

Heavy Rainfall Event May 7-9, 2019

Synopsis:

A slow-moving storm system resulted in two rounds of heavy rainfall over Harris County. The first round focused across extreme northeast Harris County on the afternoon of May 7th and then over southern Harris County during the evening hours. Flash flooding occurred with this round of storms mainly in the Kingwood area. The second event occurred on the evening of May 9th into the early morning hours of May 10th where numerous severe thunderstorms containing excessive rainfall rates developed across west-central Harris County and then spread into southern and eastern Harris County. Flash flooding occurred with this event primarily due to already saturated grounds and the intense short duration rainfall rates. Numerous streets were impacted across the county during both rainfall events, but bayous and creeks performed well with most remaining in banks and those that briefly exceeded banks not reaching heights that would cause significant and widespread structure flooding. In addition to the excessive rainfall and flooding, widespread hail resulted in damage across several portions of the county. In fact the hail on Thursday evening is likely one of the more extensive hail events Harris County has experienced in recent history.

Rainfall:

May 7:

Heavy rainfall rates developed due to slow storm motions over northeast Harris County including the Humble and Kingwood areas. A 30-min rate of 2.9 inches was recorded at US 59 and the West Fork of the San Jacinto River and a 1 hour rate of 4.0 inches. A 6-hr rainfall rate of 7.9 inches was recorded at the East Fork of the San Jacinto River and FM 1485. Rainfall rates between the 15-min and 6-hr time periods on Tuesday afternoon and evening averaged between a 2-yr and 50-yr frequency over the extreme northeast portions of Harris into southeast Montgomery Counties. This rainfall was relatively isolated in the far northeast portions of Harris County and the Kingwood area.

May 9-10:

6-hr rainfall totals averaged 2.0-6.0 inches across Harris County with the heaviest rainfall occurring across the Spring Branch area of the county during the early evening hours and then across the eastern and southern part of the county during the late evening and early morning hours of the 10th. 1 hour rainfall rates of 3-5 inches were recorded over the lower portion of Greens Bayou, with Greens Bayou at Normandy recording 5.30 inches in one hour and 4.0 inches in 30-minutes. The 4.0 inches in 30-min exceeds the 500-yr rainfall frequency by .20 of an inch. The 5.30 inches in one hour exceeds the 100-yr rainfall frequency by 1.0 inch. The majority of the county experienced rainfall rates in the 30-min to 3-hr time period that averaged between a 2-yr and 25-yr rainfall event. This rainfall

event was more widespread than the Tuesday afternoon and evening event which when combined with already saturated grounds resulted in more run-off.

The regional Flood Warning System gages recorded a total of 163 locations that experienced a rainfall of 1.0 inch in 15 minutes and 22 locations that recorded 4.0 inches in one hour.

Impacts:

A total of 415 homes were flooded across Harris County during the rainfall and flooding on Tuesday afternoon and evening and on Thursday evening. Intense local rainfall rates greatly exceeded internal and primary drainage systems capabilities resulting in significant and at times deep street flooding and sheetflow. This was especially true in the Kingwood area on Tuesday afternoon and in the Spring Branch area, Cloverleaf area, and across portions of southern and eastern Harris County Thursday night into Friday morning.

380 structures were flooded in the Elm Grove Village subdivision and other nearby subdivisions in the northern portions of Kingwood on Tuesday evening. HCFCD staff investigated Elm Grove Village area on Wednesday, May 8th and determined that the flooding was potentially caused by development upstream in Montgomery County that sent large volumes of sheetflow into the subdivision and Taylor Gully (G103-80-03.1). The isolated nature of the heavy rainfall on Tuesday afternoon prevented more widespread flooding impacts.

Isolated structure flooding occurred Thursday night and Friday morning in the Cloverleaf area due to overwhelmed internal drainage systems. Six homes flooded along the middle portions of Halls Bayou near I-45 and West Mt. Houston from the minor overbank conditions along middle Halls Bayou between I-45 and Airline Dr. The City of Deer Park recorded 25-35 homes flooded in their jurisdiction mainly from internal drainage systems being overwhelmed. Additionally, less than 5 homes flooded just south of Beltway 8 and west of I-45 S due to internal drainage issues.

The following channels reached or exceed bankfull:

- Armand Bayou
- Clear Creek
- West Fork of the San Jacinto River
- East Fork of the San Jacinto River
- Halls Bayou (I-45 to Airline Dr.)
- Spring Creek (headwaters to SH 249)
- Little Cypress Creek (headwaters to below Becker Rd.)
- Briar Branch

Flooding along these channels was mainly limited to roadways and rural lands near the channel and few structures were impacted.

HCFCF Actions:

- HCFCF staff actively monitored rainfall and creek/bayou water levels both Tuesday and then again Thursday/Friday both from HCFCF offices and the Emergency Operations Center as well as provided support to the Joint Information Center (JIC).
- The Clear Creek Second Outlet Gates were opened on Wednesday, May 8th and remained open until Monday, May 13th to help expedite the flow of storm water out of Clear Lake.
- HCFCF staff collected a total of 31 discharge measurements across Harris County and assisted Fort Bend County with four measurements on the Brazos River.
- HCFCF staff conducted approximately 35 media interviews between May 7 and May 11 and produced six press releases and approximately 90 social media posts.