



CHAPTER 2

STORM

EVENTS



2.01 Storm Events

Storm Events are any disturbed state of the atmosphere and can arise in many different forms. These include thunderstorms, floods, tornadoes, hurricanes, hailstorms, snowstorms, firestorms, dust storms and many others. For the immediate issue of stormwater the focus will be on storms that produce rainfall and flooding.

There are two very common phrases that you will encounter when talking about severe storm events. These are the 10 and 100-year storm. The term “10-year storm” describes a rainfall event which is rare and is only likely to occur once every 10 years, so it has a 10% likelihood any given year. The amount of rain which will fall will be greater and cause flooding to be worse than for a 5-year storm



which has a 20% chance of happening in a given year. Likewise, the term 100-year storm describes a rainfall event which is extremely rare and which will occur with a likelihood of only once in a century, so it has a 1% likelihood in any given year. Although this type of storms are often the cause of 10 and 100-year floods, the events are independent and rely on a lot of factors other than just the intensity of the storm.

Flooding can occur very slowly or very rapidly. Slow flooding occurs when a large quantity of rainfall is navigated to a river or stream at too rapid a speed for the body of water to cope. This type of flooding where there is high precipitation over a sustained period of time. The more common type of flooding in Collierville is the faster version. These storm events are referred to as flash floods and are a result of an intense thunderstorm providing rainfall at a rate that the ground cannot absorb it. This results in an overwhelming amount of surface water which can cause the same types of devastation as that done by the slower, sustained flooding.



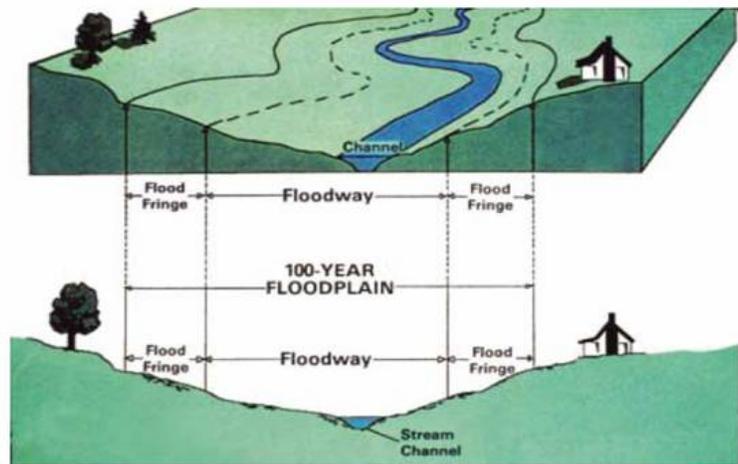
The negative effects that can occur from storm events are widespread and focused upon more than positive effects. Physical damage can be something as simple as eroding the bank of a stream or something as extreme as loss of vehicles, buildings, and bridges. Casualties can occur among people and livestock if the storm is strong enough. Other things that may come as a result of a severe storm event are contamination of water

supplies, unhygienic conditions, shortage of food crops, and loss of non-tolerant species of trees. On the positive side, storms and flooding can make soil more fertile, provide nutrients to which the area is deficient, and replenishing water sources in times of drought.

2.02 Floods and Floodplains

Floods are natural processes. Throughout time they have shaped the landscape, provided habitat for wildlife, and created rich soils. Cumulatively, floods have also been our nation's greatest natural disaster, disrupting lives, and often causing significant economic losses. Television coverage of floods and their consequences has provided vivid images of the damage that can be done.

Floods happen when runoff exceeds the capacity of the river or stream channel. Water overflows onto the nearby low-lying lands called floodplains. A floodplain is flat or nearly flat land adjacent to a stream or river that experiences occasional or periodic flooding. It includes the floodway, which consists of the stream channel and adjacent areas that carry flood flows, and the flood fringe, which are areas covered by the flood, but which do not experience a strong current. In hilly and mountainous areas, flooding is likely to be rapid, deep, and dangerous. In relatively flat floodplains, land may stay covered with shallow, slow-moving flood water for days or even weeks.



Human activity often leads to flood damage. When people use flood-prone areas along rivers and streams, they do two risky things. First, their homes, businesses, and activities get in the way of the natural overflow of the waterway. Sooner or later, they will be damaged or destroyed. Second, their buildings, pavement, landscaping, roads, and other facilities take up space in the normal floodplain that is needed to carry extra water during a flood. This forces the flood water to move farther away from the natural waterway, flooding more land. It sometimes also increases the velocity and height of the floodwater. In addition, there may be flood hazard areas along the smaller streams and other watercourses in a community that have not been identified or mapped through a study of its flood problems. New development can increase water run-off, causing flooding in places that have never been flooded before. This is an area that the Town of Collierville monitors and assesses before these developments come in. The following

picture shows how filling in the floodplain can affect existing homes and businesses. Education, response, and relief with respect to flooding is discussed further in Chapter 6.

