

## California Flood History

1862 &ndash; Parts of Sacramento under 20 feet of water.

1955 - Floods in northern and central California killed 67 people.

1964 &ndash; Huge storm hit northern coast of California, resulting flood on Eel River killed 24 people.

1986 &ndash; Central California flooding left 14 dead and caused over \$1.5 billion in property damage.

1997 &ndash; Flooding killed eight and caused more than \$2 billion in property damage. Forty &ndash; eight counties declared disaster areas.

2004 &ndash; Upper Jones Tract levee break in June results in federal disaster declaration and \$90 million in damage.

2006 &ndash; Governor declares state of emergency due to threat of major flooding in northern California and San Joaquin Valley.

### The Floods of 1995

The first winter rain season following the Old Topanga Firestorm created more worry than disaster. Although mudslides, debris flows, and flooding did occur, the extent of damage was manageable, albeit costly in terms of public works projects. However, despite the absence of massive flooding and debris flows, sedimentation was accumulating in the drainages below the slopes cleared of mature vegetation. Through various erosional processes, such as dry ravel, and the stage was being set for a disastrous chain of events should a heavy rain season appear within the next few years. That season came in the winter of 1995 as an El Nino weather pattern formed in the Pacific Ocean producing heavier than usual rains throughout the State of California and the West.

As the years prior to the Fires of 1993 involved a prolonged drought, many of the watersheds stripped of vegetation had been eroding due to dry ravel, a process which was further enhanced by barren slopes with hydrophobic soils. Many of the major riparian corridors within the burn area of the Old Topanga Firestorm were loaded with sediment and only required the right flow of water to set off the second part of the fire/flood cycle. The first heavy rains hit the Santa Monica Mountains in late January and continued through February and well into March of 1995. In January a storm of only 2 year intensity hit the Las Flores Canyon, Carbon Canyon, and the Malibu/Cold Canyon watersheds. The damage from this storm alone was several million dollars, and it completely flooded the area surrounding Malibu City Hall, closed the Pacific Coast Highway (PCH) in several locations for days, as well as most of the few remaining access route in and out of the city. In March of 1995 a storm hit the mountains dumping over 3 inches of rain in 2 hours upon the Topanga Canyon, Tuna Canyon, and Pena Canyon watersheds. The result of this storm was a debris flow which covered PCH with over 12 feet of mud and debris and closed the major route in and out of Malibu for over 3 days, as well as damaging or destroying several residences and associated structures.

Many historic and ancient landslides throughout the Santa Monica Mountains were reactivated by heavy, and more importantly, constant winter rains. The Rambla Pacifico landslide, which in 1984 destroyed 11 homes and closed the easiest access route to PCH, again began to move at a rate of approximately 60 feet per year on average on its northern lobe, and 30 feet per year at its southern lobe. The increase in speed was largely the result of the undermining of the slide mass by Las Flores Creek, which was flowing along the base of the slide at a rate of at least 4,000 cfs during the storm events of January and February 1995. The movement of the slide now threatens one of three remaining access routes into the area, as well as properties adjacent to the slide destroyed by the fires.

Many other landslides throughout the Santa Monica Mountains have activated as a result of the rains, closing roads for weeks on end. Some roads remained closed into the summer and fall of that same year. These landslides become active as ground water filtrates through soil horizons and onto the slide plains of these unstable slopes. Approximately a hundred properties are now threatened by the active movement of both small and regional slides. Many of these

properties have subsequently been impacted by the floods of 1995, and the Old Topanga Firestorm of 1993.