

TENNESSEE VALLEY AUTHORITY
DIVISION OF WATER CONTROL PLANNING
HYDRAULIC DATA BRANCH

JULY 1962

EXCERPTS

PRECIPITATION
IN
TENNESSEE RIVER BASIN

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REPORT NO. O-243-328
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JOHNSON CITY, TENNESSEE, FLOODED BY BRUSH CREEK

ON JULY 3, 1962

By

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Late in the evening of July 3, 1962, an intense storm occurred over an area roughly twenty miles long and ten miles wide, including the cities of Johnson City, Kingsport, and Jonesboro, Tennessee. Within the storm area the rainfall for the 24-hour period ending on the morning of July 4 was near three inches. Most of this amount fell in less than two hours.

At Kingsport and Jonesboro minor tributary streams went out of banks and caused some flooding of streets and businesses, but most of the flooded streets and businesses were the result of overtaxed storm sewers which could not carry off the heavy rainfall. In rural areas there was considerable washing of sloping fields planted in corn and tobacco, but in general there was no extreme flooding by streams.

In Johnson City the storm caused a great deal of flooding and damage when the channel of Brush Creek was unable to carry the heavy runoff. At some points along the course of the creek as it moves under the business district, water was over two feet deep in the streets and stores in the area. Damage estimated at \$60,000 was confined principally to the business district.

Rainfall

Boone Dam, at the center of the storm area, reported a 24-hour total rainfall of 3.65 inches. At Kingsport the City Filter Plant gage recorded 3.35 inches, and the TVA gage at the Tennessee Eastman Plant had 3.18 inches. The two stations at Johnson City had almost identical totals, with 2.95 inches at the TVA substation located near the northeastern city limits, and 2.96 inches at the Veterans Administration Building at Mountain Home near the southwestern city limits. The two stations are about 3.5 miles apart. There was no indication that the rainfall within the city between the two stations was greater than the amounts measured at the gages.

Light rain fell during the day, and some light rain preceded the intense storm which lasted one and one-half hours. In Johnson City it is estimated that 2.5 inches of rain fell between 9:30 and 11:00 p. m. on July 3.

Runoff

Brush Creek flows in a northeasterly direction into the Watauga River. The drainage basin is roughly rectangular, being eight miles long and two miles wide, with Johnson City covering the middle third of the basin. With one-third or more of the basin being highly developed, the percentage of rainfall that runs off is very high during intense storms, and the time of concentration is short.

Shortly after the intense rain started on the evening of July 3, the heavy runoff from the buildings and paved areas began to flow into the business district. Streets were flooded as the storm sewers were unable to carry the high flows. Brush Creek began rising in the Embreeville Junction section above Johnson City, and the Creek overflowed its banks, flooding streets, gardens, and a few houses.

In this reach and down into Johnson City as far as Main Street the flood was lower than the August 1938 flood* by 0.2 to 1.2 feet. The upstream end of the covered channel was not full but lacked 1.6 feet of reaching the underclearance. The bridge opening at Watauga Avenue was inadequate, and water breaking over the bank above the bridge flowed down the Southern Railway tracks and into the Johnson City business district.

A tributary stream, sometimes known as King Creek, flows into Brush Creek from the west. Almost the entire drainage area of King Creek is highly developed with a large percentage of paved streets and many buildings. During intense storms the small channel is inadequate, and a large portion of the runoff flows down West Market and West King Streets into the business district. During the July 3 storm this water was largely responsible for the flooding in the business district, for from Market Street downstream to the lower limits of Johnson City the July 3, 1962, flood was 0.3 foot to 2.0 feet higher than the 1938 flood.

Below the mouth of King Creek the covered channel of Brush Creek apparently flowed full, since it was reported that water spurted up through holes which had been drilled in the concrete slab covering the channel in the vicinity of Commerce Street.

Through the business district of Johnson City flood waters reached varying depths up to 2.6 feet on Commerce Street near the creek crossing. At the corner of Market and McClure water was twenty-six inches deep. The flood waters overtopped the Southern Railway tracks at the depot and downstream for a short distance, crossed Roan Street with depths slightly over one foot, and mostly returned to the channel below the covered section. Flooding downstream from the lower end of the covered channel was not important except for that in a housing development on the north side of East Fairview. At that point a small tributary stream enters Brush Creek. East Fairview crosses the branch on a fairly high fill, and the small drain under the fill was entirely inadequate. With the fill acting as a retention dam, water reached a depth of four feet upstream, flooding several buildings and automobiles parked in the streets of the housing development which was built in the low-lying land along the branch above East Fairview.

Damages

Upstream from Johnson City in the Embreeville Junction section there was no great damage. Though a few houses were flooded by depths up to six inches, they were low-cost houses; and it is estimated that the total damage upstream from the Johnson City city limits would not exceed \$1,000. From the upper city limits to Main Street damages were scattered. Water entered the main building and storage sheds of the Harris Manufacturing Company, a hardwood flooring manufacturer, and caused some damage. Six trucks belonging to

*Described in "Precipitation in Tennessee River Basin" for September 1938.

BRUSH CREEK FLOODS
BUSINESS DISTRICT AT JOHNSON CITY, TENNESSEE
ON JULY 3, 1962



View looking east on West Main Street. Lamont Street is between Dollar Store and The Record Shop.



Drugstore located on northwest corner of West Market and Boone Streets. Photograph was taken about 11 p. m., or shortly before the crest stage occurred.

(Photos courtesy of staff of Johnson City Press Chronicle)

BRUSH CREEK FLOODS
 BUSINESS DISTRICT AT JOHNSON CITY, TENNESSEE
 ON JULY 3, 1962



View looking south along Buffalo Street from Fountain Square. Photograph was taken at about 11 p. m. , or shortly before the crest stage occurred.



View looking south along Commerce Street from Roan Street. The Brush Creek channel crosses under the street and under the garage in the left center of the picture. Inter-Mountain Telephone Company Building is on the extreme left.

(Photos courtesy of staff of Johnson City Press Chronicle)

the Volunteer Natural Gas Company parked on the bank of Brush Creek upstream from Tennessee Street were flooded by water three feet deep. The Kelly Food Products Building upstream from Sevier Street was flooded a few inches deep, damaging cases of candy and other foods and supplies.

In the Johnson City business district Main Street was flooded from Fountain Square to the Bus Terminal, a distance of 600 feet. The flood waters here were generally just over the sidewalks and entered three or four buildings to shallow depths, causing little damage. As mentioned earlier, water flowed down Market Street from the west, and the street was flooded from Whitney Street to Fountain Square, a distance of 1,500 feet. From Whitney to Boone Street the depths were not great but the velocity was high; and water was forced into some buildings, such as Smith-Higgins Company, wholesale druggists, where the water got four inches deep, reaching the lower shelves of their stock and causing damages of \$5,700. Between Boone and Fountain Square, depths on Market Street reached as high as 26 inches at Gay's Cafe on the northwest corner of Market and McClure. Other businesses flooded on Market Street were Gene's Grill, Powells Department Store, Market Street Furniture, Chambers-Williams Drug Store, and Farnsworth Furniture Store. On cross streets in the flooded area, such as McClure and Commerce Streets, several businesses were flooded. These included Fletcher Furniture, Sell Produce, Powell's Annex, Shell Service Station, and Giant Super Market, which had four to six inches in the large building between the above two streets. On Roan Street water was 0.4 foot deep around the Inter-Mountain Telephone Company Building, and water entered the basement. Photographs on pages 5 and 6 show flood scenes in the business district.

The high water stayed up for less than two hours, and many buildings with tight-fitting doors had little damage, though the water got high outside the building. Miller's Super Market on Market Street had 2.0 feet outside but only two inches inside. The Rich Plan office had 1.7 feet outside but only a trickle went through the doors. At Giant Super Market the water was nine inches higher outside than inside.

City employees were called out during the flood and worked through much of the rest of the day, July 4. They pumped out basements and used fire hoses to flush down the streets to get rid of the mud deposited by the flood. Most of the stores that were flooded had clean-up crews working on July 4, and practically all were open for business on July 5. Since the 4th was a holiday, there was no loss of business as a result of the flood.

Estimates of damage made immediately after the flood reached a total of \$60,000.