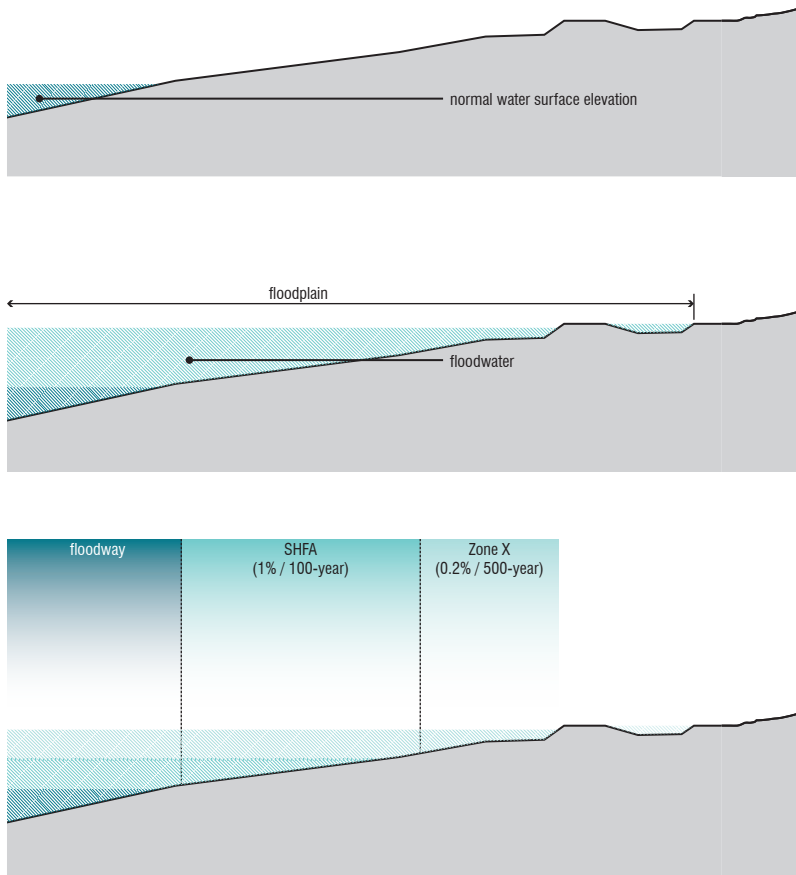


# What is a floodplain?

The Federal Emergency Management Administration (FEMA) defines a floodplain as any land area susceptible to being inundated by floodwaters from any source. This can include coastal areas impacted by storm surge, land along a river or bayou that is flooded when that waterway rises out of its banks, or low-lying land that fills with water when it rains. Flooding occurs in a wide range of landscapes due to rainfall or storm surge.



It is generally safe to say that land inside the designated floodplain is at risk of flooding, that land inside the floodway is at higher risk of flooding than land in the 1% floodplain, which is at higher risk of flooding than land in the 0.2% floodplain. However,

- Land outside the designated floodplain can still be at risk of flooding.
- Land inside the 1% (100-year) and 0.2% (500-year) floodplains may flood more often than the designations indicate.

## Legal Definition

In addition to being a natural phenomenon, a floodplain is a legally defined concept. FEMA designates floodplains nationwide, which are used for several purposes:

- The designated floodplains are used to set rates for flood insurance.
- Mortgage issuers usually require flood insurance for any property in the designated floodplain.
- Cities set special building regulations for properties inside the designated floodplain.
- Models based on designated floodplains can be used to warn residents of impending flooding and to issue evacuation orders.

*For more information, see future GHFMC fact sheet on: How is the flood plain designated?*

## Types of Floodplains Designated by FEMA

The **floodway** is “the channel of a river or other water course and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.” In a flood event, the floodway functions as part of the waterway, and is filled with flowing water.

The **1 percent (100-year) floodplain** is land that is covered in water during a flood event that has a 1 percent chance of being equaled or exceeded each year.

The **0.2 percent (500-year) floodplain** is land that is covered in water during a flood event that has a 0.2 percent chance of being equaled or exceeded each year.

These designations are based on computer models and statistical estimates of the 1% and 0.2% rainfall amounts. Fundamentally, a designated floodplain is a modeled estimate.

### Misconception

The 100-year floodplain only gets inundated once every hundred years.

### Fact

The 100-year floodplain has a 1% chance of being flooded in every given year. This means statistically, the 1% (100-year) flood has about a 26% chance of occurring during a 30-year period of time.

### Misconception

The 500-year flood only happens once in 500 years.

### Fact

The 500-year flood has a 0.2% chance of occurring every single year. Again, this means that statistically, the 0.2% (500-year) flood has a 6% chance of occurring during a 30-year period of time.

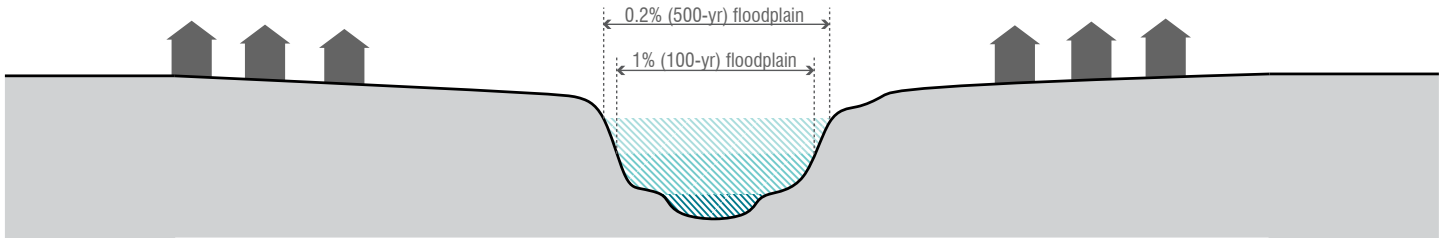
### Misconception

If a property is not in the mapped 100-year floodplain, it will not be flooded.

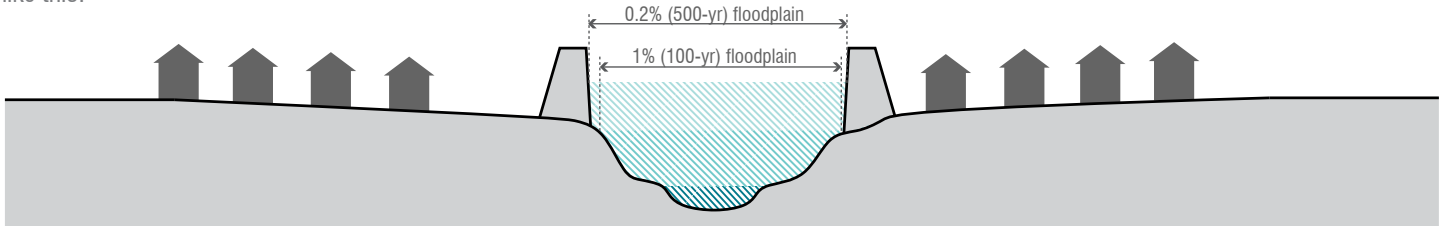
### Fact

Most homes in the Greater Houston region are at risk of flooding regardless of what floodplain they are mapped within.

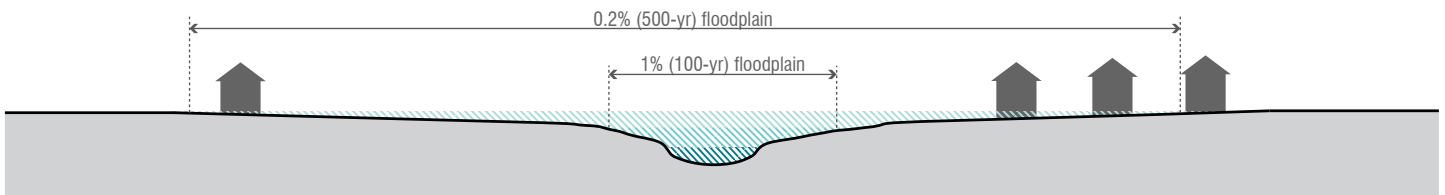
**In some landscapes, floodplains are clearly defined by natural features.** In a river valley, for example, there is often a flat area around a river that floods frequently, and land above steep banks on either side that the river never reaches. Here, the 100-year and 500-year floodplains are quite similar in their extent. Here, the designated floodplain is also a natural floodplain that is visible in the topography. In the Houston area, the lower San Jacinto River is like this.



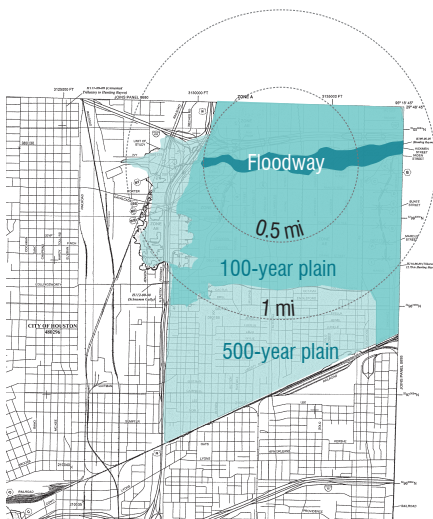
**In some landscapes, floodplains are clearly defined by man-made infrastructure.** Levees hold floodwaters back and create a clear boundary: land between the river and the levees is likely to flood, and land beyond the levees is not. In the Houston region, the Brazos River is like this.



**In many parts of the Houston region, floodplains are not clearly outlined by elevation differences.** In a flat landscape, water spreads broadly once it rises out of the banks of the bayou. The FEMA modeled floodplains are more uncertain in this type of topography. A small rise in rainfall volume can lead to a large increase in the area flooded. There is no geographic feature that protects a house on the far side of the designated 100-year floodplain from flooding.



**In some areas, undersized stormwater systems contribute to localized flooding in areas that are not near a river or bayou.** In these areas, flooding can occur no matter how low or how high the water may be in the nearest waterway. Since these areas are not near a waterway, they may not be included in FEMA floodplain mapping.



*In Kashmere Gardens (left), the designated 1% and 0.2% floodplains extend far from Hunting Bayou. It is very hard to predict here what land will flood and what will not.*

## KEY POLICY QUESTION

In a flat landscape, should we base infrastructure and development decisions on the FEMA-designated floodplains when we know that land outside those floodplains is also at risk of flooding?

For more information visit:

Kinder Institute Harvey Story Map:  
<https://ricegis.maps.arcgis.com/apps/Cascade/index>

Find out if you're in a floodplain:  
<https://msc.fema.gov/portal/search>

Greater Houston Flood Mitigation Consortium:  
<http://houstonconsortium.com>