

Who Should Pay for the Damage from Hurricane Harvey?

August 31, 2017
by [Randy Bright](#)

As I write this article on Sunday, August 26, Hurricane Harvey has already dumped about 24 inches of rain on Houston, causing massive flooding. By the date this article is published, Houston is expected to receive at least that much rain again.

Although the amount of rain Harvey will eventually produce over Houston and the region around it is unprecedented in Houston's history, heavy rains and flooding events are not.

Houston is a very low-lying area. Hobby Airport is only 46 feet above sea level, and though it is well inland from the Gulf, all flights have been cancelled due to standing water on the runway.

Like most cities, a large percentage of the ground is covered with impervious surfaces such as concrete or asphalt. This also causes stormwater to drain away faster, where it eventually collects with other stormwater in areas that are designed to carry only so much. When rainfalls exceed the design limit, flooding results. Houston's drainage system was apparently designed many years ago to handle a ten-year event, not a 250- or 500-year event, and it was certainly not designed for a city as heavily populated as it is now.

To make matters worse, Houston does not drain well because of the amount of clay in its soil. Clay is essentially impervious, so water does not have a chance to percolate into the soil before it runs off.

To get a perspective of Harvey's impact on Houston could eventually be, consider that back in May of 2015, a large weather system hit Texas and Oklahoma. About 80,000 people in Houston lost power; METRO rail and bus services were cancelled; Interstates 10 and 45 were flooded; at least 11 people died and many more were missing or trapped by high waters. The amount of rain it received in one day? A record 4.34 inches.

In April of 2016, at least 7 people died in a flooding event caused by rainstorms. About 1,000 homes were flooded and about \$5 billion in damages was done after the northwest area of the Houston region was hit with 17 inches of rain in one day. A county official estimated that over the several days of the storms, about 240 billion gallons of rain fell on the Houston area. It was considered to be the worst flood since Tropical Storm Allison hit in 2001.

Allison was the first and only tropical system that would make landfall in the United States in 2001. Like Harvey, it began on the east side of the Atlantic near Africa, but instead of moving directly into the Gulf, it moved across the ocean into the Caribbean and across Southeastern Mexico into the Pacific Ocean. It then crossed back over Mexico into the Gulf of Mexico where, like Harvey, it quickly began growing in intensity until it became a Tropical Storm Allison.

While Allison's impact was widespread, about 90 percent of the damage done was in the Houston area. During a 10-hour period, ten inches of rain fell, and the total amount of rain that fell during the entire event was 37 inches. Damages in the Houston area only was about \$4.9 billion. The storm killed 41 people in all, with 23 of those in Texas alone.

When Katrina hit New Orleans, many of the evacuees fled to Texas, and in particular to the San Antonio area. Since then, San Antonio has been a federally and state designated center for evacuees with emergency shelters that are ready on a moments' notice. One source has indicated that FEMA "has shipped 250,000 meals, 77,000 liters of water and 4,000 tarps to the city's Randolph Air Force Base for locals and coastline evacuees."

But San Antonio has also experienced some flooding from Harvey, and Randolph sent at least some of its aircraft to Tinker AFB in Oklahoma before the hurricane hit.

It remains to be seen how much more severe the damages will be from Harvey, but thus far it appears that there has not been nearly the loss of life that has occurred in previous weather events such as Katrina or Allison. Hopefully, Houston residents and local governments have gained enough experience that loss of life will be minimized.

On the other hand, property damages are expected to be enormous, leaving us with the question of who will pay for the damages, and who, as in the case of New Orleans after Katrina, will pay for improvements to flood control infrastructure.

The areas of New Orleans that laid below sea level should never have been rebuilt at U.S. taxpayer's expense. With Houston, which is above sea level, that's not such an easy call.

It is, however, local government's responsibility to manage stormwater runoff. Like Tulsa did in the 80's, Houston is going to have to take a greater initiative to make it a safer place to live.



Randy W. Bright, AIA, NCARB, is an architect who specializes in church and church-related projects. You may contact him at 918-582-3972, rwbrightchurcharch@sbcglobal.net or www.churcharchitect.net.
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