskin Creek.

### Image 1



Cowskin Creek flooding at a golf course off of Maize Road in West Wichita

**Image 2**



Cowskin Creek flooding at Karren Street and Central

**Image 3**



Cowskin Creek flooding southeast of 119th Street

**Image 4**



Cowskin Creek flooding along 13th street, just west of 119th Street

**Image 5**



Looking west on 13th St, Cowskin Creek flood waters over road

Source: [www.crh.noaa.gov](http://www.crh.noaa.gov)