



## Flash Flooding

Each year, more deaths occur due to flooding than from any other thunderstorm related hazard, resulting in more than 140 fatalities each year. Most flash floods are caused by slow moving thunderstorms, thunderstorms that redevelop over the same area, or heavy rains from tropical storms and hurricanes. These floods can develop within minutes or hours depending on the intensity and duration of the rain, the topography, soil conditions, and ground cover.

A flash flood is a rapid rise of water along a stream or low-lying urban area. Flash floods can roll boulders, tear out trees, destroy buildings and bridges, and scour out new channels. Rapidly rising water can reach heights of 30 feet or more. Flash flood-producing rains also can trigger catastrophic mud slides.

### WHAT TO LISTEN FOR:

#### ***Flash Flood Watch:***

Issued by the National Weather Service to indicate current or developing hydrologic conditions that are favorable for flash flooding in and close to the watch area. The occurrence of flooding is neither certain nor imminent. Those in the watch area should be alert for flooding.

#### ***Flash Flood Warning:***

National Weather Service meteorologists have determined that flash flooding is occurring or imminent. Those in the warning area should take the necessary precautions at once.

**DID YOU KNOW?**  
**Six inches of fast moving water can knock you off your feet.**



NOAA

## TURN AROUND, DON'T DROWN!



Almost half of all flash flood fatalities occur in vehicles. Many people do not realize two feet of water on a bridge or highway can float most vehicles. If the water is moving rapidly, the car, truck, or SUV can be swept off the bridge and into the creek or downstream with the flowing water. Water

can erode the road bed, creating unsafe driving conditions. Underpasses can fill rapidly with water, while the adjacent roadway remains clear. Driving into a flooded underpass can quickly put you in five to six feet of water. Many flash floods occur at night when flooded roads are difficult to see.

When you approach a flooded road, TURN AROUND, DON'T DROWN!



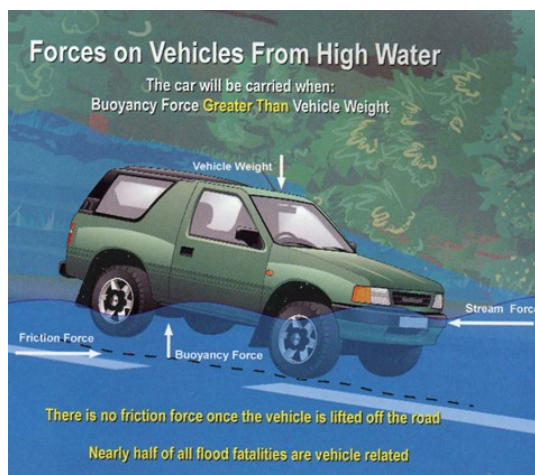
*Road damage as a result of flash flooding.*

## WHY DO VEHICLES FLOAT?

Many people believe their vehicle is too heavy to float and will remain in contact with the road surface. Think about that for a moment. Aircraft carriers weighing more than 97,000 tons float on the ocean.



*U.S.S. Eisenhower*



While a car may weigh around 3,000 pounds, it can still float with enough water beneath it.

Vehicles, including ships, float because of buoyancy. Buoyancy is a force that pushes up on objects in water (or other fluids). Most cars can be swept away in 18-24 inches of moving water when the force of buoyancy beneath the vehicle (pushing up) becomes greater than the force of the weight of the vehicle (pushing down). Trucks and SUVs do not fare much better with an additional 6-12 inches of clearance. Once the vehicle begins to float, it can easily be swept away by the force of the moving water.

## MYTH VS. FACT

### **MYTH:**

*Flash floods only occur in the eastern United States.*

### **FACT:**

Flash floods have and can occur in all 50 state, including Alaska and Hawaii.



USGS

### **MYTH:**

*Flash floods occur only along flowing streams.*

### **FACT:**

Flash floods can occur in dry creek beds and urban areas where no streams are present.

### **MYTH:**

*Flash floods occur mainly in the late afternoon and evening.*

### **FACT:**

Flash floods can occur at any time of day, many flash floods occur at night, too.



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### **MYTH:**

*Larger vehicles, such as SUVs and pickups, are safe to drive through flood waters.*

### **FACT:**

Two feet of rushing water can carry away most vehicles, including SUVs and pickups.

### **MYTH:**

*Homeowners insurance policies cover flooding.*

### **FACT:**

Unfortunately, many homeowners do not find out until it is too late that their polices do not cover flooding. Contact your insurance company or agent about flood insurance.

# FLASH FLOOD SAFETY

## *What You Can Do!*

### BEFORE THE STORM:

- ◆ Know the county in which you live and the names of nearby major cities.
- ◆ Check the weather forecast before leaving to be outdoors for extended periods.
- ◆ Watch for signs of approaching storms.
- ◆ Monitor the NOAA Weather Radio or your favorite news source for vital weather related information.
- ◆ Do not camp or park your vehicle along streams and washes, particularly during threatening conditions.

### DID YOU KNOW?

**Water weighs 62.4 pounds per cubic foot.**

### IF FLOODING OCCURS:

- ◆ Get to higher ground.
- ◆ Get out of areas subject to flooding. This includes dips, low spots, canyons, washes etc.
- ◆ Avoid areas already flooded, especially if the water is flowing fast.
- ◆ Do not attempt to cross flowing streams.
- ◆ Road beds may be washed out under flood waters. **Never** drive through flooded roadways.
- ◆ Do not allow children to play near high water, storm drains or ditches. Hidden dangers could lie beneath the water.
- ◆ Be especially cautious at night when it is harder to recognize flood dangers.

