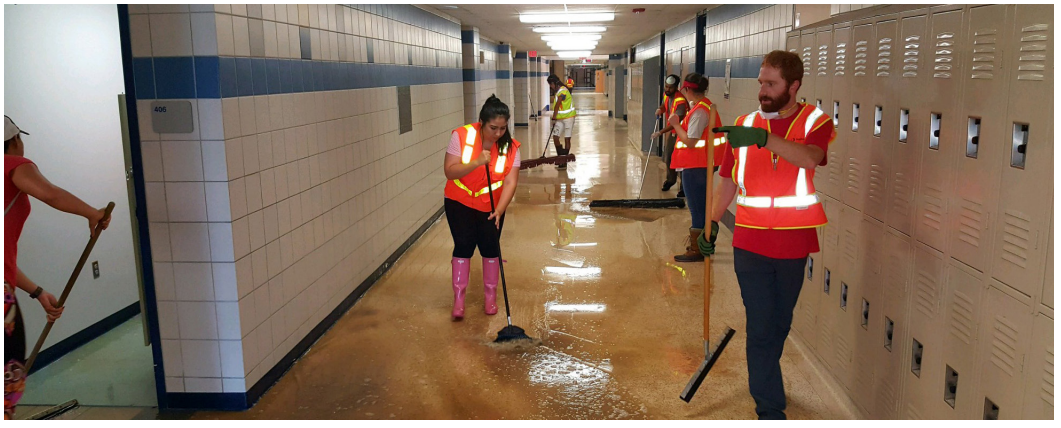
How updates to floodplain mapping will impact Texas

ROBERT PAVUR



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Natural disasters, such as catastrophic flooding, challenge the very essence of a community.

The state of Texas has seen many dangerous floods in the last 20 years resulting from extreme rainfall. Nearly 5 years ago on Halloween of 2013, 12-14 inches of rain fell in Central Texas, causing Onion Creek to rise 11 feet in 15 minutes and crest at a record 41 feet between Wimberley and Driftwood, Texas. Two years later during the 2015 Memorial Day weekend, those areas again saw 12-13 inches of rainfall over a 4-6 hour period, causing the Blanco River in Wimberley to rise more than 35 feet in 4 hours to a new record flood stage. Just last year, Hurricane Harvey dropped as much as 50 inches of rain over a seven-day period in parts of the Houston/Beaumont area. Communities across the state are still seeing the effects of that storm.

Many of the significant storm events that have occurred within the last 20 years have taken lives and destroyed property. Understanding the risks and updating the rainfall statistics with data over the last 20 years will help communities become better prepared. It's imperative that new developments utilize recent rainfall data to improve the safety of our communities and reduce the risks of destruction to property improvements.

Why we need to update rainfall statistics

These floods and (all storm events) are commonly referred to as a certain year storm, such as a "100-year" or "500-year" event. A 100-year storm event is a storm producing a certain amount of rain that will likely happen only once in 100 years (or a 1% likelihood each year). These statistics are based on historical records of rainfall, which vary from region to region. 100-year storm events can happen in back-to-back years, but each occurrence changes the probability or statistics.

Communities adopt their drainage system standards based on studies performed by state and federal agencies. The civil engineering industry then uses those standards to design drainage systems to safely convey stormwater runoff downstream without placing people or property in harm's way. The problem: many of those standards have become outdated.

For example, the City of Austin currently uses rainfall frequencies developed more than 20 years ago by the United States Geological Survey (USGS) during a 1998 study that analyzed rainfall data collected all around the state of Texas (Asquith 1998). Furthermore, all of that rainfall data was from prior to 1994, and while some regions of Texas had over 100 years of rainfall records, other regions hardly had any rainfall records at all.

Floodplain mapping updates are underway

The Hydrometeorological Design Studies Center within the Office of Water Prediction of the National Oceanic and Atmospheric Administration's (NOAA) National Weather Service is currently updating rainfall frequency estimates for the state of Texas using rainfall data collected across the state through 2017. Their publication is planned for late 2018, which will be called NOAA Atlas 14 Volume 11 Version 2.

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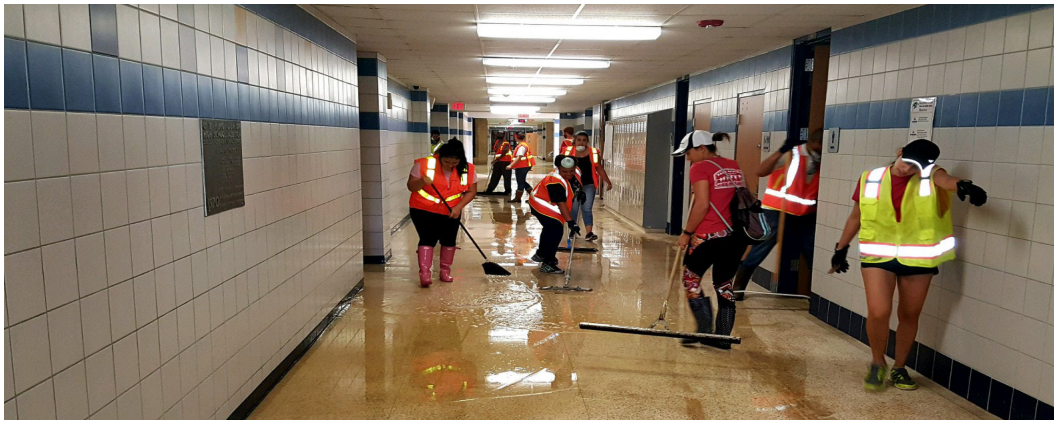

Clean up at Sheldon ISD in the Houston area after Hurricane Harvey.

The draft showed that some regions of Texas, such as central Texas from Del Rio to Beaumont, increased in the amount of rainfall estimated for the 100-year, 24-hour storm event as much as 7 inches; other areas of Texas, (primarily west Texas) decreased in the amount of rainfall estimated for the 100-year, 24-hour storm event as much as 2 inches. Storms are very unpredictable, and avoiding adverse impacts from stormwater is never guaranteed, but the risks can be lowered.

Communities within the regions of Texas that see significant changes in rainfall frequency depths will likely feel a much greater sense of awareness due to the floodplain modifications. Higher estimated rainfall depths result in higher flowrates in rivers and channels, which further result in deeper and wider floodplains.

The official FEMA floodplain maps will likely take a good amount of time to get updated due to the efforts required for modeling and map preparation, as well as the FEMA review and approval processes. However, the decision to adopt the updated rainfall frequency depths will be at the city or county level and are anticipated to become the new standard statewide. The City of Austin will be one of the first to act, amending their code to require the use of the current 500-year floodplain elevations, similar to the new 100-year floodplain elevations of the Atlas 14 rainfall estimates. Many other cities are expected to follow suit.

How do the new floodplain maps affect you?

So what does this mean for you? Statewide, some existing structures that weren't previously within the 100-year floodplain will soon be within the new 100-year floodplain. When property loans are processed for existing structures within the 100-year floodplain, FEMA flood insurance will be required. On the development side, wider floodplains will also result in less developable land. Keep in mind, to be used for future development, properties with existing drainage systems may now require improvements and modifications to reduce the size of the floodplain through that property. New developments will also require larger storm sewer systems and larger detention ponds to convey higher flows, which will increase the cost of development.

There's no doubt that the risk of losing lives and property to flooding lowers when communities are better prepared. Developers can and will be key in helping communities get there. We all must anticipate floodplains to periodically be updated in the future as new rainfall data is factored into the statistics. Keep this in mind for your current and future developments. Paying more now on development improvements and greater stormwater conveyance means paying less later with the cost of lives and property. ■