NWS FORM E-5

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
NATIONAL WEATHER SERVICE

River District Office:
WSFO Lubbock, TX

REPORT FOR:
MAY 1994

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

TO: Hydrometeorological Information Center
NOAA/ National Weather Service
Office of Hydrology, W/OH12x1
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REFERENCE: WSOM E-41

Minor overbank flooding occurred across a part of the upper Colorado River watershed from May 10 to May 12. Excessive rainfall from down-basin moving thunderstorms created the flooding along Beals Creek from eastern Howard County downstream to the creek's confluence with the Colorado River and along the Colorado River from its confluence with Beals Creek downstream to E. V. Spence Reservoir in Coke County. The flooding occurred across mostly undeveloped land and no damage was reported from this event.

An upper level low pressure center became stationary over the southwestern United States from May 7 to May 9. This upper low induced the development of a surface low pressure center across southwest texas between El Paso and Presidio. This surface low provided a deep southeast flow of moist air from the Gulf of Mexico into West Texas. This flow of moisture in combination with minor disturbances spinning off the upper low created widespread thunderstorm activity, mainly over the South Plains, Permian Basin, and Big Country from May 9 through May 12.

The thunderstorms which produced the heaviest rainfall developed the morning of May 10 over southern Howard County south of Big Spring. These thunderstorms moved slowly northeast while further development continued on the southwest flank of the storms. The most intense echoes drifted across southern Howard and Mitchell Counties and into Nolan County. Much of the path of these storms was along and just south of Beals Creek. The WSR-88D radar at Lubbock estimated a one hour rainfall center of five to six inches during the late morning of May 10. Storm total precipitation estimates from these storms totaled 10-12 inches just northeast and downstream of the Beals Creek gage located on the Highway 163 bridge or about 10.8 miles south of Westbrook.

After a lull in thunderstorm activity during the afternoon and early evening hours of May 10, intense thunderstorms redeveloped over southeastern New Mexico during the late evening of May 10. These thunderstorms tracked east reaching southern Howard County by the early morning hours of May 11. These thunderstorms then continued across the same area that received the excessive rainfall less than 24 hours earlier. Storm total precipitation estimates from the Lubbock radar for these storms were between four and eight inches. This second round of down-basin moving thunderstorms caused a secondary peak in the flood height at the Beals Creek Gage.

The WSR-88D radar in Lubbock estimated a swath of rainfall amounts greater than six inches across southern Howard County, southern and central Mitchell County and western Nolan County. A rainfall maximum of 17.8 inches was estimated just northeast of the Beals Creek gage. Indications are that the radar did an excellent job in estimating rainfall amounts for this event. Amounts of seven to ten inches were verified by the public in Mitchell County during a survey conducted by NWS personnel in this area on May 13. The maximum radar estimated amount of 17.8 inches fell over an unaccessible portion of Spade Ranch in Mitchell County.

The excessive rainfall produced by these thunderstorms resulted in a dramatic rise of Beals Creek at the Highway 163 bridge on the morning of May 10. The creek was at a stage of 2.4 feet at 1415Z but rose 18 feet during the next five hours to a stage of 20.45 feet at 2006Z. The creek then slowly fell over the course of the next 11 hours to a stage of 15.81 feet at 0631Z on May 11.

While Beals Creek was receding at Highway 163, the Colorado River 4.7 miles west of Silver was approaching its bankfull stage of 16 feet. The river rose from a stage of 1.76 feet at 0511Z May 10 to 10.02 feet on May 11. The river went over bankfull at 0620Z May 11 with a stage of 16.04 feet. At this time minor lowland flooding was also occurring along the Colorado River from its confluence with Beals Creek downstream to E. V. Spence Reservoir.

The additional thunderstorm activity over the upper Colorado River watershed during the morning hours of May 11 resulted in a new rise on Beals Creek at Highway 163. After falling to 15.81 feet at 0631Z may 11, the creek began rising again and reached 20.02 feet at 1032Z May 11 before finally cresting at a stage of 21.31 feet (6,553 CFS) at 1334Z May 11. An eyewitness stated that at this time the creek was only around two feet below the top of the Highway 163 bridge. The Colorado River west of Silver continued to rise and was at a stage of 20.00 feet at 1251Z on May 11. The river crested at 0114Z May 12 with a stage of 20.21 feet (13,501 CFS). Residents reported the Colorado River to be 1.5 miles wide at this time. The river went below bankfull stage at 2240Z May 12 when it fell to a stage of 15.94 feet. The lack of further Significant thunderstorm activity across the Colorado River watershed allowed Beals Creek and the Colorado River to slowly recede after 2240Z on May 12. The Colorado River flows into E. V. Spence Reservoir in Coke County. The elevation of E. V. Spence rose from 1866.32 feet on May 9 to 1871.15 feet by May 19th.

The weather service offices with responsibility for this area (WSFO Lubbock and WSO Abilene) did an excellent job in handling this flood event. A flash flood watch (based on information from The Lubbock WSR-88D) was issued during the late morning hours of May 10 with flash flood and flood warnings issued during the early afternoon of May 10. The precipitation algorithm from the WSR-88D was instrumental in delineating the area for the flash flood watch. The first watch covered only Howard, Glasscock, Mitchell, and Scurry Counties.

In addition to the river flooding along Beals Creek and the Colorado River, very heavy rainfall caused widespread flash flooding mainly across the South Plains and Permian Basin during the same time span.

No other river flooding occurred during May 1994.

cc: W/SR2 RFC FTW IBWC EL PASO
RFC TUL USGS IBWC PRESIDIO
USCE LBB WSOs (AMA/MAF/SJT/ELP)