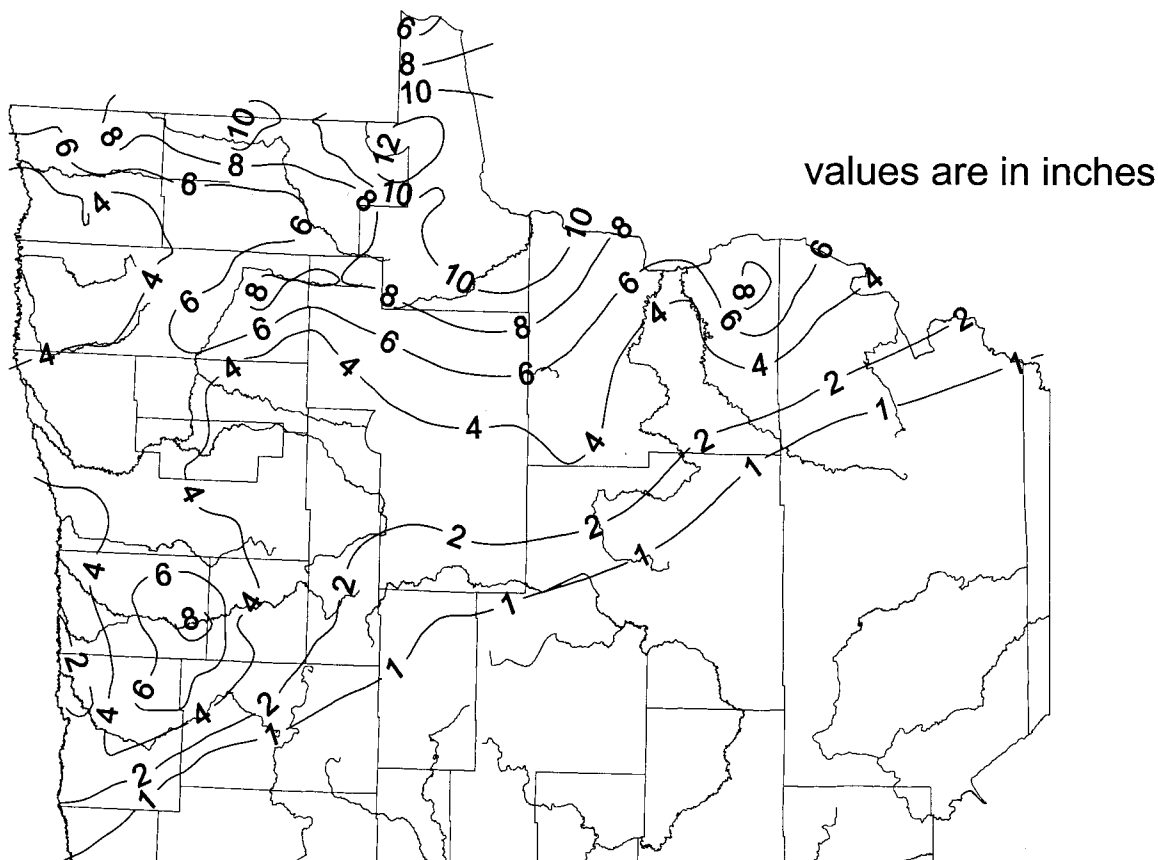


Rainfall Totals - June 9 and 10, 2002



State Climatology Office - DNR Waters

Extraordinarily Heavy Rains Fall on Northwestern and North Central Minnesota June 9 and 10, 2002

Portions of northwestern and north central Minnesota experienced one of the most significant precipitation events in Minnesota's post-settlement history on June 9 and 10, 2002. While not unprecedented, the event was extraordinarily rare in its intensity and geographical extent.

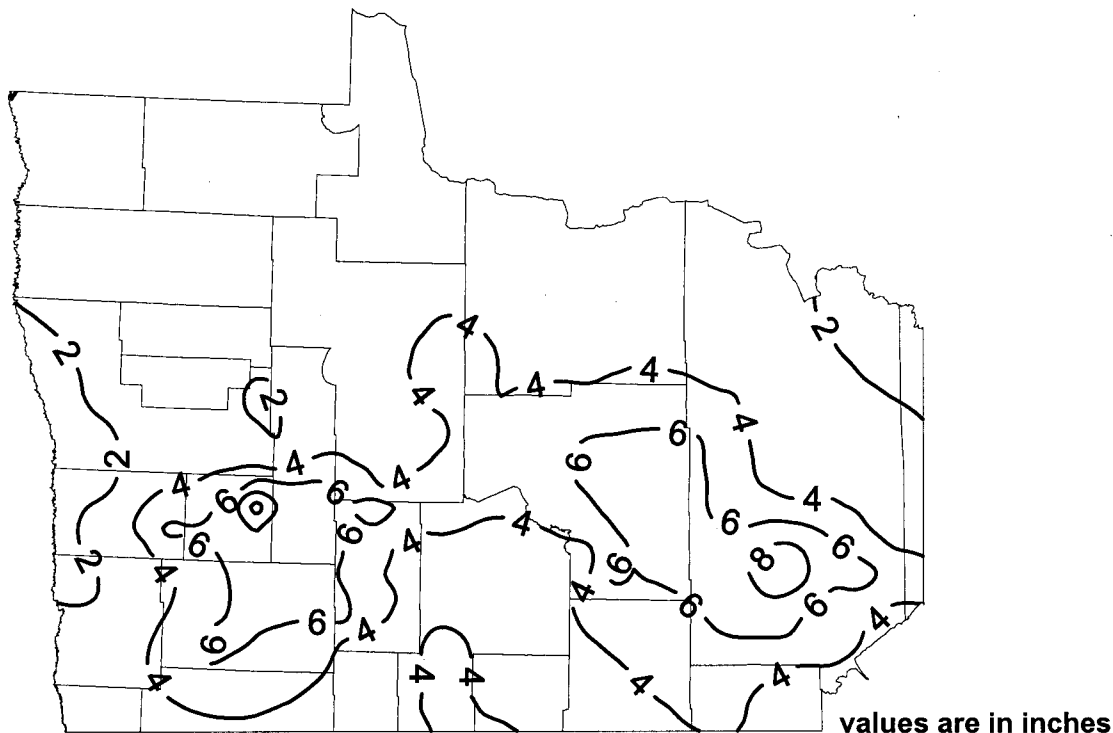
Rainfall totals for the 48-hour period beginning during the early-morning hours of Sunday, June 9 exceeded six inches over a broad multi-county area. Rainfall accumulations topped eight inches in portions of Norman, Mahnomon, Marshall, Kittson, Roseau and Koochiching counties. All of Lake of the Woods county fell within the eight inch contour. An incredible twelve inches of rain doused portions of Roseau, Lake of the Woods, and Koochiching counties. The largest rainfall report was a 14.55 inch total near Lake of the Woods on the Roseau/Lake of the Woods county border. Anecdotal reports of fifteen or more inches were received in some areas.

To place the event in historical context, a 48-hour rainfall total of six and one half inches is considered to be a one percent probability occurrence in these areas. The map above indicates that hundreds of square miles exceeded this threshold. Additionally, some communities received more than one half of their total normal annual precipitation during this two-day period. Rainfall events of similar intensity and spatial extent have occurred only twice in the last 30 years in this region. The June 2002 event is on par with the July 1972 "Grand Daddy" of flash floods, and the 1975 flood episode affecting southeastern North Dakota and northwestern Minnesota.

In the southern portion of the affected area, thunderstorms began to drop heavy rains shortly after midnight on June 9 and continued into the morning hours. Six or more inches of rain fell in less than twelve hours in northeastern Clay, southeastern Norman, and western Mahanomen counties. More than nine inches of rain was reported near Twin Valley in Norman county. Northern sections of the affected area received rain during the morning of the 9th, but the rainfall was not nearly as heavy as that experienced by their southern neighbors. However, thunderstorms redeveloped along the Canadian border during the afternoon of the 9th, and moderate to heavy rain continued to fall nearly continuously for the remainder of June 9, into the day on June 10, and finally tapered off in the early morning hours of the June 11.

The thunderstorms produced damaging wind, hail, and some small tornadoes. However, the heavy downpours led to the greatest amount of damage. Many tributaries of the Red River left their banks, creating serious flooding in cities such as Ada in Norman county and Roseau in Roseau County. General urban flooding was reported in many other communities, resulting in flooded basements and blocked streets. Major and minor highways in northwestern and north central Minnesota were closed due to flooding. Widespread inundation of farm fields occurred and will significantly impact agricultural production.

Heavy Rains Again Drench Northern Minnesota June 22 - 23, 2002



State Climatology Office - DNR Waters

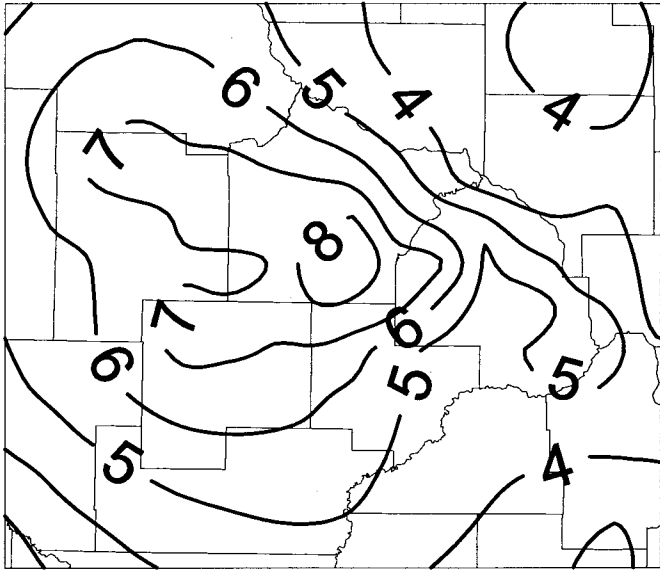
Adding insult to injury, heavy rains fell upon northern Minnesota less than two weeks after one of the most significant precipitation events in Minnesota history. Beginning on Saturday, June 22 and continuing into Sunday June 23, torrential rains exceeding four inches fell in an arc from already hard-hit Norman and Mahnomen counties, east to St. Louis County. Portions of Norman, Mahnomen, Becker, Clearwater, Itasca, and St. Louis counties reported more than six inches of rain in the two-day event. Rainfall amounts topping eight inches were observed in small areas of Mahnomen and St. Louis counties.

The heavy rains led to flooding in Ada, Mahnomen, and Floodwood; inundated already waterlogged croplands in northwestern Minnesota, and resulted in numerous road washouts and flooded basements across the effected areas.

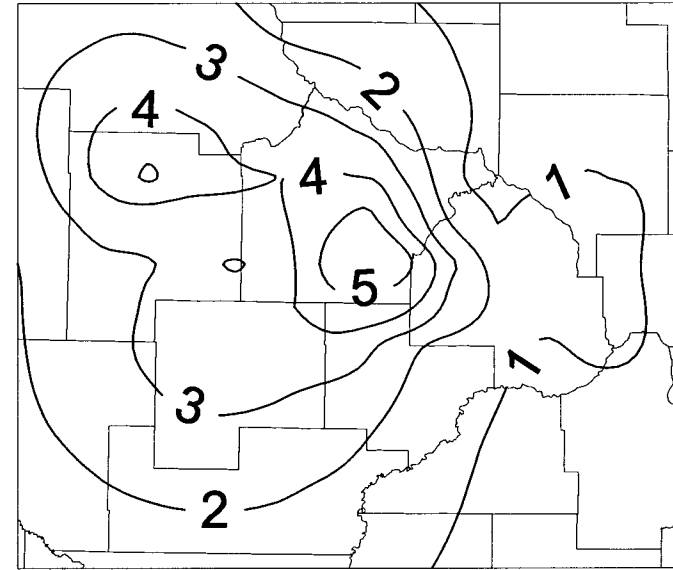
While the heavy rain was devastating to many, residents in some northern Minnesota communities received a welcome respite from a dry spell that had persisted throughout the late spring and early summer.

Heavy Rains in Wright County Area

June 21-24, 2002



June 24, 2002



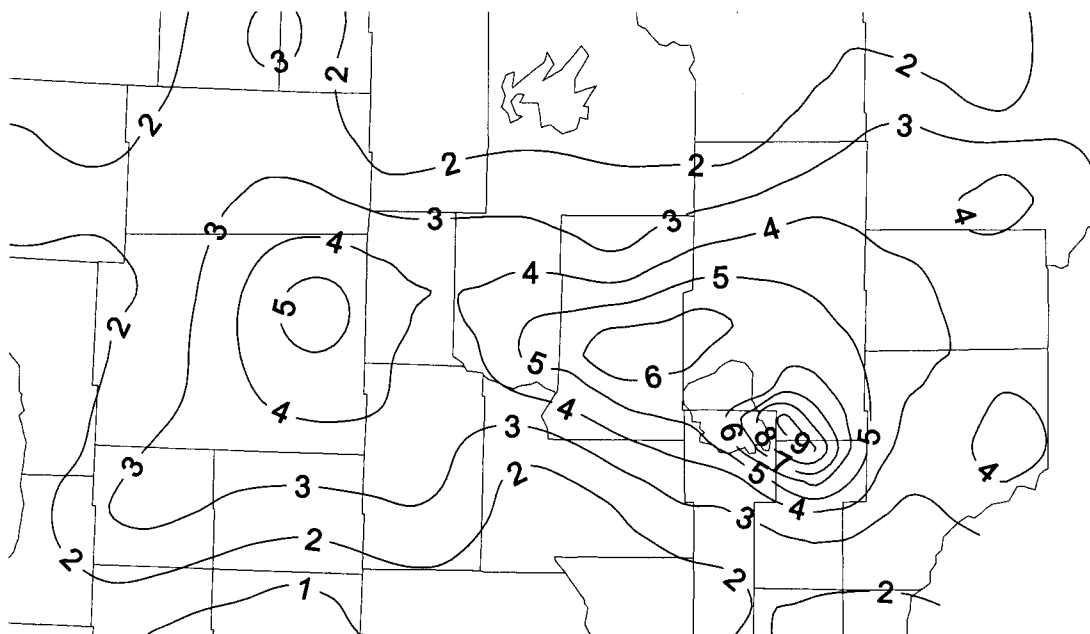
values are
in inches

State Climatology Office - DNR Waters

Heavy rains fell in central Minnesota on June 21 and again on June 24, 2002. Wright, Carver, and McLeod counties reported urban and agricultural flooding. The heaviest precipitation occurred on Monday, June 24 when six inches of rain fell on portions of southern Wright County. 5.50 inches of rain was reported at Delano of Wright county.

The heavy rains on the 24th were only part of the story. Wright county and its neighbors received one to three inches of rain on only three days earlier June 21. The deluge on the 24th exacerbated area flooding. Many basements were inundated, especially in Wright County. Two portions of Highway 25 were closed in the county, as well as a section of Highway 12 between Montrose and the north junction of Highway 25. About one half of a mobile home park in Howard Lake was evacuated due to the rising water.

Heavy Rainfall - Central Minnesota July 6 and July 7-8, 2002



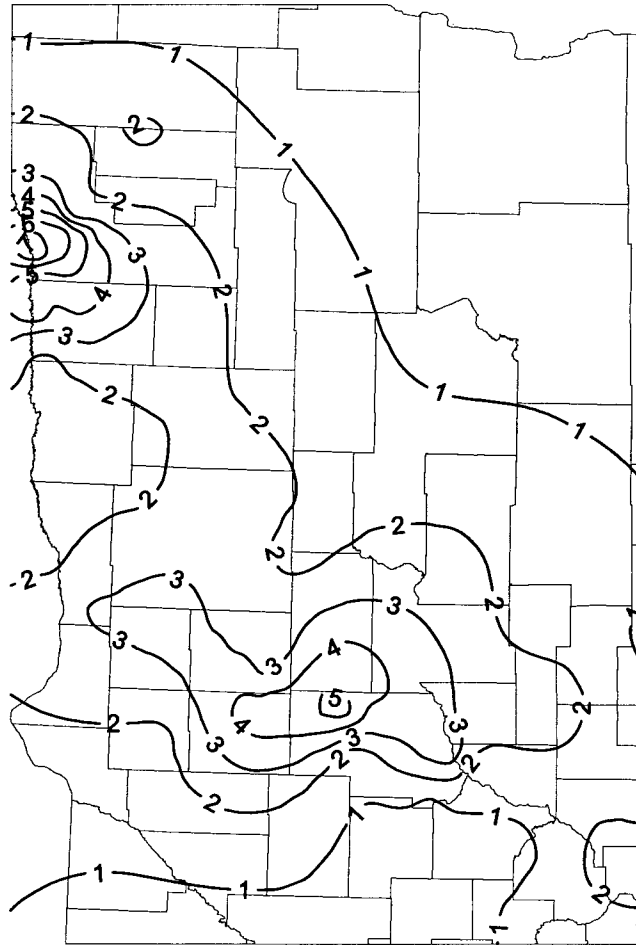
State Climatology Office - DNR Waters

values are inches

Heavy Rains Fall on Central Minnesota: July 6-8, 2002

Another round of heavy thunderstorms rolled across Minnesota on Saturday July 6 and continuing through the early morning hours of Monday July 8. The first wave of heavy rain fell on the 6th when one to four inches fell in east central Minnesota. On Sunday, July 7, rainfall totals of two to six inches fell in an arc from Todd County to Pine County. The highest multi-day totals were 10 inches in northern Kanabec County and 9.5 inches in southwest Aitkin County.

Heavy Rains Fall Over Central and Northwest Minnesota July 9 -11 2002



Heavy rains fell over northwestern, central, and south central Minnesota on July 9 and 10. Rainfall totals exceeding four inches were reported in some communities. The largest rainfall total from July 9 and 10 was 8.33 inches near Climax in western Polk County.

Street flooding was reported in St. Cloud, Sauk Centre, Foley, and Fergus Falls on the morning of the 10th. Persons stranded in their cars in St. Cloud had to be rescued by the fire department. Detours were posted on Highway 23 in Foley, and at the intersection of Highway 10 and 15 in St. Cloud.

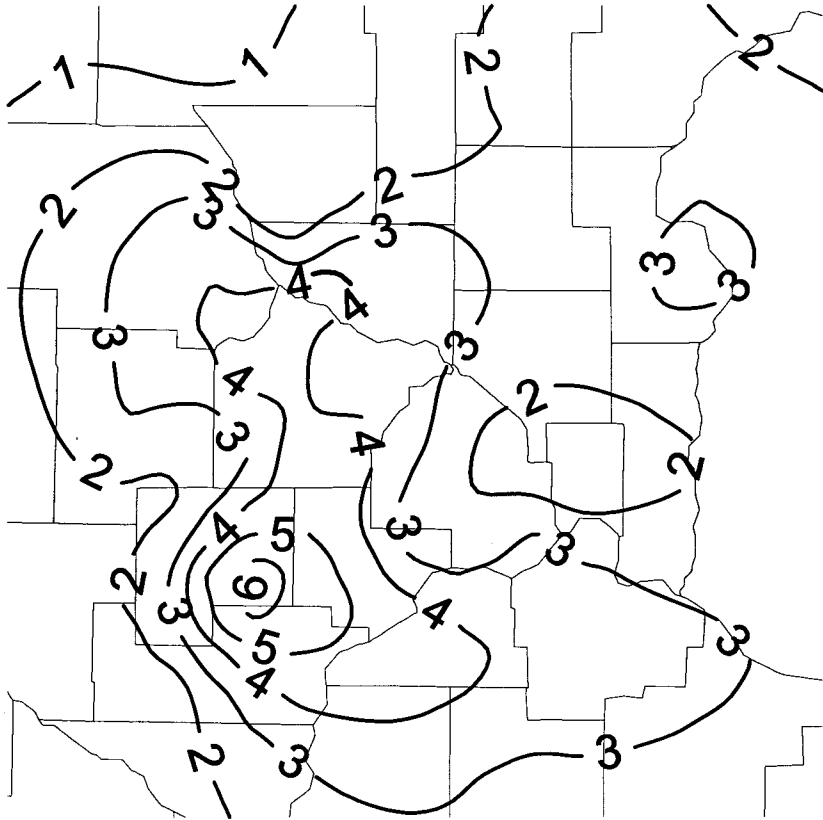
In the metropolitan area, basement flooding was reported in apartment buildings and businesses in Fridley around noon on the 10th. Flooding was also reported at the intersection of 45th and 49th Avenues near University Avenue in Anoka. The rain tapered off over southern Minnesota late on the 10th and the early morning hours of the 11th.

Some larger National Weather Service Cooperative Observer reports for 24 hours ending the morning of the 10th include 4.53 inches at Glenwood, and 4.07 inches at Long Prairie. North St. Paul received 1.28 inches in 45 minutes from 8:05am to 8:50am on July 10. St. Cloud State University received 2.70 inches of rain in 1 hour 45 minutes on that day.

State Climatology Office - DNR Waters

values are in inches

Heavy Rains Fall in Central Minnesota August 3 - 4 2002



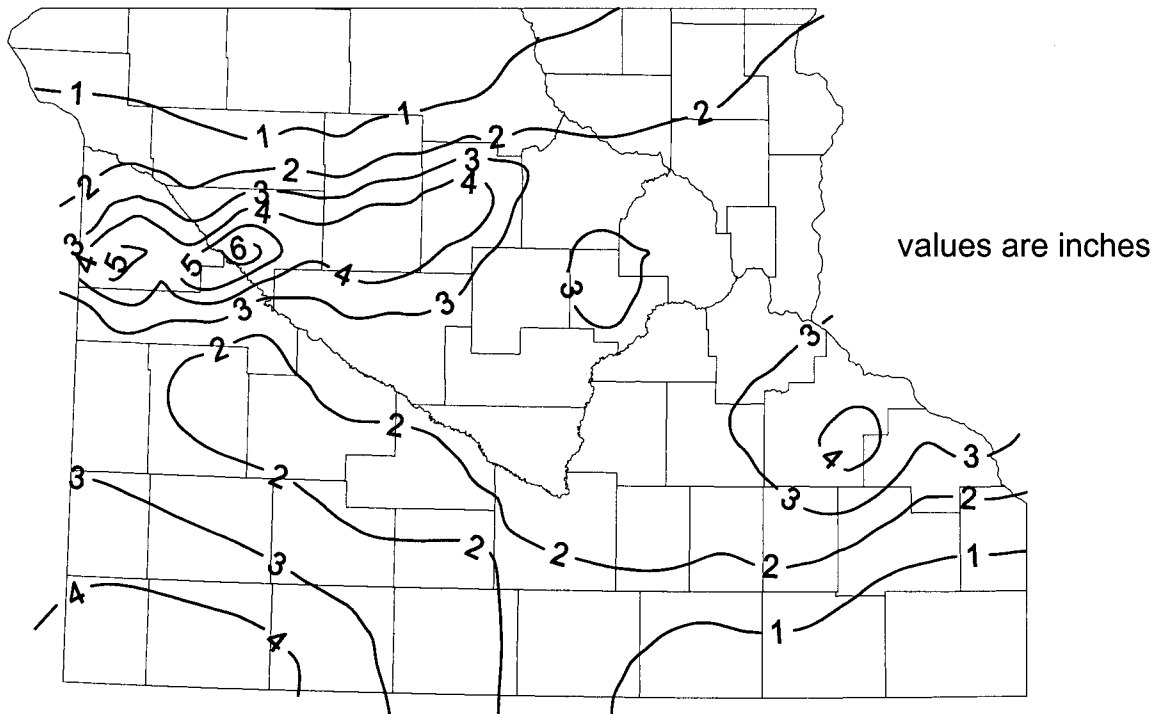
Values are in inches

Heavy rain fell across central and southern Minnesota on Saturday, August 3. Rainfall totals exceeding four inches were reported in portions of Stearns, Wright, McLeod, Carver, Sibley, Scott, and LeSueur counties. A small portion of southeastern McLeod County received over six inches of rain. Glencoe of McLeod County reported a storm total of 6.92 inches. The rain moved across the state in two waves. In the first wave, a cluster of thunderstorms moved east across central Minnesota during the late morning of August 3.

A second wave of heavy rain swept through many of the same areas during the evening of the 3rd. Reports of street flooding, basement flooding, and road washouts were common throughout the affected area. The second wave of thunderstorms also generated severe weather in the form of large hail, strong winds, and a reported tornado in Sibley County. The rain slowly tapered off over central Minnesota during the early morning hours of the 4th, with some showers and thunderstorms persisting in south central Minnesota throughout the day on the 4th.

State Climatology Office - DNR Waters

Rainfall Totals - August 20 and 21, 2002



State Climatology Office - DNR Waters

Heavy Rains Douse Central and Southern Minnesota August 20-21, 2002

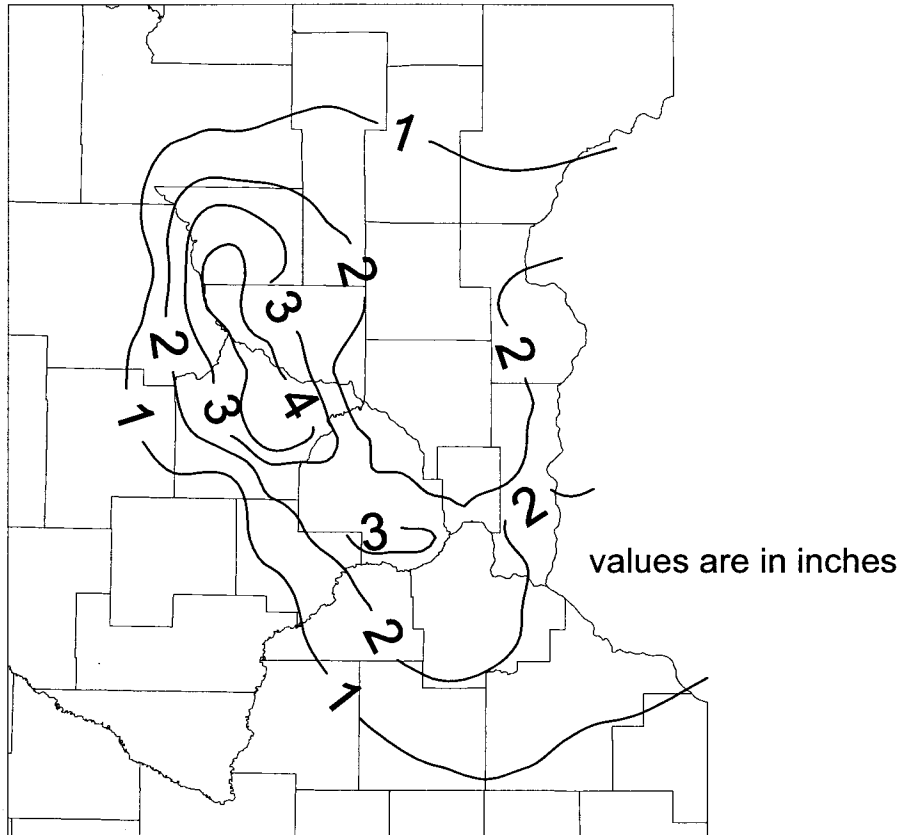
A succession of heavy thunderstorms drifted across central and southern Minnesota on August 20 and 21, leaving a stripe of heavy rain that spanned the width of the state. The heaviest precipitation fell upon southwestern, west central, and central Minnesota where some rainfall totals exceeded five inches. Five-inch totals were reported in sections of Lac Qui Parle, Yellow Medicine, Chippewa, Meeker, and Rock counties. The highest rainfall total was 6.30 inches in Montevideo. An anecdotal report of 8.30 inches came from a location one mile east of downtown Montevideo. In west central and central Minnesota, the rains began during the mid-afternoon hours of August 20 and continued into the early morning of August 21. A second rain complex formed during the morning hours of August 21 in southwestern Minnesota and finally cleared southeastern Minnesota by late afternoon.

In the affected areas of west central Minnesota, a 24-hour rainfall total of five inches is considered to be a one percent probability occurrence. Elsewhere in southern Minnesota, a one percent probability event is six inches in 24 hours. In spite of the intense rainfall, relatively few problems with urban or rural flooding were reported. In west central Minnesota, antecedent conditions were relatively dry, meaning that soils were receptive to the heavy rain.

Heavy Rains - East Central Minnesota September 5 and 6, 2002

Two waves of thunderstorms brought very heavy rains and some scattered reports of severe weather over central Minnesota on September 5th and 6th. The first wave of thunderstorms moved to the northeast across the Twin Cities during the evening rush hour of Thursday, September 5th. These thunderstorms brought vicious lightning and strong winds over the eastern Twin Cities metropolitan area. Some wind damage was reported in White Bear Lake.

A second wave of thunderstorms began near St. Cloud around 9:00 PM on Thursday evening and slowly moved first to the east, then drifted southward as the night went on. The storms dropped golf ball-sized near Dassel in Meeker County. The line of storms then expanded to the east and sagged to the south. Booming thunder awakened many in the Twin Cities during the early morning hours of Friday September 6th. There was a vivid show of lightning. On the western edge of this line of storms, more thunderstorms developed through the night, passing over the same areas hour after hour. The result was a swath of rainfall totals of 3 to 5 inches from near Foley in Benton County to near Rockford in eastern Wright County. The highest total reported to the State Climatology Office was 6.00 inches at the Wright County Soil and Water Conservation District Office in Buffalo. The St. Cloud Airport saw 4.39 inches, while the St. Cloud State University campus reported 4.48 inches. Most places in the Twin Cities recorded 2.00 to 3.00 inches of rain. Normal rainfall for the entire month of September in the Twin Cities is 2.69 inches.



State Climatology Office - DNR Waters

Areas from just west of Foley in Benton county, to Buffalo in Wright county received the most damage. A bridge was reported underwater on County Road 25 at Popple Creek of Benton county. Another bridge which was under construction was washed out on County Road 4 west of County Road 3 in Benton county. St. Cloud had numerous cars stalled in low areas and underpasses within the city. Flash flooding was also reported in Buffalo with flooded businesses on Main Street. County Road 12 in Buffalo was barricaded due to flooding. There were reports that the northern Twin Cities also had some intersections underwater during the early hours of the 6th. By midday on the 6th, the thunderstorms had diminished or moved father southeast.