

Hazard/Definition

Severe Thunderstorm/Hail:

A violent storm accompanied by thunder, lightning, strong winds, hail and rain.

Description/Frequency

Thunderstorms develop when cold upper air sinks and warm moist air rises. As the warm air rises, storm clouds, called "thunderheads" develop. These clouds make the thunderstorm, which brings strong winds, lightning, hail and rain. Thunderheads may be miles across at the base and reach heights of 40,000 feet or more. The typical thunderstorm is 15 miles in diameter and lasts an average of 30 minutes. They most often occur during the afternoon and evening hours. Despite their size, all thunderstorms are dangerous. In addition, tornadoes and flash floods can be caused by these storms. Thunderstorms in Boulder County often produce little rain, but very strong wind gusts and dust storms.

Historical Score: 3

Severe thunderstorms occur in the County several times each year during the summer months.

Significant Storms:

September of 1989: Two months following the Black Tiger Fire, heavy rain and hail caused a mudslide in Boulder Canyon. One mountain home was destroyed. Lack of vegetation following the fire contributed to the flooding. Hail fell in the Cities of Boulder and Lafayette. Lightning caused a small forest fire in Coal Creek Canyon. Power outages occurred throughout the county.

July 11, 1990: The hail storm of July 11th traveled along a line from the Town of Lyons in northern Boulder County, tracking to the southeast along the foothills, catching the eastern portion of the City of Boulder. Hail was reported in the southeastern part of the county where Louisville got marble size hail. The storm path was five to ten miles wide. It continued in a southeasterly direction and moved into the Denver area where the storm was the most severe.

July 20, 1990: Thunderstorm caused localized flooding in the City of Boulder. Bear Creek in the Table Mesa area overflowed its banks. Large rocks tumbled down on highway 119 at the mouth of Boulder Canyon.

Mitigation Options/Strategies

- C Daily weather reports are obtained from a private meteorologist and the National Weather Service.
- C Public education programs to increase personal protection and reduce the number of deaths from severe thunderstorms that are sometimes accompanied by hail, lightning and flash flooding.
- C Keep posted on weather conditions through the use of radio, television and newspapers.
- C The Cities of Boulder, Longmont, Louisville and Lafayette have outdoor warning sirens that are used during emergency situations. A public awareness campaign is done during the months of April, May, June, July and August to educate the public on what the sirens mean and what they should do when they hear the signal.
- C SCC Communications and US West partnered together for a warning and evacuation system for Boulder County. It is called the Emergency Warning and Evacuation Service (EWES) and is part of the Emergency Preparedness Network (EPN). The existing 9-1-1 database of telephone numbers and addresses is used in combination with detailed maps to help determine the geographic boundaries of an area impacted. The system is capable of calling up to 2,000 numbers in one minute. It is designed to deliver recorded information to endangered people in advance of a disaster or any major event. Messages can be delivered in various languages, as well as to pagers or the Emergency Alert System (EAS). Multiple floodplain areas can be handled during a single event with priority given to the area most impacted.
- C The Boulder County Multiple Agency Coordinating System (MACS) group, consists of representatives from all agencies and jurisdictions within the County. This group makes plans and agreements for the procurement of resources needed during emergencies.

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September 1990: Heavy rain and hail triggered mudslides in Boulder Canyon.

June 1993: Heavy rain caused low-lying flooding and Boulder Creek overflowed its banks onto the Creek Path where it passes under Broadway. Heavy rain fell in the mountains near Ward and Nederland. Rockslides were reported on Flagstaff Road. The storm dumped 2-1/2 inches in two days on Boulder County, setting records for rainfall and cool temperatures.

August 1994: A severe thunderstorm accompanied with heavy rain caused street flooding in the Cities of Boulder and Longmont. In Boulder, rivers of water more than a foot deep were reported along Canyon Boulevard, Valmont Road and Folsom Street. On 17th Street between Canyon and Arapahoe the rushing water washed out part of the street creating a deep pit. The Town of Lyons was hit the hardest and suffered the most damage. A gas main burst when street flooding caused the road to collapse. Power outages occurred and many trees were blown down.

Potential Score: 5

This hazard is rated high because of the probability of occurrence during any given year. Heavy rain that accompanies these severe storms may cause flash flooding, threatening people's lives and property.

Impact on Life and Property:

Lightning occurs with all thunderstorms, causing death and injury to people and substantial damage to property and forests. Hail storms are frequent in Boulder County but not always necessarily severe. These storms can impact an area financially because of the damage that they cause. The hail storm of 1990 was the most costly United States hailstorm with total damages near \$625 million.

Mitigation Options/Strategies

Revised 2000