AFTF Study Area Flood History

To support the Alluvial Fan Task Force, the Department of Water Resources charged the Water Resources Institute at California State University to examine the history of flooding in Southern California obtaining records of local flood history related to alluvial fans from local flood managers in the AFTF Study Area consisting of Imperial, Kern, Los Angeles, Orange, Riverside, Ventura, San Bernardino, San Diego, Santa Barbara, and Ventura counties. Damages and costs contained in this report have not been adjusted to current value and reflect the amounts in the year in which the event took place.

History of Flooding in Southern California

For purposes of this report, Southern California will consist of the counties of San Diego, Imperial, Riverside, Orange, San Bernardino, Los Angeles, Ventura, Kern, San Luis Obispo, and Santa Barbara. Reaching from the Pacific Ocean to the west to the Colorado River on the east, Southern California has an extraordinarily diverse landscape. There are the steep San Gabriel, San Bernardino and San Jacinto Mountains, home to National Forests full of canyons, many of which contain seasonal and intermittent rivers. The western side of the Transverse Ranges is contiguously and densely populated. There are huge areas of arid desert that are also quickly being urbanized, as well areas of sparsely populated land. Many areas use imported water to irrigate vast tracts of agriculture land, and some land that is left in its natural state. To say the least, there are many opportunities for flooding.

Southern California floods because of its unique geology and climate. Southern California's Native American's adapted over the millennia to these circumstances. Often they moved with the season, and in general saw the landscape more from an entire watershed perspective rather than using rivers as boundaries. Water was a critical aspect to many of the decisions about where to live, either because of its scarcity or its over-abundance. Although Native peoples did manipulate the natural environment, the scale at which this was done was far less then those who arrived later.[1]

Later European settlers did not and have attempted ever since the arrival of the Spanish military and missionaries and subsequent waves of Americans to "tame" this environment. Soon after arriving in San Diego in 1769 and establishing the first mission there, the Portola expedition left to establish a second mission in Monterey. Soon after leaving San Diego, Fray Juan Crespi, one of the expedition's diarists, noted while camping on the banks of the Santa Ana River that "it is evident from the sand on its banks that in the rainy season it must have great floods which would prevent crossing

[1]Hundley, Norris, Jr.; "The Great Thirst: California and Water, 1770's-1990's"; University of California Press, 1992; Pg.15

it."[2] A few days later on August 1, camping where the Mission San Gabriel now sits, he wrote "At ten in the morning, the earth trembled. The shock was repeated with violence at one in the afternoon, and one hour afterward we experienced another"[3] Thus we have the first written account of what residents might expect from Southern California's weather and geology. Despite the flooding and earthquakes Crespi was impressed with the quality of the soil and the future of agriculture and thus the allure of settlement. Many of the missions would suffer flooding and earthquakes necessitating their relocation. Later settlers would encounter similar problems, but as the population became denser, relocation became less possible. As the region filled up, development occurred in more and more unstable areas.

The 10 counties that make up Southern California are among the fastest growing areas in the United State and the area is home to almost 24 million people. The highest density areas are Los Angeles, San Diego and the Riverside/San Bernardino Inland areas, with hundreds of miles of mostly impermeable surfaces, which can exacerbate flooding.[4]

To address the issue of flood protection in these areas, the California Department of Water Resource convened an Alluvial Fan Task Force in 2007. The Task Force was to study methods for reducing flood hazards and to create a Model Ordinance and Design Guidelines that would encourage sustainable development decisions in Southern California. In order to fully understand how flooding has shaped and will continue to affect the 10-county study area, the AFTF, in conjunction with the Water Resources Institute at Cal State San Bernardino, compiled a study of the flood history of Southern California.

Flooding's geologic connection

Southern California's diverse geology combine with an erratic precipitation pattern provides the region with a proclivity for flooding. The moving force behind this precipitation is the Pacific Ocean. Most of Southern California enjoys a Mediterranean climate, with cool rainy winters and dry summers. Most rain falls from October to March. The coastal areas have summer fog, and are fairly temperate. The inland areas are both hotter in the summer and colder in the winter. The mountain areas have snow in the winter and cooler summer temperatures. The deserts see very little precipitation but are subject to monsoonal weather patterns of late spring and especially summer heavy rain events. Many of the most densely populated areas are in the valleys at the foot of steep mountain ranges which push the clouds upwards to release their condensation, and these areas receive much higher rainfall (and snow) totals. Once the weather system drops much of the moisture, the areas in the 'rain shadow' of the mountains are much more arid

[2] Crespi, Juan; 1721-1782; Diario y descripcion de los dilatados; A description of distant roads: original journals of the first expedition into California, 1764-1770; Edited and translated by Alan K. Brown; San Diego State University Press, 2001
[3] Ibid
[4] Troxell, Harold C; "Water Resources of Southern California with Special Reference to the Drought of 1944-51; U.S.G.S. Water Supply Paper # 1366; United States Government Printing Office; 1957; pg 42

with far less rain. Mountain areas may see upwards of 50 inches of seasonal rainfall, and desert locations may have as little as 4 inches a year.

Weather phenomena such as El Niño and La Niña can also have huge impact on weather patterns. Rainfall amounts, however, don't necessarily correspond with flooding events. Sometimes they go hand and hand, but just as often they aren't related. Rainfall averages are not a good basis to predict historic flooding since accurate records cover only totals since 1870's and certainly doesn't cover the entire study area. For example, over a century an area such as Los Angeles may have had a rainfall average of 15 inches, but a closer look reveals that average is made up of years of less than 5 inches for some years, to over 30 inches for others.[5] These wild variances in yearly rainfall amounts are the pattern to remember. In most locations of the study area, the majority of the rains come during the typical rainy periods from October to March. Global warming may also play a role by bringing wetter warmer storms during the winter months when most of Southern California receives the majority of its rain.[6] When an area has experienced consistent rain throughout the season, its soil can become completely saturated, and run-off rates increase. A large storm with high levels of precipitation near the end of the rainy season can cause flooding. But even a somewhat moderate rainfall rate concentrated in a small geographic location can and does cause flooding events. Because each location may experience any one of these scenarios, floodplain management is very challenging. Add in factors such as funding issues, population density, politics, frequency of flooding events, and all the other factors that make Southern California a unique place to live.

Floods and Burned watersheds

Another aspect of flooding to consider are the fires in any part of a watershed. The burned areas are also often associated with higher precipitation amounts as well as they occur in the San Gabriel, San Bernardino and San Jacinto Mountains that surround much of the urbanized areas of Southern California. The extent of a fire is not limited to the destruction of homes and businesses that are located in the mountains but also to the watershed. During a fire a waxy substance can be left behind from the burning of brush and trees that remains on the soil itself. This soil resists percolation and saturation of rains that may follow some months after a fire. Instead of the rain being absorbed in part by the soil, the water accumulates on top of the soil and leads to higher run-off and can results in flooding.[7] This cycle of floods following fires in the watershed has been closely observed for more than 90 years in the Southern California region.[8]

Because Southern California always has concerned itself with securing a sufficient water supply for its population, and periods of drought are very common, finding, keeping, and

[5] Orsi, Jared; "Hazardous Metropolis: Flooding and Urban Ecology in Los Angeles"; University of California Press; 2004; pg 3
[6] Carle, David; Introduction to Water in California; University of California Press; 2005; pg 31
[7] McPhee, John A.; "The Control of Nature"; Farrar Straus Giroux; 1989; pg 213
[8] Rowe, William Penn; "Report on the Keenbrook Burn of August,1940"; unpublished engineer report; 1943

replenishing that supply is a constant concern.[9] Certainly this is one reason that flood control, or more recently, flood management, has evolved over the years. A hundred years ago, when far fewer people were living in Southern California, any water that flowed in rivers and had a natural terminus of the Pacific Ocean was considered wasteful. Conserving water for beneficial use, most often for agriculture lands, was the highest goal. Saving as much water as possible from flowing into the ocean even in the event of minor flooding was considered inconvenient but necessary.[10] To that end, conservation districts built small dikes or levees to slow the flow of water so that more water was captured to recharge aquifers. Flood control sometimes took a back seat to conservation concerns. When Southern California was sparsely populated, the negative consequences of floods could be somewhat avoided by leaving large open areas undeveloped and subject to the natural cycle of events. With time, much larger human populations began to encroach on flood plains and less and less land became available for the natural systems to operate.

Flooding and development

By the turn of the 1900's, flooding often brought with it large losses of property and lives. It was a flood event (1914) that focused the attention of many citizens living in Southern Californians with the idea that water could be controlled in the event of a flood.[11] Most notably, the County of Los Angeles and the U. S. Army Corps of Engineers began working together to combat flooding along the rivers in the region. Before this, the Army Corps in Southern California had concerned itself "with the development of harbors along the coast, military construction, and a certain amount of investigative and exploratory work"[12] that prevented the navigation of ports, harbors, and rivers. Previously, the Army Corps had worked to remove silt from Los Angeles Harbor washed down to the water's edge by flooding.

Before 1914 municipalities were most often reactionary to floods, simply cleaning up after an event, but doing little to prevent flooding beforehand. That began to change with each successive flood after the turn of the century, as more and more people moved into the region. A federal, state or local response to these events sometimes resulted in ways to get water away quickly from populated areas, such as lined channels and eventually to concrete canals of practically entire river systems.[13] These very efficient measures do

[9] Troxell, Harold C; "Water Resources of Southern California with Special Reference to the Drought of 1944-51; U.S.G.S. Water Supply Paper # 1366; United States Government Printing Office; 1957; pg 8
[10] Troxell, Harold C; "Water Resources of Southern California with Special Reference to the Drought of 1944-51; U.S.G.S. Water Supply Paper # 1366; United States Government Printing Office; 1957; pg 53

[11] Orsi, Jared; "Hazardous Metropolis: Flooding and Urban Ecology in Los Angeles"; University of California Press; 2004; pg 36

[12] Turnhollow, Anthony F.; "A History of the Los Angeles District U.S. Army Corps of Engineers 1898-1964"; U.S. Army Engineer District, Los Angeles; 1975; pg 9

[13] Orsi, Jared; "Hazardous Metropolis: Flooding and Urban Ecology in Los Angeles"; University of California Press; 2004; pg 153

offer a level of control unseen with some other methods. However, the consequences of concrete channeling include loss of natural esthetics, loss of habitat, the high cost of building and maintaining the structures and many other concerns. These channels move water very swiftly away from urban areas, but also don't allow for the re-charge principles that were once popular for replenishing aquifers.[14]

Any historic analysis of flooding in Southern California must also address the beneficial aspects of flooding on the landscape. Floods must not be thought as simple disasters, as wholly negative, but rather as dynamic forces of nature on the landscape. Development has most often been located on top of this dynamic system because the ease of grading large sections of land formed by thousands of years of flooding. These slopes, known as alluvial fans are found at the base of mountains throughout the west, and were created by flooding in the first place. The groundwater all of us depend on in Southern California comes in part through flooding on these alluvial fan surfaces, which through their layers of coarse rock and finer silt create underground aquifers that fill with water during flooding events. Along with others, these are the beneficial aspects of a flood. As early as 1883, Southern California Historian James Miller Guinn remarks that floods "like everything else in our State, which can not be measured by the standards of other countries. We are exceptional even in the matter of floods. While floods in other lands are wholly evil in their effects, ours, although causing temporary damage, are greatly beneficial to the country. They fill up the springs and mountain lakes and reservoirs that feed our creeks and rivers, and supply water for irrigation during the long dry season. A flood year is always followed by a fruitful year."[15]

The limitations of studying flood history

A simple list of the years that flood events occurred in Southern California can be a disservice to the reader. Taking the list and turning it into an average or any other kind of statistic misses the value of knowing the history of flooding and its consequences. Because Southern California covers a very wide and diverse territory, each flooding event tells a unique story. No flooding event replicates any other flooding event, even when the events happen in the same geographic location. Rather, the value is to know the pattern of flooding events which can be used to determined why, where and what consequences they may have in an area. In fact, the dates of a flooding event are not very useful other than as a way to record that flooding happens and happens with regularity.

The limitations to this study are the difficultly of locating research materials. A few counties have compiled their flood accounts, and maintained historical records well, but most have not. Los Angeles County in particular has generated several books written by various authors about the subject of flood control, most commonly critical of existing

[14] Troxell, Harold C; "Water Resources of Southern California with Special Reference to the Drought of 1944-51; U.S.G.S. Water Supply Paper # 1366; United States Government Printing Office; 1957; pg 55

[15] Guinn, James Miller; "Exceptional Years"; Historical Society of Southern California; 1883; pg 33-39

flood control works. Efforts to locate reports from each county's flood management agency have met with mixed results. Each county in the study area approaches document management in very diverse and often inconsistent ways. Historic document management at most Southern California flood agencies is poor at best and non existent in many. A comprehensive history of all flood events in Southern California has not been written, nor have the documents been readily available. Lack of historic document management at state and federal levels is consistent to that of the counties.[16]

Due to the difficultly of locating substantiating documents about flooding events at the county, state and federal agency levels, records used for this report are sometimes newspaper articles, first-person accounts, and descriptions of some flooding events that can only be described in more general terms. The methods used to monitor flooding events have also evolved over time; with earlier reports relaying on damages seen after an event has taken place, or a written record taken from a personal journal or entry in an engineer's field notebook. Later reports more often contain more technically accurate flood descriptions, but often lack the human element entirely. Large floods also sometimes wash away monitoring equipment such as gaging stations, making completely accurate reports impossible.

In general, flood reports written before 1978 are often very thorough. After that date, county agencies often didn't have the resources to write reports and relied on state and federal agencies to write the reports about flood events. These reports are sometimes written without first hand knowledge of the area or the event. This lack of written records makes it difficult at times to write or research thoroughly about flood events in even one county, much less the entire region.

One hundred years of flooding history

Although we have some written records of flooding in Southern California dating to the beginning of the Mission Period in the 1700's, this report will concentrate on the flooding history of the years 1905-2005. It must be noted that the largest flood of record for much of the area of Southern California falls before this time period, in 1862. The flood of 1862 is the largest flood on record and nearly every watershed in Southern California was affected.

All the floods in this report have caused considerable damage to transportation routes-roads, bridges and rail lines, and shipping harbors, erosion of lands important to agriculture, damage to homes and structures of all kinds, and loss of life to humans and livestock. They have disrupted daily lives, and caused many hardships.

There have been some very widespread flooding events that have caused severe problems in all 10 counties in a single year. In all likelihood these sizable floods will almost certainly happen again. Isolated events or flooding that happens in a relatively small

[16] Pielke, Jr., R.A., M.W. Downton, and J.Z. Barnard Miller, 2002: Flood Damage in the United States, 1926-2000: A Reanalysis of National Weather Service Estimates. Boulder, CO: UCAR.

geographic area should not be overlooked. These events can cause just as much, or even more destruction, loss of life, and cost of damages for the local area than larger regional events might.

Imperial County Flood History

1916

January 22, 1916

Colorado River flood with a peak flow estimated at 250,000 c.f.s. at Yuma caused flooding at Brawley

1921

June, 1921

Colorado River flood caused by snowmelt at Upper Colorado River basin caused flooding in Lower Colorado River basin. Peak flow is estimated at 188,000 c.f.s. at Yuma. This caused flooding at Brawley.

1939

September 5-7, 1939

A series of Tropical disturbances left behind heavy rain. 5.02 inches fell in Brawley and 4.31 inches in El Centro. This exceeds the annual rainfall of 3 inches. Brawley's Main Street flooded curb to curb. Three bridges were destroyed north of Brawley by the floods and 5 more had serious damages. The County Jail flooded by a foot and half of water, and public schools were closed. One person died as a result of electrocution. A sharp increase in Mosquitoes was seen (and felt!). There was damage to the All American Canal and drainage system. Most of the damage was done to agricultural lands and irrigation works such as canals and delivery systems. Debris from the storm was deposited on Highway 98. The estimated cost of damages to the irrigation works was set at $110.000.00.

1976

September 9-11

Tropical Storm Kathleen came ashore September 9th and brought with it heavy rains. It brought about 10 inches of rain to some desert areas. San Felipe creek overflowed and caused extensive damage to 3, 390 acres agricultural land of cotton, alfalfa and hay, irrigation works and damage to roads. Carrizo Wash washed out roads and rail lines. In the small town of Ocotillo the south section was flooded by Myer Creek. Then the creek shifted and the north end of town flooded. This flooding left behind 1 to 3 feet of silt and mud and damaged many homes and structures. 3 fatalities occurred in the Ocotillo area.

Two people were swept to their deaths on Interstate 8 when it washed out. Major flood damages to Interstate 8, State Highway 98 and the San Diego and Arizona Eastern Railroad lines. The bridge at Myer Creek washed out. 6 homes were destroyed. 55 homes were damaged and 1 business. The trestle bridge of the Railroad at Coyote Wash washed out. Coyote Wash and Yuma Wash overflowed and damaged 2,000 acres of agricultural lands. Pinto Wash and Westside Main Canal Break overflowed and caused extensive damages to agricultural lands of cotton, alfalfa and sudan grass, about 1,750 acres all told. This flood event caused an estimated $20, 231, 000.00 in damages.

January 23-25, 1976

Topical storms revisited the same area and again left behind heavy rains. At San Felipe Creek damages to agricultural lands due to the overflow of the creek during the flood. Mammoth and Iris Creek Wash overflowed and damaged or destroyed irrigation works and flooded agricultural lands. Roads and highways were covered with debris and the small town of Niland had some infrastructure damage from the flood. This flood event had estimated damages of $5,664,000.00.

1977

August 15-17, 1977

Tropical Storm Doreen moved inland leaving behind intense rain in Imperial County. The County was declared a disaster area. Thunderstorms brought 4 to 5 inches to the desert areas. The result was severe flooding to agricultural lands, causing widespread damage to crops, utilities, roads and structures. Irrigation systems were destroyed at Niland, and Westside Main Canal was out at Westmorland. Niland flooded, and in Holtville the sewer plant was badly damaged. A house was flooded in Holtville. In Calexico streets were flooded and two feet of water flooded City Council chambers. In El Centro roads, sewer and homes were flooded. In Calipatria a ditch overflowed and the city was flooded with 2 feet of water. 16 housed were flooded there with mud and water up to 5 inches. Interstate Highway 8 west of Ocotillo was damaged.

1983

Colorado River flooding was a result of rapidly melting record snowfalls in the Upper Watershed. This resulted in high volumes of water to be released from Glen Canyon Dam, Hoover, Davis and Parker Dams. This caused flooding to low laying areas in the Lower Colorado River Watershed. Damage to recreational facilities, such as camp grounds, boat docks, launch sites and the businesses services these facilities. Sewage treatment plants were also subject to flooding.

1993

January 8-March 3

Severe winter storms brought wide spread flooding most of Southern California. In Imperial County approximately 650 miles of County maintained gravel roads suffered flood damages.

1995

January 4-24, 1995

A series of storms struck Southern California beginning January 4th. Imperial County was declared a disaster area January 10th by President Clinton. The Salton Sea continues to rise because of high rates of rainfall. A trailer park at Desert Shores had 134 lots flooded. Water in this area is also seeping into the underground electrical system and caused power outages. It also caused problems with the sewage treatment operations. Seawalls are crumbling and falling down. The Salton Sea Beach was submerged. Some existing dikes, owned by Imperial Irrigation District were raised to prevent further flooding. 16 miles of dikes were raised 2 or more feet for this propose.

Kern County Flood History

1914, 1916 floods were mentioned in reports, but no supporting documentation found at this time

1931

June 8, 1931

An intense rain storm in the Taft, South Taft, Taft Heights, Ford City, and Fellows areas caused widespread flooding. Public Schools were flooded, homes destroyed, oil company facilities, highways, roads, and utilities were torn out and badly damaged. Two 500 barrel oil tanks were washed off their foundations and some of this oil, and the oil from the fields spread oily mud over lawns, homes, businesses and infrastructure of these areas. The flood destroyed a rail spur track. The stadium at Taft High school was obliterated.

1932

September 24-30, 1932

Heavy rains from a series of storms brought a lot of rain to the area of the Tehachapi Mountains. Tehachapi Creek overflowed its banks, and at each of the 6 railroad bridges along the creek debris snagged and created unstable debris dams which held back flood waters long enough to create temporary reservoirs of run-off. These dams break apart as water builds behind them creating surges of flood waters that exasperate the flooding problems. In 1932 walls of flood water, some 40 feet high raced down Tehachapi Creek as each bridge gave way. Two railroad trains, one 40 cars long and the other 66 cars, were caught in the flood waters and overturned and buried by flood water and debris. The flood waters, with the trains and other debris then ran right into a nearby Service Station

where 19 men were seeking shelter from the rain. 26 people at least died as a result. The community of Tehachapi was flooded with 5 feet of water and conditions were similar in the communities of Monolith and Mojave. At least 9 railroad bridges were lost and a large trestle west of the Tehachapi was lost in this flood, along with miles of rail lines. The cost to the railroads for track repair was $600,000.00. One of the train engines was found days later buried under 10 feet of silt and debris, 150 feet from where it fell into Tehachapi Creek.

1937

February, 1937

This was a large flood, and Bakersfield narrowly escaped inundation in this event. The levee that was built to protect Bakersfield came within one foot of overtopping during this flood. An emergency flood fight helped to protect the levee from overflow. Fruitvale and Fairhaven areas were flooded. 16 people had to be rescued by boat in these areas. Over 50 people were evacuated and all of their homes were destroyed or badly damaged. Agricultural lands were flooded or washed away, and livestock drowned in the flood. Roads and oil production facilities were damaged.

1950

November, 1950

The Kern River had an estimated peak flow of 38,000 c.f.s. This was the second largest flood of record when over 14.5 inches of rain and 2 feet of melted snow collected in the Kern River to produce a very damaging flood. Roads, bridges, and highways were washed out, or blocked by landslides. Many homes and other structures were flooded. The fish hatchery was almost completely destroyed. Agricultural lands were damaged or destroyed. Isabella Dam was in mid-construction when this event took place and equipment being use to build the dam were flooded or buried, including a big power shovel. People in the Rosedale and Stockdale areas were evacuated. An emergency flood fight by 500 volunteers worked to make sure the levees surrounding Bakersfield stayed sound and didn't overtop.

1955

December, 1955

Over 15 inches of rain over a 2-day period caused some flooding along the Kern River. Homes and roads both were flooded during this time. The fish hatchery, rebuilt after being destroyed by flooding in 1950 was again washed away. They lost 683,000 fish. The Kern River was 20 feet higher than normal. The areas near Kernville were evacuated. Telephone service was disrupted.

1956

October 4, 1956

A cloudburst in the Sandy Creek area caused flooding in the Taft and Ford City area. The area was completely cut off from surrounding areas because of mud flows and debris. Domestic water supply lines were washed out as were telephone lines. The sewer plant filled with sand. Transmission lines were also struck by lightening and failed. The practice fields at Taft College and Taft High School were severely damaged by erosion or filled with mud. Water was up to 6 feet high at the High School during the flood. Agricultural lands were heavily damaged by this event.

1963

February, 1963

Forty people were evacuated from their homes in the Kernville area as flood waters from the Kern River threatened their homes. Once again the fish hatchery sustained damages, and all the fish lost-some 225,000 rainbow trout that were about to be released. Over 14 inches of rain fell over a short duration. Everyone staying in low laying areas was evacuated. Public Schools in the Johnsondale area were cancelled. Roads, homes, and utilities were all damaged.

September 17-19, 1963

This flood took place in the Ridgecrest area, near the China Lake Naval Weapons Center. This heavy rain event flooded businesses along the Inyokern Road (State Highway 178) and to the Naval Administration and industrial facilities. This was mostly a result of under-designed culverts at the Highway which failed to carry off water from the El Paso Wash.

1964

September, 3, 1964

A high intensity rain in the El Paso Mountain area overwhelmed the storm culverts at Highway 178 and El Paso Wash and overflowed both sides of the Highway and into the U.S. Naval Weapon's Center. The Michelson Laboratory was flooded which sustained damages totaling $278,000.00.

1966

December 2-7, 1966

The greatest flood of record produced an estimated peak flow on the Kern River at Kernville of 74,000 c.f.s. Almost 21 inches of rain in two days caused this flooding event. The Highway Bridge at Kernville was destroyed by flooding. An electric plant up stream

from the Bridge was washed out, hitting the bridge and collapsing it. The fish hatchery, to the surprise of none, washed away. Many people were evacuated from the Kernville area. Prisoners at a work camp were evacuated and sent to facilities in Bakersfield. All roads in the mountain areas are out either due to washing out, or by landslides. Trailer parks, motels, lodges and cabins were all swept away by flood waters. The fire station at Lake Isabella was flooded with several inches of water. The USGS gaging station was washed away on the Kern River. A section of the golf course at Kernville was washed away. Two people lost their lives during this flood in Kern County. The Belleview weir washed out. Highway 178 was closed due to flooding and debris. Had the dam at Lake Isabella not been built Bakersfield would have been completely flooded.

1969

January and February, 1969
This was a series of storms that brought extremely heavy precipitation to California. The first storm saturated the soil and the subsequent storms produced high levels of run-off. During the storms in February a heavy rain in the Ridgecrest area caused flooding along Jacks Ranch Road. The muddy flow entered businesses and other buildings in Ridgecrest and towards the Naval Weapons Center. The estimated cost of damages to Kern County for the 1969 floods was $4,700.00

1972

June 7, 1972

An intense thunderstorm centered over the north Bakersfield area causing flooding and damages in its wake. Domestic water supply lines were washed out, roads severely damaged, and cars lifted and moved during the high run-off period. Houses were flooded with up to 4.5 feet of water, apartments were flooded and destroyed. Billboard signs were toppled from erosion. The cross-town freeway was flooded in Bakersfield, and closed. Clean up of debris and sediment took several hours. Two people drowned, one a high school senior who was returning from his class picnic. Mudslides closed some roads and highways. Lightening struck 6 substations knocking the power out to most of Bakersfield. Kern General Hospital had a flooded basement and first floor, which closed the emergency room services. Memorial Hospital was threatened with evacuation if the flood control canal broke, but it held. Highway 178 was closed because of mud and landslides. Businesses downtown Bakersfield had some flooding, as did the city of Oildale. Jefferson parks municipal swimming pool filled with storm run-off.

1975

September 8-12, 1975

In the Isabella area a high intensity flash flood left behind many damages and left one person dead in Kern County. One woman was swept from Highway 14 and drowned.

High levels of sediment and debris deposits were a clean up chore on highways, roads, and on agricultural lands. Agricultural lands saw some damages, mostly to crops waiting to be picked.

1978

February, 1978

President Ford declared Kern County a disaster area on February 15, 1976. This was a heavy rain event combined with snow melt run-off in some areas. One woman died in Kern County as a result of her car being swept away by a mud slide across Interstate 5. Extensive damage to agricultural lands is an outcome to this flood. Over 6 thousand acres were flooded. Homes in the Lamont/Arvin area were flooded, as were the roads, utilities and other municipal infrastructure. Businesses and other structures were also flooded. Transportation routes, including rail traffic was suspended for as long as 3 days. 91 County roads were closed. Mudslides, landslides and debris flows were also common. The California Aqueduct was damaged. Bridges, culverts and other flood control works were badly damaged. Domestic water supply and sewer lines were washed out. Also damaged were oil field facilities. Cost was approximately $25 mil.

1983

March, 1983

Floods devastated Caliente and Lamont causing an estimated $58.7 mil in destruction. Homes, roads, city infrastructure such as domestic water supply lines and sewer lines were all destroyed. Public schools, parks, and businesses were flooded. Agricultural lands were damaged and destroyed. Irrigation works were washed out.

1984

July 15-16, 1984

A high intensity short duration thunderstorm produced flood conditions in the Goat Ranch Canyon, and Long Canyon areas. This storm followed a watershed burn by the Bodfish fire. Mudflows and debris blocked State Highway 178 and many other roads as well. Uffert Park was covered in mud flows of about 6 inches. 3 houses in the Long Canyon area became completely uninhabitable when mud flows inundated them. A small levee in this location was breached and eliminated by the flood. In the Bodfish Creek area, mudflows threatened homes.

July 30, 1984

The area at Scodie Canyon was the location of an intense thunderstorm which caused flooding in the community of Onyx. The flood waters overflowed channels, and eroded

new channels in this area. Three mobile homes were washed away by the flood waters and 9 more were completely destroyed. One man was killed by lightening in this area.

August 15-22, 1984

The area of Ridgecrest was flooded by a thunderstorm. At Cerro Coso College water flooded the administration building. Employees at the Naval Weapons Center were stranded at work as the entire road and highways were flooded, or blocked with debris. Michelson Laboratory was flooded. The area of Inyokern was also flooded by this storm. Businesses in downtown were flooded, including the offices of the local newspaper. The bridges at Highway 178 and Highway 395 were closed. Homes were also flooded in Inyokern.

1997

September 3, 1997

A convective storm arrived in Kern County in the eastern Tehachapi Mountain areas of the communities of Mojave and Cantil that caused flooding. State Highway 14 in the vicinity of Cantil and Redrock Canyon had severe damages from erosion and debris on the Highway. The Highway was forced to close until repairs and clean up could be made. The communities of Mojave and Cantil also were impacted with debris flows and flooding.

Los Angeles County Flood History

1911

Localized flooding along the San Gabriel River in San Gabriel Valley washed away nearly 130 acres of alfalfa field along with two barns. It washed away farm implements and improvements to a dairy farm. Cost of damages was $25,000.00.

1914

February 18-22, 1914

This flood event caused great damage to the harbor at San Pedro with much of it filled with run-off, sediment and debris from flooding with more than 3 million cubic yards of silt. This event, although not large by flood standards alone, prompted the residents of Los Angeles to create the Los Angeles County Flood Control District to address flooding issues that had plagued the area for decades. The flood caused $10 mil in damages to Los Angeles County. Bridges were lost, rail lines washed out, roads damaged, houses flooded, agricultural lands washed away, utilities lost, and ships were mired in silt in the harbor. Los Angeles was isolated and cut off for days. Many thousands of people were displaced for weeks by flood waters in their homes. Twenty homes in the Arroyo Seco

district collapsed into Verdugo Creek. Rainfall total at the LA United States Weather Bureau station for event was 7.04 inches.

1915 Los Angeles Flood Control District was created

1916

January 14-19 and 25-30

The cost of this flood event is estimated to be $775, 238.00. Loses to agricultural lands was $500,000 alone, mostly due to silting and the cutting of new channels by flood waters. Roads, highways and bridges sustained $254,638.00 in loses. A few bridges were lost and other damage to bridges and roadways were repairable. The railroads lost track and rail traffic was halted for several weeks until repairs were made. The Los Angeles River ran 3 miles wide. Two houses near Vernon were washed away. 50 homes in Cudahy were flooded when the levee built to forestall flooding gave way. Livestock was washed away and drowned. Most telephones and telegraph lines were disrupted. Los Angeles harbor had about 2,030,000 yards of silt deposited in the channels due to flooding. Heavy silting at Long Beach harbor as well, with over 1,000,000 yards of silt deposited. Rainfall total at the LA United States Weather Bureau station for this event was 6.90 inches.

1926

April 4-8, 1926

An unusual thunderstorm with heavy rainfall caused some flooding and lightening fires. An oil tank in Brea was struck by lightening during this event. The rainfall totals at the LA United States Weather Bureau station for this event was 7.34 inches. Damages to roads, rail lines, and utilities, as well as agricultural lands.

1927

February 12-16, 1927

This was a moderate flooding event, with some heavy rain. Damages to roads, bridges, rail lines and agricultural lands were all a results of this flooding event. There was heavy run-off due to soil saturation from earlier storms. Damages are estimated at $547,000.00 for LA County. The peak flow at the LA River at Stewart and Grey Road was 21,600 c.f.s. The peak flow at Rio Hondo and the Mission Bridge was 25,330 c.f.s. The rainfall total at the LA United States Weather Bureau station for this event was 6.38 inches.

1934

January 1, 1934

This was a major flood event in the La Canada Valley/Glendale area, leaving behind $5 Mil in damages. Flooding in the greater LA basin is serious as well. Debris flows buried 200 homes and heavily damaged 400 others. 800 automobiles were buried in Montrose, La Crescent and other foothill communities. 25 people were drowned at the Red Cross headquarters at the American Legion Hall in La Canada where they had gone to escape their flooded homes. 75 people were dead or missing as a result of this flood. Roads, bridges, homes and businesses were destroyed by mud flows and flooding. Boulders of over 1 ton were moved miles down canyons. Estimated debris flow of 659,000 cubic yards was deposited in the Tujunga, La Crescent, and Montrose and La Canada areas. Many check dams in canyons were washed out or topped. The rainfall total at the LA United States Weather Bureau station for this event was 8.27 inches. Peak flow on the Los Angeles River at State Street was 37,500 c.f.s.

1937

February 6, 1937

Los Angeles basin is flooded and many communities are underwater. Heavy rains were seen in all parts of Los Angeles County, with the City of Long Beach receiving 4.25 inches in 24 hours. Snow melt in San Gabriel Mountains may have contributed to the high run-off levels. Lives lost in this flooding event.

1938-Great Flood

March 3, 1938

$45 million dollars in damages, 113 people dead, and 5,601 homes destroyed, and damaged severely another 1500 homes. Two Civilian Conservation Corps camp was lost and the 300+ relief workers had to be rescued. Thousands of people were left homeless. Thousands of acres of agricultural land were ruined, due to silting, scour, or flooding. All roads in the San Gabriel Mountains were washed out. All rail lines were out of service due to washouts or bridges gone. The Lanker shim Boulevard Bridge collapsed. 91 railroad and highway bridges were destroyed, or badly damaged. Utilities, including telephone, electric service and natural gas lines were out. All traffic street lights were out-leaving traffic a huge mess. Public schools were closed. Thousands of people had to be evacuated, some by emergency action. Sewage and water supply lines were washed out. With rail lines out, there was no mail delivery service-so mail was taken by the US Coast Guard between LA and San Diego. The hardest hit area in LA County was in the San Fernando Valley where Encino was almost completely covered in flood waters. The Van Nuys area was isolated for several days because all roads and bridges were either destroyed or flooded. On the Los Angeles River the flood exceeded all previous floods of record. The Los Angeles River cut new bends, destroying property in its wake, including Griffith Park and two highways. The peak flow at Long Beach exceeded the average flow of the Mississippi River at St. Louis. The rainfall total at the LA United States Weather Bureau station for this event was 11.06 inches. Peak flow on the Los Angeles River at State Street was 99,100 c.f.s.

1939

September 24-26, 1939

The tail end of a hurricane came inland leaving behind tropical storms that brought very heavy rains to locations in Los Angeles County. Towards the end of the month a tropical storm referred to as "El Coronado" hits and causes extremely heavy rainfall all over Southern California, with LA receiving 5.42 inches in less than 24 hours. Over 30 deaths are attributed to this event. This event prompted the weather bureau to open a forecast office in Southern California, which began operations in February 1940.

1943

January 21-24, 1943

Intense rain event, with 25.8 inches of rain at Hoagie's Camp in a 24 hour period, this storm was absorbed by dry soil and empty flood control basins. This storm was actually larger than the 1938 storm in the San Gabriel location, but because the ground was dry and basins empty, run-off was at a minimum. Damages were confined to channel revetments, roads, and bridges. Failure of a levee of the San Gabriel River south of Spring Street caused widespread flooding of this area. Highways were blocked by flooding and debris at many locations. Some damage to agricultural lands. Several houses were undermined and later moved. The rainfall total at the LA United States Weather Bureau station for this event was 7.57 inches. Peak flow on the Los Angeles River at State Street was 38,000 c.f.s.

1952

January 15-18, 1952

Moderate flooding, with most of the damage due to landslides in the Santa Monica Mountains near Hollywood, which has been the location of intense hillside residential development during this period. Also residential developments placed in natural watercourses or in low areas prone to slow drainage were hit hard. Estimated cost of damages exceeds $ 6 Mil for this event. A total of 16,000 acres flooded. Principal areas of flooding were Canoga Park, Reseda, Van Nuys, Whittier, Los Alamitos, Los Niters, and Hawaiian Gardens. The depths of flooding in these areas varied from 3 inches to two feet. 21 deaths are attributed to this flooding event. The rainfall total at the LA United States Weather Bureau station for this event was 8.07 inches. Peak flow on the Los Angeles River at State Street was 50, 700 c.f.s.

1956

January 25-26, 1956

Heavy rains which caused flooding had the consequences of 1500 people to be evacuated from low lying areas. Glendora saw heavy rains. 1 death is attributed to this event. It cost the County of Los Angeles $7.5 mil in estimated damages for this flood.

1958

February 20, 1958

Downtown LA is flooded with up 6 feet of water. Boulders and debris blocked 3 ramps to the Pasadena Freeway. Hundreds of families had to be evacuated from homes in Gardena, Torrance, Hawthorne and Lawndale, Redondo, Hermosa and Manhattan Beach. Public schools were closed. The basement at Richfield Oil Company flooded and 100 employees had to escape through the windows. The 3500 employees of the telephone company at Eastern and Saloon had to close because the building was flooded. An estimated $1 mil in damages is the cost of this event.

1962

February 7-12, 1962

This flood was from a series of storms that produced high rainfalls over a short duration. There were mudslides in the foothill regions and in Torrance and El Segundo. 300 people were evacuated. Big Tujunga Dam and Santa Anita Dam were pushed to the limit of capacity. Heavy debris from recent fires filled basin quickly and led to higher levels of run-off.

1965

November and December, 1965

The President declared Los Angeles County a disaster areas after this event destroyed public and private property. Debris in Newhall Creek, Sand, Iron and Wiley Canyon partially plugged channel inlets to the concrete improved flood control channels, which caused flooding as water and debris spread out behind the snag. San Fernando Valley saw damages along Stetson, Hog and Sombrero Creeks. A flood control channel under construction saw heavy damage. A 200 foot section of the Pacific Coast Highway was blocked by a mud slide and closed for over 24 hours. Lots of localized flooding, but Los Angeles highly developed flood control works prevented more destructive widespread flooding.

1967

November 18-21, 1967

Big storm leaves behind intense rains to Los Angeles. LA gets almost 8 inches of rain during this event. 2 people lose their lives, and 400 people are stranded in mountains

because all transportation routes closed due to landslides or washouts. Flash flooding in canyons because of heavy rains above. Foothill communities hit hardest in this event.

1968

Summer, 1968

A tropical storm which dropped moderate amounts of rain in a short duration period caused flooding in Topanga Canyon and the Malibu Creek area. The watershed above had burned shortly before this rain event and although this wasn't a large amount of rain, the run-off was extremely high. This flood destroyed bridges in the Malibu Canyon area, flooded homes and led to the evacuation of over 500 people from the area when their homes were threatened.

1969

January- February 1969

The State of California was declared a disaster area by President Nixon during this event. In Los Angeles County 73 people died as a result of the floods, 16 by drowning and 57 in storm or flood related traffic accidents. The hardest hit areas for these flood events were the foothill areas, Glendora and Azusa. Azusa Pacific College gymnasium was extensively damaged beyond repair when Hook East Debris basin over flowed. Also the Shop Buildings and Band room of the College suffered from flooding. Below the college at St. Lucy's Priory more damages to buildings was seen. The flooding went on further to destroy a home on Sierra Madre Avenue. Many homes in the Azusa area were flooded and flows through the Monrovia Nursery swept away thousands of plants and added them to the debris of the flood. 1,000 people were isolated in Topanga Canyon when all access roads were destroyed. Many luxury homes in the Mandeville Canyon were destroyed by mudslides. 200 residents of Big Tujunga Canyon were isolated, and in an attempt to evacuate them, were caught in mid stream and had to be rescued via helicopter. Hundreds of homes were destroyed by land and mudslides in canyons and mountain locations. Homes in Sunland were destroyed in the February event. Homes in Pasadena and Glendale were also heavily damaged by mudflows. Agoura Hills and Malibu areas were hit hard by this event with homes, bridges and roads all destroyed. In Mint Canyon in the Antelope Valley hundreds of residents were isolated when all roads except U.S. Highway 395 became impassable either by washouts, or debris. Homes and businesses were destroyed by floodwaters. Landslides in the Pacific Palisades area destroyed 10 homes, the highway, roads, and utilities. Los Angeles International Airport was closed. The cost to remove debris is estimated at $16 mil. The total estimated cost, excluding the removal of debris, for Los Angeles County for both January and February was nearly $68 mil.

1975

September, 8-12, 1975

Thunderstorms caused flooding which closed four highways in Los Angeles County and 2 Lucerne Valley men nearly drowned in a mudslide. The two men were buried by the landslide, but they held their breath until the landslide passed over them. People nearby pulled them to safety.

1978

February 8-10, 1978

Los Angeles County was declared a Federal Disaster area following a flash flood during this time frame. Along a tributary of the Big Tujunga Canyon in the Big Springs area and intense storm brought heavy rains to an area that had burned recently. This event caused massive run-off that caused flooding, destruction of structures and death to at least 15 people. 700 people were evacuated from their homes and over 100 homes were destroyed in the Sunland areas alone. Public schools were closed, bridges destroyed, miles of roads and highways were washed out. Electric service to half a million people was out. Damages exceeded an estimated $83 mil. The hardest hit area was Hidden Springs about 20 minutes north of Los Angeles in a canyon of the San Gabriel Mountains. Early in the morning on the 10th, a 'big wave' (eyewitnesses say a 15 foot wall of water) made its way down the canyon. A lodge located on Mill Creek was hit with this wave and the people who were inside were swept to their deaths. A fire had broken out in the lodge earlier and members of the volunteer fire department were there to assist the 11 people with the fire when the wave hit. Two members of the fire department were also lost in this tragedy. Down stream, 3 people watching a movie at a triplex were also swept away by the 'big wave'. Along with the lodge and the people, and the movie house, the fire engine, cars, houses and everything else in the way was swept up and vanished. It was over in seconds. Culverts, roads, and a highway were also washed out.

March, 1978

In the Crescent area intense localized rains led to costly flooding. The watershed above burned in 1977, and the rains the following year created more than average debris. The floodwaters were heavily laden with debris and quickly filled debris basins in the La Crescent area, which in turn overflowed. Several homes in the La Crescent area were filled with debris and floodwaters from this overflow. Storm drains filled and flooding fanned out behind them causing damage to roads, bridges and homes. Many people had to be evacuated and many people became homeless when their homes filled with mud, water, boulders, and debris. La Miranda Creek overflowed its channel and caused flooding.

1983

This flood claimed the lives of 6 people when intense rain over a short duration resulted in extremely high storm run-off that overwhelmed undersized storm channels and drains. Debris quickly filled basins, drains, and channels making it impossible for flood waters to recede quickly. This resulted in wide spread flooding that damaged roads, businesses, bridges, and homes. La Mirada Creek channel overflowed in this event.

1987

December 4-5, 1987

A cold front brought heavy rains and caused flooding in downtown Los Angeles. Hundreds of people were evacuated from low lying areas. Street flooding, road damages, utility outages and erosion to property were all the result from this event.

1992

February 10-16, 1992

President Bush declared Los Angeles County a disaster area February 21 after a series of thunderstorms brought heavy rains to the area earlier in the month. During this event streets and sanitation facilities flooded. The Little Tujunga Wash was in danger of breeching and 400 yards of its banks were raised and reinforced to prevent it overflowing and flooding nearby by homes. An unfinished retention basin in Lancaster failed, and 4 businesses and 3 homes were flooded. Burbank Boulevard was flooded and motorists were stranded. 20 cars were flooded and recreation facilities at the Sepulveda Dam Reservoir site. The Tillman Treatment plant flooded and effluent was pumped to the Hyperion plant for 12 hours until repairs could be made to the Tillman plant. Six people were lost due to flooding in Los Angeles County.

1993

January 5-20, 1993

On February 3, 1993 President Clinton declared Los Angeles County a disaster area after a series of storms left behind heavy rain that caused countywide flooding. Floods during this period caused $14 mil in damages to Los Angeles County. In Pacific Palisades 3 homes were destroyed and 4 more damaged due to landslides. In the Mt. Washington area 2 more structures were threatened by slides.

1995

January 3 to February 10, 1995

At the request of Gov. Wilson, President Clinton declared Los Angeles County a disaster area during this time period. In Carson 3 feet of water forced the evacuation of 90 homes in the Keystone area, 75 of which suffered water damage. The basement of Carson City

Hall was flooded. Estimated damages total $2 mil. In Hawaiian Gardens a senior citizens residence were evacuated in ankle deep flood waters. Ten houses were also flooded. In Long Beach on the Cal State University Campus, in the areas of Colorado Lagoon, El Dorado Park 137 houses sustained flood damages, and 150 people were trapped in vehicles or in buildings that collapsed. One street collapsed, 5 ceilings caved in and one man drowned when his car stalled in flood waters and was washed away. In the Malibu area the Pacific Coast Highway was closed due to a landslide. In Tuna Canyon and a section of Kaman Dune Road landslides closed both roads. Homes were damaged, businesses flooded and cars stalled in the Las Flores Canyon area. The footing to the Cross Creek Bridge was lost. Two dozen cars were flooded and several homes in the Torrance area.

March 10-11, 1995

A powerful Pacific storm brought heavy rain to Los Angeles County and triggered a number of mudslides and caused flooding. The Pacific Coast Highway between Carbon Canyon and Topanga Canyon two landslides trapped motorists on a 3 ½ mile stretch of the road. 100 homes on the Pacific Coast Highway were caught in mud slides.

2005

January 7-11, 2005

Five days of heavy rains caused widespread rain throughout Southern California. On February 4, 2005 President Bush declared 7 counties in Southern California disaster areas, including Los Angeles County. Run-off was high from this event as the ground was saturated from heavy storms preceding it. Domestic water supply pipelines were washed out. Flood control infrastructure was damaged, and required cleaning out after the event. Street flooding, roads closed and debris clean up were all seen.

2007

September 23, 2007

A late summer storm, a low pressure system known as an ‘orphan’ arrived in Los Angeles with heavy rains that caused flooding in some part of the city. Urban flooding with high run-off loads dumping polluted water into the coastal areas that closed beaches in some areas. At the west end of Griffith Park a clogged drainage basin overflowed and caused ash, mud and debris from the recent fires in that area to mix with the floodwaters to seep across streets and trapping 14 vehicles in mud and debris.

Orange County Flood History

1916

January 17-28, 1916

In Orange County the Santa Ana River overflowed, sending a wall of mud through farmland and streets. 4 people lost their lives due to drowning in the flood waters. 2 people were swept away in their house, which was washed down the Santa Ana River. Orange County lost a lot of important agricultural lands with damages estimated at $350,000.000. Anaheim Union Water Company lost their concrete head gate and several thousand feet of main canal were destroyed. This led to water supply distribution problems. The estimated cost of damages was $57,000.00. Almost all roads in mountain and foothill areas were washed out. The Santa Ana River overflowed its channel near Huntington Beach causing flooding of that area. The State Highway was washed out and suffered $36,000.00 in damages. Almost all the bridges in Orange County were lost, but most were simple wooden bridges that were easy to re-build. Total damages to roads other than the highway was $45,000.00. All telegraph and telephone service was disrupted. The total estimated cost of this flood to Orange County was $520,000.00. Over 11.5 inches of rain fell during this period in Orange County.

1927

February 11-17, 1927

Large areas of Fullerton and Anaheim were flooded. This flood was a result of continual rain for 6 days which melted the snow in the San Bernardino and San Gabriel Mountains, which led to high run-off rates in the Santa Ana River. Roads, bridges and agricultural lands were all flooded.

1934

December 30-31, 1934

A major winter storm brought heavy rains to Southern California. In Fullerton 6.21 inches of rain, and Orange, 4.81 inches in 24 hours time. This led to flooding throughout Orange County. There were reports of walls of water and piles of debris as high as 10 inches in height were seen in some canyon areas. Many deaths are attributed to this flood.

1938-Great Flood

March 3, 1938

A series of heavy rainstorms produced heavy flooding, one of the largest flooding events in the last 100 years. Eyewitness accounts say that an eight feet high wall of water swept out of the Santa Ana Canyon. At the peak of the flood, on March 3, the waters of the Santa Ana River ran at an estimated rate of 100,000 c.f.s. The flood of 1938 was the most destructive in Orange County's history. Nineteen people lost their lives in Orange County, and left over 2,000 people homeless. It also ruined thousands of acres of

agricultural lands with silting or channeling. Near the mouth of river at the Pacific Ocean, the Santa Ana River overflowed its banks and covered an area 15 miles long and seven miles wide. Some citrus groves were buried beyond the crowns of the trees, completely wiping out the trees for use. The Santa Ana River cut new channels on its way to the ocean, channels that ruined homes, carried off livestock, lives and farm lands. Rain totals in Anaheim exceed 8.5 inches during this event, and some locations in the upper basin of the Santa Ana River received well over 30 inches.

1939

September 21, 1939

A tropical thunderstorm hit Orange County, with strong winds and heavy rains. Many lives were lost, homes were flooded, and many boats out in the ocean sunk. A section of the Huntington Beach pier was lost in this event.

1965

November 20-25, 1965

Heavy rain storms sometimes referred to as the Pineapple Express drop heavy rain. Orange County declared a disaster area by Gov. Reagan. There were land and mud slides and road and bridge damage in this event. Many people were evacuated from their homes. Residential and business structures were flooded.

1969- Great Flood

January 18-28, 1969

The State of California was declared a disaster area by President Nixon during this event. This was a series of storms that brought extremely heavy precipitation to Southern California. The first storm saturated the soil and the subsequent storms produced high levels of run-off. Bridges, roads, and rail lines were destroyed. Homes were damaged and ruined. Had Prado Dam not been in place the estimated peak flow for the Santa Ana River would have been 75,000 c.f.s. Since Prado Dam was in place, rate of flow below the Dam was a more controllable 6,000 c.f.s. It is estimated that the Prado Dam prevented flood damages of $440 mil. But as it was, Orange County did suffered $6,554,000 in damages in the January event.

February 18-27, 1969

The floods in February were worse in Orange County than the January floods. Seven deaths have been attributed to the February events, along with 15 serious injuries. Santiago Peak and Santiago Canyon took the brunt of the February events. Flooding was very heavy in the Santiago River basin and over 1,000 people were evacuated. About 1,000 people were maroon in the Silverado Canyon area. San Juan Creek near San Juan

Capistrano overflowed and did a lot of damage in that area. The flood damaged or destroyed roads, sewers, water supply systems, and utilities. Parks, homes, residential property, businesses and other structures were flooded during this event. The beaches were covered in debris and run-off from the flood. The Santa Ana River channel and levees were damaged and poised a serious threat to Orange County. Emergency work by the Orange County Flood Control District, and assisted by the U.S. Marine Corps helped to prevent breaching of the levees and disastrous flooding in Orange County. The estimated cost of the February events were $15,393.000.00 The total cost for 1969 flood fight efforts for both the January and February events are estimated at $22 Mil.

1974

December 3-4, 1974

Heavy rains bring some flooding to low lying areas of Orange County. Roads and utilities damaged along with agricultural lands with erosion and silting.

1978

Along the Santa Ana River damages occurred at the Green River Golf Course, the Riverview Golf Course, Fatherly Park, and the Garden Grove Freeway (91), utility and railroad lines were washed out. The sewer lines were washed out and this caused untreated sewage to be dumped into the Santa Ana River, which caused the beaches at Huntington to be quarantined for 10 days. At Santiago Creek a bridge and culvert were damaged. Gravel mining in the area was impacted due to road washouts and equipment damage. Water supply lines were damaged. A few businesses and apartments had some damages when a channel filled with silt and backed up. Casper's Park had its channels eroded. The total cost of damages to Orange County due to the 1978 flood was $5 mil.

1983

February 24-26, 1983

Heavy rains brought flooding to Orange County. 200 homes in Orange County suffered major damages from flood waters, and 780 additional homes were flooded or sustained minor damages from flood waters. Thousands of people were evacuated. There was extensive street flooding in this event and damage to 30 cars in Anaheim. An apartment building in Anaheim was also flooded.

1986

March 15-16, 1986

Heavy rain in Orange County produced mudslides along the coast, closing transportation routes north and south for a period of time until removal of debris took place. Some streets had to be repaired due to washing out, and debris removal efforts.

1993

January and February, 1993

President Clinton declared Orange County a disaster area after a severe winter storm hits the area. This series of storms left behind large quantities of rain. Coyote Creek, El Modena Irvine Channel, and Segundo Detach Canada all overflowed, but only caused minor problems. In the Anaheim Hills a 24 acre landslide destroyed 3 houses and forced the evacuation of 45 others. In other areas of Anaheim Hill another 7 homes were also threatened with slides. 100 wells were dug to dewater and try to drain the hillsides to slow this movement. In Laguna Beach a landslide destroyed 3 homes, one of which subsequently burned. Seven homes were destroyed by landslides and debris flows in the Santa Ana Mountain Canyons. Tornados damaged several homes in the Lake Forest and Placentia areas. Heavy rains January 17-19th caused a slope to fail in San Clemente, destroying 6 houses and damaging 160 others. A section of the bluffs along the ocean in the San Clemente area gave way, and not only buried the Pacific Coast Highway and Amtrak Rail lines, but also destroyed 5 homes.

1995

January 4-24, 1995

A series of storms struck Southern California beginning January 4th. Huntington Beach received 4.5 inches of water causing flooding in different areas of the city. Streets were flooded, cars were stalled and people were stranded by the water surrounding their homes. Mudslides and landslides on recently burned watershed slopes caused significant damages. On January 6th, the Governor declared a state of emergency for Orange County. 250 homes and 25 businesses flooded near Ball Road with an estimated cost of damage of $900,000. In Huntington Beach 150 homes were flooded and 150 people had to be rescued and evacuated. At Laguna Beach a storm drain overflows and water 8 inches flowed down Main Street. Homes and businesses were flooded along Laguna Canyon Road and along Broadway. The floodwaters cut channels into the main beach and takes out part of the boardwalk. At Los Alamitos the Community Center was flooded with 3 inches of water, and five homes near the Air Reserve Center were flooded along with 30 automobiles. Leisure World Retirement Community at Seal Beach is flooded and damages are estimated at $3 mil. The flood control channels overflowed and 14 buildings, the amphitheater, a church, the communications center, roads, pharmacy and maintenance yards all flooded.

1997

December 6-8, 1997

Heavy rains cause widespread flooding in Orange County. Mud and landslides in foothill locations closed highways and roads. Corona is flooded, with homes, businesses and street flooding. 4-8 inches of rain fell across Orange County in this event.

1998

February 6-9 and 23-24, 1998

Widespread flooding is a result from a heavy winter storm series especially in the Newport Beach area and the City of Irvine. Southern Orange County saw the brunt of these storms with many people evacuated and swift water rescues from flood control channels. Canyon areas had land and mud slides which compromised transportation routes. Several sink holes developed in roads, causing traffic problems. Bridges and rail lines were also damaged. Electric service was disrupted, and utilities were washed out. Agricultural lands saw damages to crops and livestock.

2001

February 11-13, 2001

Heavy rains brought widespread flooding and high run-off to urban areas of Orange County. There were disruptions of electrical service when power lines were knocked down by falling trees. Street flooding caused transportation routes to be closed until water receded and debris cleaned.

2005

January 7-11, 2005

Five days of heavy rains caused widespread rain throughout Southern California. On February 4, 2005 President Bush declared 7 counties in Southern California disaster areas, including Orange County. Run-off was high from this event as the ground was saturated from heavy storms preceding it. A forced release of floodwaters at Prado due to construction of an addition to the dam caused flooding and damages at the Corona Airport. In Placentia 350 homes were flooded. Many thousands of people were evacuated due to the Prado Dam situation and other flooding concerns.

June 1, 2005

Triggered by the extremely wet winter, an enormous landslide took place in Laguna Beach. 15 homes destroyed or severely damaged. Some minor injuries as well took place. Cost of damages estimated to be $27 mil.

2007

September 26, 2007

A late summer storm brought heavy rains to Orange County, where over an inch of rain fell in a short time frame and cause flooding. A major league baseball game was delayed by the rain, and the infield suffered some minor damages from run-off. In Costa Mesa a woman trying to cross a flooded intersection became trapped by water 5 feet deep and had to be rescued by emergency personnel. There were some short periods of power outages as well. Urban flooding, with high run-off amounts of polluted water caused some beaches to be closed as a safety precaution.

Riverside County Flood History

1910

January 1, 1910

Rail traffic is halted due to landslides and washouts in Santa Ana River Canyon, San Jacinto River and Batiste Creek. Bridges across the Santa Ana River were washed out, leaving Riverside isolated from San Bernardino and points north.

1914

January 18-26, 1914

Riverside is cut off completely from points west, all bridges washed out. Santa Ana River reported to be a mile wide at full flood heights. All transcontinental trains were halted. There is heavy flooding in the San Jacinto River area, especially in the areas of Temecula and Murrieta Creeks. Murrieta Valley is covered with flood water.

1916

January, 1916

Bridges destroyed from Idyllwild to Corona. The Santa Ana River and San Jacinto River both had flooding. Concrete channels of the Riverside Water Company and Gage Canal were washed out. Lake Elsinore levels rose very quickly, threatening the club house on Lake Shore with flooding. All rail traffic halted in Riverside County due to tracks washing out, or landslides. One passenger train was marooned at Cabazon and all service east and west stopped. The domestic water supply reservoir holding Riverside's drinking water was undermined by flood water and destroyed. Flood waters also destroyed Hemet's water supply when the steel tank toppled over due to erosion at the base. Hemet also lost long sections of city water lines. Highway and road damage heavy at San Tomato Canyon and Beaumont areas. Nine inches of rain fell in the Coachella Valley. The cities of Indio, Coachella and Mecca were completely inundated. Estimated damages to Riverside County were $851, 450.00.

1918

March 18, 1918

San Jacinto River flood ripped out the Citizen's Water Company Dam near Hemet. As a result Lakeview, Nuevo, and Perris Valley all flooded. Extensive damages to rail lines between the communities of Ethnic and Winchester. Agriculture loses in this area were high.

1921

December 12-27, 1921

West Riverside Bridge destroyed. Auburndale Bridge destroyed. Bridge at Prado washed out. Main Street Bridge in Corona collapsed. Flood water on its way to Lake Elsinore flooded the areas of Lakeview, Nuevo and Perris Valley. Flood waters destroyed Santa Ana Canyon highway and it was closed.

1922

January 2, 1922

On the Colorado River, at Palo Valley flooding washed out the levee and flooded the southern end of the Valley.

1926

April 5-8, 1926

A flood washed out railroad lines at El Casco halting rail traffic. Check dams at San Jacinto River badly damaged. Flooding occurred at the communities of Lakeview, Nuevo and Perris Valley. The bridges were washed out along San Jacinto River. Soboba Hot Springs Resort and Indian Reservation marooned by flooding. The San Gorgonio River and White River were on a rampage.

1927

February, 1927

The City of Palm Springs flooded, three miles of state highway and the rail lines at Whitewater River were destroyed after a storm dropped heavy rain. The Auburndale Bridge at the Santa Ana River was washed away. All rail service in Riverside was suspended. The highway between Beaumont and Banning was washed out. Rail lines at El Casco were washed out. San Jacinto River, Batiste Creek and Whitewater all had high flood runoff levels. Lakeview Valley flooded and 5 families had to be rescued. Nuevo

and Perris Valley, including the community at Ethnic also flooded. San Jacinto River ran two miles wide between Perris and Homeland. Whitewater River at Coachella breached the levee and the rail bridge was destroyed. The bridge at San Jacinto River east of Valle Vista was washed out. One man drowned clearing debris. Estimated damages from the flood to Riverside County are $1+ mil.

1936

February, 12, 1936

The levee at Batiste Creek was topped and threatened the levee of the San Jacinto River. The levee at San Jacinto broke in 4 places. Two people drowned when bridges collapsed. San Jacinto City was flooded, and several ranchers in the area were evacuated. The highway at Gilman Springs was washed out. The communities of Lakeview, Nuevo and Perris Valley were flooded.

1938

March 1-3, 1938

Two people died as a result of flooding. The northern section of Riverside was inundated, and many people were forced from their homes. Men, woman and children had to be rescued from trees when they were unable to reach higher ground when their homes became imperiled. Livestock of all sorts, cows, horses, pigs, sheep and other smaller livestock were all lost to flooding in the Santa Ana River. The bridge at Peddle washed out, as were the bridges at Norco and Murrieta. The levee at San Jacinto was badly damaged. Road damage was extensive in Riverside, Corona, Elsinore, Murrieta and Temecula. Riverside was left isolated from other cites due to damage of bridges, roads and rail lines. Most of Riverside was without electricity or telephone service for more than a day. Fairmont Park saw great destruction when the dam at Lake Evans was ripped out by flood waters. The roads, boathouse, lake, ornamental lights, and large trees were destroyed. Lake Evans drained to a thick layer of mud where once a lake stood. Whitewater River destroyed Highway 60 near Palm Springs. The bridge was out at Banning. The estimated damages from the flood on the Santa Ana River, San Jacinto/Batiste Creek, Whitewater River and Timescale Creek to the County of Riverside were nearly $2 Mil.

1939

September, 1939

The tail end of a hurricane came inland leaving behind tropical storms that brought very heavy rains to desert locations of Riverside County. Towards the end of the month a tropical storm referred to as “El Coronado” moves to the areas and leaves behind extremely heavy rainfall all over Southern California. The desert areas received twice as

much rain as they generally see in two years time. Eastern Coachella Valley was less than two feet of water.

1940

Highest record for rainfall in Riverside for the 1940-41 season, but very little flooding occurred in the City of Riverside.

1941

August, 10, 1941

Thunderstorm in desert areas leaves behind massive rains. Many homes and structures flooded. Mecca is flooded with over a foot of flood waters.

1945 Riverside County Flood Control and Water Conservation District formed.

1948

July 23, 1948

Thunderstorms in Palm Desert and La Quinta area trigger widespread flooding. Homes were flooded with damage reported to roads with dip crossings. Severe damage was seen to agricultural lands with erosion and silting from flooding. Also destruction of irrigation works due to flooding and erosion.

1956

July 25, 1956

Thunderstorms in Riverside brought over an inch of rain in a very short time frame which led to flash floods.

1965

November and December, 1965

Riverside County was declared a disaster area by President Reagan after a long series of storms caused severe damage to public and private property. This flooding event took 9 lives in Riverside County. Most of the flooding in November was a result of heavy rains along the Whitewater and Santa Ana Rivers. Floods along the Whitewater River washed out 22 county roads. Scour and damage to 13 miles of channel between Cathedral City and the Salton Sea. 2,000 acres of agricultural lands were flooded with erosion or silting. Citrus and Date groves suffered heavy damages. Acquits Creek washed out many roads, and damaged bridge abutments on State Highway 111. Flood waters swept 50 cars into streams and drainage channels of Acquits Creek and Whitewater River. Big and Little

Morongo Washes eroded roads at dip crossings, damaged homes and swept away several cars. The San Jacinto River washed out an uncompleted levee and golf course, and several pieces of heavy construction equipment. State Highway 79 was closed for a few days to make repairs in the dip crossing and to remove debris. Some homes were isolated in the Hemet area. The Santa Ana River at Corona inundated low lying agricultural lands and livestock drown. Bridges and highway crossings were also in peril.

1967

September 6, 1967

Homes and an apartment complex in the Banning area experienced some flooding after an intense thunderstorm event. An under-designed storm drain clogged with debris and too much run-off resulting in flooding behind it.

1968

An intense thunderstorm caused flooding in the Gilman Hot Spring area that flooded Highway 79 and a small hotel. The Valley View Village Motel sustained total destruction of two units, with a 3rd with heavy mud damage. The basement of a nearby home was also flooded and heavily damaged. All the destruction was caused by rolling boulders that pounded into the structures during the event, allowing mud, debris, and water to flow into and through structures. Some structures were buried to their eaves. 1.60 inches of rainfall was recorded in this area in a 30 minute time frame.

1969- Great Flood

January and February, 1969

The State of California was declared a disaster area by President Nixon during this event. In January and then again in February of 1969 two floods struck Riverside County causing widespread flooding. Four people lost their lives due to flooding in 1969, and many lives were saved on account of emergency evacuations. Flood damages in Riverside County amounted to $32 Mil. In Riverside County the February event caused greater damages than the January event. The January flood damaged at least 650 homes, 90 businesses and 30 industrial plants. The February event damaged at least 730 homes, 100 businesses, and 35 industrial plants. The most severe residential damages were along Oak Avenue channel in Corona, Norco and San Saline Creek in Mira Loma, the Whitewater River, Noble and Little San Gorgonio Creeks in Cherry Valley and the San Gorgonio River at Cabazon. The greatest agricultural areas damaged by the floods were Prado Reservoir area, the tributaries of the Timescale Wash, the San Jacinto River areas and the Whitewater River locations. The greatest business losses were from the Timescale Wash in the Corona area, at Cabazon and areas emptying into Prado Reservoir, and the Whitewater River area. Transportation infrastructure saw the highest damages in from the Whitewater River, the Santa Ana River, Timescale Wash, San Gorgonio River at Cabazon, San Saline Creek in Mira Loma, and Oak Avenue channel at

Corona. The mainline of the Southern Pacific Railroad was washed out. During the January event 350 homes in the Palm Springs area were flooded, and about 600 residents had to be evacuated. Urban runoff in the western half of Riverside County was severe. Two areas had to be evacuated, and the City of Corona suffered extensive damages, as did the City of Banning and some unincorporated areas of Cherry Valley. Utilities in the Whitewater River areas were destroyed when the bridge at State Route 111 washed out at Thermal. Water, sewer, electrical, natural gas and telephone lines were badly damaged or washed out along Whitewater River. Railroad lines repaired after the January event were destroyed again in February. Water lines repaired after January were washed out again in February. Sediment flows covered yards, and agricultural lands sometimes destroying crops and landscaping. Sediment flows filled debris basins and reservoirs, and caused heavy erosion in some areas. Road repairs, and emergency routes constructed after the January event were washed out. This caused delays or rerouting up to 54 miles. At Prado Basin a maximum water surface elevation was reached of 527.6 on February 26. Floodwaters covered Corona Airport up to 10 feet deep. Corona sustained major flooding damages to homes, agriculture lands, businesses, schools, apartments, mobile home parks, roads, bridges, utilities, and city infrastructure.

1974

July 23, 1974

This was a high intensity storm event in the western part of the Hemet area. 2.39 inches of rain fell in about 2 hours time. This was a relatively isolated event in a small geographic location. Flooding of streets in the Hemet, San Jacinto and Valle Vista areas were common, as were electrical blackouts. The bulk of the flood damages were centered at Ryan Field Airport where 27 airplanes were damaged as a result of this incident, 12 of which were damaged beyond repair. Costs associated with this flooding event were estimated at $135,000.00.

October 22, 1974

A high intensity thunderstorm event struck the easterly area of Coachella Valley, including the Palm Springs area. About 3 inches of rain and hail fell within a time frame of two hours. This was a relatively uninhabited area, so precise storm measurements are not available. The most severe flooding and property damage were generated in the Little San Bernardino Mountains, especially in Long and Wide Canyons. The outlet tower at the Wide Canyon Dam was nearly engulfed with debris inflow. Two vacation cabins were destroyed in the 29 Palms region due to this event. Roads and Highways were closed temporarily due to flooding issues, and nearly a thousand power poles were struck by lighting during the event, causing brief power outages to a wide area.

1976

September 10, 1976

This event began as Hurricane Kathleen when it came ashore in Baja Mexico. As the system moved north the storm decreased to a Tropical Storm. 900 homes were damaged in this heavy rain storm in the communities of Palm Desert, Rancho Mirage, Indian Wells, and Indio. The one day storm total was 7.38 inches. Total damages were estimated at $39 Mil. Governor Brown declared the area a disaster on September 13, and President Ford later declared it disaster areas on September 21. Dikes failed at Dead Indian Canyon and in the Deep Canyon area west of Palm Desert, causing an estimated $10 Mil in property damages in Palm Desert alone. Roads were damaged and telephone and power failures were also seen. Peak discharges at Deep Creek were 7,100 c.f.s. At Palm Canyon Creek peak discharges were 4,050 c.f.s.

September 23-24, 1976

Another topical storm brings very heavy thunderstorms to the Coachella Valley area with a storm total of 3.87 inches of rain. Three inches of that total fell in a period of 1.5 hours in the vicinity of the Hayfield Pump Plant about 22 miles northeast of the Salton Sea. This event flooded about 100 homes, many of which had been flooded September 10th. The Rancho Mirage and La Quinta areas also received flood damages to roads, mudslides, and bridge washouts. Damages estimated at $3.9 Mil, with about 1.1 Mil in public property damages.

1977

August 15-17, 1977

Tropical Storm Doreen produced heavy rainfall in the Desert Hot Springs area. 4.49 inches of rain fell during this event. This resulted in both residential, business and public property flooding and damages. The hardest hit areas were Indio, Palm Desert, Thousand Palms and Desert Hot Springs.

September 10, 1977

A late summer storm brought intense rain, hail and lightening to the communities of Thousand Palms, Bermuda Dunes, Cathedral City and Sky Valley. A dike in the Called Helena area broke and 90 homes were flooded. A Mobile Home Park that had already flooded before the break, was flooded again, which caused further damages. A landslide plugged the Colorado River Aqueduct with 6 feet of debris in the aqueducts two-12 foot wide pipes. Riverside County declared the area a local emergency. 143 homes were damaged and 10 others destroyed. Damages were estimated at $708,000.00

1978

January 15-17, 1978

Flooding in Coachella Valley followed intense storm system. Damages to roads included Date Palm Drive. Several homes in Elsinore were flooded when over 4 inches of rain fell during this period.

January 20, 1978

The Riverside Canal broke in La Sierra flooding some homes in the area. Other areas that had flooding problems on this date include Sunny mead, Woodcrest, and Little Lake.

February 6-14, 1978

Two inches of rain fell in about 2 hours causing some flooding of homes and roads in the Corona and Wild Omar areas. Trailer parks in both areas were evacuated due to mud slides or flooding. South of Corona in the Cleveland National Forest almost 10 inches were recorded for this period.

March 1-6, 1978

Heavy rainfall in this period resulted in flooded cars, roads and homes. It also disrupted electrical service in the western end of Riverside County. Mockingbird Lake was about 10 feet over its legal limit and water was released which damaged roads and created a ravine in an undeveloped area. Riverside Canal failed again in the La Sierra area, flooding a few homes. There was flooding in the Wild Omar and Winchester areas. Wild Omar received over 6 inches of rain for this period. The Santa Ana River at Mira Loma flooded 5 acres of dairy pasture. The flooding San Gorgonio River washed out and damaged the access roads to Cabazon, stranding residents, who were later evacuated. At Timescale Wash on March 4th a levee began to fail, and a trailer park and 20 businesses were flooded up to 4 feet of floodwaters. Hundreds of residents were evacuated. Flooding downstream resulted in rail lines washing out and damage to roads. A sewer was washed out twice and the west end of Corona Municipal Airport was flooded a foot or more and planes were moved to higher ground. This flooding event estimated costs were set at more than $9 million.

1979

July 20, 1979

Big thunderstorm caused flooding in the Palm Desert and Rancho Mirage areas. Debris flow killed one person, and hundreds of homes in the Rancho Mirage, Palm Desert and La Quinta area were flooded. Some residents were swept out of their homes at night, most of whom survived the incident.

1981

September 7, 1981

A high intensity storm event in the Lakeview Mountains created runoff flooding in the valley below. The area of Lakeview and Green Acres, both small unincorporated areas, are in Riverside County near Hemet. About 33 homes were flooded in the Lakeview area, resulting in $66,500.00 estimated damages. In the Green Acres area 48 homes were flooded with cost of damages estimated at $77,000.00. Some roads, utilities, businesses and other structures were also damaged with an estimated cost of for both areas set at $151,400.000.

1983

August 13-17, 1983

Tropical Storm Ishmael brought high intensity periods of rain to Riverside County, especially in the desert regions near Cathedral City and Rancho Mirage. This event caused almost $19 million in damages. Rainfall comparisons between this event and the events in 1976 (TS Kathleen), 1977 (TS Doreen), and 1979 (TS Dolores) shows TS Ishmael amounts to be the highest of the four.

1988

August 24, 1988

This storm event took place in the Cathedral City and Palm Springs area. Homes, utilities, roads and businesses experienced mild to severe flooding as a result to this event. This flood took place in the early morning hours and traffic on roads was light. A trailer park at Highway 111 was flooded with a foot of water. Debris flows on roads was high.

1990

September 5, 1990

A thunderstorm in the Beaumont-Banning areas dropped 1.77 inches of rain in 45 minutes and caused flooding which damaged some culverts and roads. At least two homes were flooded with up to a foot of water; debris covered roads and highways, the yards of homes, and surrounded some residential property, and flooding one business in this location.

1993

January 5-20, 1993

During this time period over 10 inches of rain fell in the western part of Riverside County. This flooding event resulted in damage to roads, bridges, homes, and businesses and seven people lost their lives. Many others were evacuated or rescued from their homes. On January 19th Riverside County was declared in a state of emergency by the

Governor and on Feb. 3rd 1993 the County was declared a disaster area by the President. Clogged and backed up flood control channels and culverts resulted in some flooding as well. The hardest hit area was Cabazon which was isolated due to flooding by San Gorgonio River. Roads and residences in this area experienced flooding. In the area of Palm Springs and Desert Hot Springs, the Whitewater River claimed at least 3 cars which were swept away by the river. All 7 deaths were due to flooded roads. The area of Old Town Temecula and Old Town Murrieta were also hit hard by flooding. Many people were evacuated from homes when Murrieta Creek flowed up to 4 feet in homes and businesses. Estimated costs due to flooding are set beyond a million dollars.

1995

March 23-24, 1995

A powerful storm brought heavy rain to Riverside County, in particular the area of Lake Elsinore, which caused inflow to exceed the outflow. Some homes near the lake were flooded by the high levels reached in the lake on March 23rd and 24th. A trailer park was threatened with flooding, but emergency levees were built to forestall this disaster. One death is attributed to this event. At the request of Gov. Wilson, President Clinton declared Riverside County a disaster area during this time period.

1998

August 29-30, 1998

Strong thunderstorm focused on the Hemet area caused flash flooding in that area. Homes and roads were flooded and damaged.

2004

August 13-14, 2004

Monsoonal thunderstorms produced heavy rains in the Wildomar, Sage and La Quinta areas. Highway 78 was closed due to flooding and debris cleanup.

October 20-27, 2004

Heavy rains produced widespread flooding. A flooded intersection in Sun City claimed 7 cars and their occupants had to be rescued. Also many motorists got stuck in floodwaters near Perris at the San Jacinto River.

2005

January 7-11, 2005

Five days of heavy rains caused widespread rain throughout Southern California. On February 4, 2005 President Bush declared 7 counties in Southern California disaster areas, including Riverside County. Run-off was high from this event as the ground was saturated from heavy storms preceding it. Interstate 15 at Temecula was closed due to a landslide and flooding. The Ortega Highway was closed. This event caused street flooding in many locations, as well as general flooding of structures.

July 23, 2005

Flash flooding in the Hemet area because of thunderstorms releasing heavy rain. Homes and businesses in Hemet are flooded or damaged by this event.

2006

September 4-6, 2006

Heavy thunderstorms in the Elsinore convergence zone produced debris flows in San Jacinto which trapped 19 vehicles. Homes and businesses were also flooded and damaged. Flash floods in Hemet closed roads and trapped drivers. A landslide closed Highway 74.

San Bernardino County Flood History

1910

January 1, 1910

A large flood swept through the City of San Bernardino and Colton January 1, 1910. The rail yards were flooded at Santa Fe Yards in San Bernardino and the Southern Pacific Rail yards at Colton as well. Damages to tracks, bridges and roundhouses were the heaviest ever seen. Eastern end of San Bernardino valley is underwater and on the west end of the valley houses were washed out. San Bernardino Valley is isolated with most bridges and roads destroyed. Heaviest rain in 20 years, and the Santa Ana River was at its highest stage in 20 years. A train traveling between Los Angeles and Colton fell into the Santa Ana River when a bridge collapsed. Landslides and washouts halted all railroad traffic in and out the San Bernardino Valley. Utility pipelines up to 30 inches were washed out. All outside communication lines were disrupted. Agricultural lands washed away, as well as mature trees. Estimated c.f.s of discharge at the Santa Ana River was 45,000. Estimated c.f.s. discharge at the Mojave River was 62,000. Estimated c.f.s. discharged at Mill Creek was 11,000.

1911

March 2, 1911

San Bernardino Valley saw heavy rain wash out 900 feet of water mains, bridges, rail lines in Colton. Mojave River ran extremely high, endangering the Santa Fe Bridge in Victorville area. 4 men and their horses were drowned trying to cross the Mojave River near Victorville.

1914

January 18-26, 1914

In San Bernardino Valley, heavy flooding destroyed many roads and most bridges. Communication lines were destroyed and damage to railroad lines is high. San Bernardino Valley is left isolated from surrounding areas. Large lake forms at Little Mountain in San Bernardino from run-off of Devil Canyon. Rail line damage halts all rail traffic in and out of Valley. Water mains destroyed. Citrus groves damaged. San Antonio water tunnel severely damaged and as a result water supply to Upland/Ontario area disrupted. One death reported.

February 20, 1914

Rail line wash out in Cajon Pass, and rail bridges destroyed. Santa Fe Pre-cooler saw heavy damage, and roads are washed out. Citrus groves badly washed.

1916

January 17-28, 1916

San Bernardino Valley is isolated, as were Redlands, Ontario and other communities in the area. All the streets running north/south in the City of San Bernardino had heavy run-off, most running curb to curb. In San Bernardino County, two men drowned. Many streets, sidewalks and 40 bridges were destroyed. Gas main line and sewer lines servicing City destroyed. Acres of land in San Bernardino underwater, and others badly washed. All roads in Cajon Pass washed out. The road and all bridges were gone in Lytle Creek. Pipelines to San Bernardino City reservoirs washed out and destroyed. Dam at Big Bear in danger-water released to save dam. Small community (20 homes) at East Highland is completely swept away by flooding in Plunge Creek. Homes in San Bernardino were flooded with up to a foot of water. Domestic water supply lines in Highland area destroyed. New County Highway washed out. Homes were flooded in Loma Linda. The Santa Ana River ran 2 miles wide during flood height. 300 people are left homeless. Flooding created heavy damage to rail lines and railroad works, including bridges, culverts, drains and rail yard. A hospital in Ontario was flooded with 3 feet of water and patients moved upstairs to avoid flood waters. Major flooding was seen at Wrightwood. Mojave River flooding and several houses in Barstow were flooded with up to 4 feet of water. One house was completely washed away. There were heavy damages to agricultural lands in the Victorville/Barstow areas, and also the general high desert regions. Costs associated to flooding were nearly $400,000.00 for San Bernardino County. Public Schools were closed, as were many businesses, including the shops at the

Santa Fe Yards. Orange groves and alfalfa ranches were ruined. The power plants at Mentone were destroyed, as were the powerhouses at Mill Creek. Estimated c.f.s. discharged at the Santa Ana River 51,000, at Mill Creek at 7,000, and at the Mojave River estimated c.f.s discharged was 30,000.

1921

December 24-26, 1921

Heavy storm in San Bernardino left behind over 2 inches of rain and left roads flooded. Bridges out and rail lines washed away. Redlands saw 2.10 inches of rain in a single day.

1927

February 12-15, 1927

In San Bernardino Valley, the State Highway washed out near Loma Linda as a result of flooding. Rail bridges between San Bernardino and Riverside washed out, and transportation halted. Southern Pacific Railroad washed out at El Casco canyon. The Sycamore Inn in Rancho Cucamonga was heavily damaged by flood waters from Cucamonga Canyon. Heavy damage to rail lines in this area as well. Highway bridges, and major roadways destroyed by flood waters. The flow in the Mojave was doubled that of normal years. There was flooding in the Wrightwood area.

1938 Great Flood

March 1-5, 1938

Major flooding for most of southern California was generated by a series of storms and very heavy total rainfall was the result. This flooding event seems to have been centered in the upper Santa Ana River watershed. Some areas in the Santa Ana watershed received over 30 inches of rain during this event, and much of the San Bernardino Valley had in excess of 12 inches during this time period. Large areas of the City of San Bernardino and Riverside were submerged. San Bernardino was completely isolated, as were most other communities in the vicinity. Over 100 bridges were destroyed, 800 miles of roads and highways were lost. Over 1,000 people were left homeless, over 150 homes were destroyed and many more flooded. 22 people died as a direct result of the flood in San Bernardino County. Most U.S.G.S. gaging stations were washed out and lost. Cajon Pass was closed to traffic owing to miles of road destruction, bridges out, rail lines destroyed and dozens of landslides. All communications were cut off and the only routes left open were by foot, or by air. Southern Pacific Rail Yards in Colton were heavily damaged, as were the rail yards of Santa Fe Railroad in San Bernardino as well as the rail yards of the Pacific Electric lines. A tanker train with many cars was turned over when the tracks it was sitting on washed out. Many rail cars were derailed and turned over in the rail yards. Two and half miles of track in Cajon Pass were washed out. All rail transportation was halted, approximately 30 daily trains. Mail Service was halted. All

utility infrastructures were lost including electric lines, natural gas lines, domestic water supply lines, telephone lines, sewage lines/plants. 22 homes in Victorville were swept away from flooding by the Mojave River, as was railroad lines, roads and bridges. There was flooding and mud flows in Wrightwood at nearly canyon mouth. There were in excess of $11 million dollars of damages in San Bernardino County alone in property losses. Peak discharge at the Santa Ana River was 100,000 c.f.s, 18,000 c.f.s on Mill Creek, 26,000 c.f.s. on Lytle Creek, and 74,000 c.f.s. on the Mojave River. The peak discharge from the 1938 flood exceeded any flood since 1862 which is considered the greatest flood of record for this area.

1939 San Bernardino County Flood Control District Formed

1939

July and August, 1939

A series of rainstorms in eastern San Bernardino County at Needles causes flooding that damaged homes, roads and businesses in the area. Hailstones more than an inch in diameter fell for over 20 minutes in one event. Needles received over 10 inches of rain during this period to an area that averages just over 2 inches a year. These storms washed out roads, rail lines, and undermined the State Highway causing transportation and communication problems for this remote location.

1941

Aug 9, 1941

A severe summer cloudburst caused wide spread flooding in Needles California. Streets, parks, Santa Fe Railroad Yards, homes were covered in inches to feet in debris. Damages to the City of Needles exceed $50,000.00. Drainage area of 1.1 miles had a peak flow of 435 c.f.s, and at the state highway at Needles (drainage area of .85 miles) had a peak flow of 600 c.f.s.

May, 1941

Mud flows at Wrightwood at Heath Canyon estimated at 1.2 mil cubic yards which covered about 190 acres. This mud flow surged daily for as long as 3 weeks, freezing as temperatures dropped at night and moving again as temperatures warm during the day.

1943

January 23, 1943

In San Bernardino Valley bridges were out and landslides in the Cajon Pass stopped all railroad traffic. Agricultural lands were badly washed out. Roads, Highways and bridges had lots of damage, especially those that crossed rivers. There was one death to

drowning at Lytle Creek. Estimated c.f.s peak discharge at Lytle Creek was 14,000. Mojave River flood washed out highway and railroad lines at Victorville. 10 families were evacuated near Mojave River at Victorville. Minor mud flows in Wrightwood. Estimated c.f.s. peak discharge at Mojave River was 45,000.

October 9, 1943

29 Palms had heavy rain, causing mud flows in homes and businesses, with one home seriously damaged. Roads had heavy damages, and power was lost to the entire community due to power poles being swept away. One automobile was swept off a road by flood water. The Mojave River ran at flood stage, with an estimated peak discharge of 42,000 c.f.s.

1954

July 1954

29 Palms was hit with a series of cloudbursts which washed out 6 miles of U.S. Route 66 highway, and other roads in the area. Power lines and telephone lines were also toppled. Yucca Valley, Needles, Barstow and the Daggett-Nebo areas were also affected, including the Marine Corp Depot. Rail lines were washed out at Barstow. Many cars were caught in flood waters in these areas, but no deaths were reported.

1955

August, 1955

A series of cloudbursts washes out U.S. Route 66 at Needles and rail lines at the Santa Fe Yard in Needles as well. 100 people made homeless when houses were flooded. 20 homes destroyed due to undermining of their foundations. State of Disaster declared by City of Needles. Railroad lines were destroyed by flooding between Ivanpah and Kelso. Highways at Barstow, Daggett and Valley Wells were covered with water and debris from flooding, in one place 4 miles of highway was submerged.

1957

Oct, 11-14, 1957

Two storms event that left behind about 1.37 inches of rain. Much of the San Bernardino Area was in residential development and vast construction sites for thousands of homes were affected by this event. Land had been, in some instances, poorly graded due to the speed of development and lack of planning. Run-off in these developments was very high and resulted in the addition of construction debris clogging drains and culverts which resulted in areas flooded that had not seen flooding in past events. Many existing homes were inundated by flood waters and debris, especially those who were below construction sites or newly graded sites. Roads, culverts, and debris basins all

experienced damages from slight to severe from this event. Traffic was disrupted as pooled water receded slowly from these areas. Damages to agricultural lands due to washing were high. Cost damages were estimated at $100,000.00 to public property.

1958

July, 1958

Severe hailstorm causes a million dollars worth of damages to roads, highways (U.S. Route 66), and communication lines in various High Desert locations, including Barstow, 29 Palms, Daggett, as well as Forest Home and the Mill Creek area. Several homes were severely damaged, one pushed off its foundation. Flood waters ran through motels, homes and businesses. Major landslides, a result of a cloudburst on burned hillsides, created a 10 foot high, and 300 feet wide landslide on the highway at Forest Home. Hailstorm also caused thousands of dollars worth of damage to apple orchards at Oak Glen.

1959

August, 1959

Thunderstorm in the area of Essex to Needles washed out bridges, stranded hundreds of travelers, and 4 cars were carried away by flood waters. Waves up to 22 feet high washed over U.S. Route 66 at Needles and a complete wash out of rail lines from Fenner to Ibis. Estimated c.f.s. at peak discharge 40,000 at Sacramento Wash located near Needles for a 31 sq mile drainage area. Homes damaged in Joshua Tree from flood waters and debris flows.

1961

August, 15, 1961

Fierce storm hits 29 Palms, Morongo, Quail Wash, Joshua Tree, Panorama Heights and Barstow areas. Flood waters flowed in homes, yards, and businesses. There were debris and water on highways and roads. Rail lines and communication lines were destroyed. Debris and water were running 12 feet deep in some places. Severe erosion to property was seen. There were a few vacationers trapped by mud flows as they were trying to evacuate and had to be rescued by emergency personnel.

1963

August 7, 1963

Heavy rainfall in Victorville and High Desert areas flooded highways and homes. Vehicles were flooded as well with up to 3 feet of water, mud and debris. A flock of 20,000 chickens were swept away in Newberry Springs, and washouts on roads and

highways stopped all traffic is some areas for days until crews could repair them. One person was swept away by flood waters at Lenwood and carried over 200 feet before he was rescued by clinging to a telephone pole. A trailer was moved off its foundation in the same location. Estimated peak discharge on the Mojave River was 42,000 c.f.s.

1965

July 16, 1965

The area of Trona was hit with flash flooding which stranded 800 employees of the American Chemical and Potash and Stauffer Chemical companies. Flood water of over 6 feet, along with mud and debris covered roads in Poison Canyon. 60 cars were stranded and many homes in Trona and Argus were flooded with mud and floodwaters.

November 20-25, 1965

San Bernardino County was declared a disaster area by Gov. Reagan. Six people lost their lives as a result of this event. Estimated damages to San Bernardino County were $11 million. This was considered a small flooding event by the San Bernardino Flood Control District based on peak flows, but caused huge costs due to damages. Damages to County Roads alone were over $640,000.00. Most of the deaths occurred by motorist caught in vehicles at river crossings. Deaths and daring rescues at these locations were quite high in the County. The road in Big Bear at Boulder Bay was closed when 200 feet of it was washed out. This event destroyed pipelines at the sewer plant at Redlands, and collapsed the wall of the City's largest reservoir. 50 homes in Lytle Creek were heavily damaged in Lytle Creek Village and 15 destroyed outright. 35 residents of this area were left homeless. Heavy flows at Wrightwood at Heath and Sheep Canyon causing widespread damage to homes and roads. Mojave River had very heavy flows, with roads and bridges destroyed and damaged. The bridge and road to Forest Falls cut off 400 residents when they washed out. 11 homes and cabins were washed away in the Forest Falls area. Mountain Home Village lost 4 homes outright and 8 more were left heavily damaged by flood waters. Alabama Street at the Santa Ana River seriously damaged, and 200 yards of Santa Fe Rail lines were destroyed. The Zanja at Sylvan Road overflowed and a house flooded in that area. Estimated peak flows at Mill Creek were 10,000 c.f.s. The Mojave River had flooding with an estimated peak discharge at 41,000 c.f.s.

December 29-30, 1965

Lytle Creek Village had torrential rains which destroyed 5 homes outright and flooded 40 more. Scotland was cut off from Lytle Creek, and the bridge destroyed. 150 people were left homeless and the road was washed out in several different places. The road repair from the earlier event at Baseline and Lytle Creek was completely washed out, as was the road at Highland Ave. and Lytle Creek. A home was destroyed in Waterman Canyon with it filled with debris. Two boys were saved from the Santa Ana River in a daring

helicopter rescue near Colton. Mt. Baldy Village had roads, a post office and home destroyed by flood waters. Mountain Roads were closed due to landslides.

1966

January 2-6, 1966

There was flooding in high desert locations. Mojave River completely washed out Lenwood Road, disrupting the transportation route between Lenwood and Hinkley. Victorville had road and utility damages, with 6 foot surges in the Mojave River. A double pole electric pole washed out and disrupted service.

December 2-7, 1966

San Bernardino County declared a disaster area by Governor Brown regarding this event. Damages due to this event exceeded $3.5 million dollars to County infrastructure, including roads, bridges, flood control works and drainage facilities. Redlands sewer treatment lines washed out. Alabama Street at the Santa Ana River closed due to flooding and debris. The Edison Plant at East Highland was cut off when the footbridge was carried away in flood waters. Roads washed out, approaches to bridges washed out at Waterman Avenue and Tippecanoe. Two homes in Mill Creek Canyon were destroyed and the State Highway washed out, and Mountain Home Creek Bridge was washed out. The levee at the Lockheed Propulsion Company near Mentone was damaged and there was some flooding of property there. Highway 38 at the Fish Hatchery was washed out. Flooding in Downtown Redlands at the Kansas Street Bridge was undercut and lost its approaches. The Alabama Street Bridge approaches were dangerously washed away. Six homes near Day Creek were surrounded by flood waters and cut off, trapping residents. Eastbound lanes of the San Bernardino Freeway were flooded by Etiwanda Creek. Rail lines were washed out at Pepper Avenue. One man drowned in Montclair when his car dropped into a 45 foot washout at Moreno Street. Lytle Creek tore out Devore Road at Neely's Corner and at Baseline Road and Highland Avenue. The water supply system at Applewhite Campground at Lytle Creek washed out. Tables and stoves at the campground were swept away, as were the toilet facilities. The "G" Street Bridge at Cucamonga Creek was washed out. A cabin was lost at San Antonio Creek and 12 others were badly damaged. Six families were evacuated from Mt. Baldy Village. Big Bear Lake was at the highest level since 1948. Estimated peak flow at Lytle Creek was 7,500 c.f.s. Estimated peak flow at Mill Creek for this event was 10,000 c.f.s.

1969-Great Flood

January 18-28, 1969

This was an intense rain event, with a 9-day total rainfall amounts ranging from 5 inches in Hesperia to 16 inches in Etiwanda. It produced some of the highest recorded maximum discharges at the following stream gaging stations: Mill Creek near Yucaipa, Lytle Creek near Fontana, Devil Canyon in San Bernardino, Lytle Creek at Colton, Day

Creek near Etiwanda, and Cucamonga near Upland. The State of California was declared a disaster area by President Nixon during this event. This was a major flooding event for most of Southern California. Twenty three million dollars in damages were sustained in San Bernardino County and one death due to drowning. Property damages were widespread and included damages to homes, roads, highways, bridges, businesses, vehicles, schools, churches, recreation facilities, agricultural development, airports, communication lines, railroad lines, power plants, sewer treatment plants, water supply lines, natural gas lines, military installations, airports, and flood control facilities. At the Santa Ana River dip crossings at roads and highways and bridges were lost and damaged. Many transportation routes between San Bernardino and surrounding areas were closed and impassable until April or later. At Mill Creek the communities at Mountain Home Village and Forest Home sustained damages to over 50 homes with flood flows. Mill Creek changed its stream course in several locations, and levees and other flood protection were overtopped and severely damaged. Levee and channel diversions were damaged at City Creek, Elder Gulch, and Plunge Creek resulting in flood damage to roads and bridges. Agricultural land in San Timoteo Canyon experienced heavy damage, as did levees and roads in this area. The Yucaipa area had agricultural lands washed away, along with levee and road damage. In the Dunlap Acres area 150 homes were flooded and heavily damaged, along with a trailer park in the same area with severe damages. The water supply system in the Birch Canyon area was washed out. The Oak Glen had heavy damage to roads, flood control works and water supply facilities. Warm Creek in San Bernardino caused severe damage to flood control facilities, and caused heavy erosion and loss of greens and fairways at the Orange Show Golf Course, and damages to transmission lines of Southern California Edison. Howard Johnson Motel and Restaurant had debris and silt deposited to the grounds and parking lot of those businesses. Sewer and water supply pipelines were washed out by Sand Creek at Pacific and Lynwood, making emergency repairs necessary. Lytle Creek had 180 homes destroyed and major damages to highways, roads, railroad lines, flood control works, and water supply lines. Lytle Creek changed course several times, causing the community to be isolated completely for 10 days. At Cajon Creek flood flows damaged flood control works, rail lines, Interstate 15 and an uncompleted freeway bridge. Flood flows at Devil Creek and Cable Canyon damaged the highway and roads and bridges in the area and flood control facilities. Outflow lines at the Rialto Sewer plant washed out. Flows at Day Creek caused heavy damages to roads, bridges, utilities, schools, agricultural lands, and levees. At Etiwanda Creek 15 homes were flooded and filled with up to 2 feet of mud and debris. Extensive damages to highway, roads, bridges, railroad lines, utilities, agricultural lands and MWD upper feeder line were a result of flooding in this area. Cucamonga Creek and its tributaries alone attributed over $10 million dollars worth of damages. About 200 homes along Cucamonga Creek were either destroyed outright or damaged heavily. The communities of Alta Loma and Cucamonga had extensive damages due to flooding. 200 hundred residents had to be evacuated due to high waters, and 18 businesses or commercial buildings were damaged. A large restaurant and bowling ally were flooded with up to 5 feet of debris laden water. The people inside this large complex had been evacuated just minutes before it flooded. Hundreds of people in Upland were evacuated when a levee was threatened by flood waters. In San Antonio Creek, Mount Baldy Village saw 14 homes washed away, and heavy damage to 14

others. Extensive damages to roads, water supply lines and the sewer plant in this area as well. At Prado Dam road and telephone lines were damaged as well as extensive damages to agricultural lands. At the Mojave River a railroad bridge was washed out, and the dip crossing of a road as a result of flooding. Flood damages in Barstow included roads, homes, agricultural lands, bridges, utilities, and railroad lines. Flood water of up to 3 feet forced the evacuation of several homes. Utility poles were washed out at river crossing, and damage to agricultural lands, especially in the Lenwood vicinity, was extensive. The Helendale and Hesperia areas are both hit hard by flooding. Estimated c.f.s. peak discharge at the Santa Ana River was 40,000, at Mill Creek peak discharge c.f.s was 35, 400, and at Lytle Creek 35,900 c.f.s at peak discharge.

February, 1969

The rainfall totals for this flooding event are more moderate than the January event, but with the ground completely saturated run-off rates were much higher. At the urban areas at the base of the San Gabriel and San Bernardino Mountains 7 to 12 inches of rain fell. At Lake Arrowhead, almost 28 inches fell. In the Mojave River region, more than 6 inches fell. The two events although located in roughly the same geographic area, the focus was different for each. January's storms came from the southwest, February's came from the northwest. Twelve people died in this event, and about $23 million in flood damages occurred. More than 2,500 were forced to evacuate areas along the rivers of Yucaipa, San Savaine, East Etiwanda, Cucamonga, San Antonio, Wilson, Oak Glen, Mill Creek and San Timoteo. San Timoteo had over $6 million in damages, including $3 million in residential property alone. The rest was on road destruction, and business and industrial property losses. Most of these damages were in the Loma Linda area of San Timoteo Canyon. Roads in the mountains were closed due to landslides, flooding and bridge damage. Damage along the Mojave River with the February event was 10 times greater than the January event. One man drowned trying to rescue motorists stranded on a flooded bridge. Roads, bridges, and rail lines were destroyed. A train with 2 engines and 25 cars derailed at Barstow when rail lines were washed out. 3,000 people were evacuated from homes along the Mojave River, and a trailer park in Baker was again flooded. Along the Santa Ana River emergency repair work from the event in January caused the February event to be greater with erosion and aggradations to streambed and flood works, perhaps by as much as 25%. At Mill Creek, the clearing of boulders and debris had not been fully completed when the February event took place. Additional debris, sediment, boulders and water led to damages to roads, businesses, homes, utilities, and flood control facilities. The February event was less intense at Mill Creek than the January event. Plunge Creek, City Creek and the Zanja all saw heavy loads of flood flows, and debris which resulted in damages to bridges, commercial property and agricultural lands. At San Timoteo Wash flood flows were much heavier during the February event than the January event. One youth drowned and 30 homes destroyed. Four bridges were destroyed, two others severely damaged, and a dip crossing destroyed, heavy road damage, including 4 entrance/exit ramps to Interstate 10. Rail lines were destroyed, sewer lines torn out, 4 different waterlines were washed out, and levees were heavily eroded. Citrus groves damages were extensive in this area. The flood flows in the Yucaipa Creek area were 15 times greater in February than they had

been in January. 40 homes, and several apartments and businesses in this area were filled with up to 5 feet of silt and debris. Roads, utility lines, and flood control works all saw damages. The Oak Glen area had greater flow in February than January, especially in the Dunlap Acres area. 180 homes were flooded in this area with up to 5 feet of mud, along with Dunlap Elementary School as well. About 300 people were evacuated from this area, some narrowly escaping with their lives. Along Warm Creek in San Bernardino damages were higher from this event than from January. Dip crossing were again washed out, Orange Show Golf Course saw fairway damages again and the parking lot of the Howard Johnson in Colton was again covered in mud and debris. Damages to utility poles and lines of SC Edison were substantial, as were lines from Pacific Telephone and Telegraph, and the sewer lines for San Bernardino Sewer facility. Damages along Sand Creek, Little Sand Canyon, Del Rosa Channel and East Twin Creek were twice as much as those seen from the event in January. Flows eroded levees and revetments and clogged these streams with large quantities of debris. In the Lytle Creek area, the January event was much worse than the February event. However, homes damaged in January were further damaged in February and roads that had been cleared were again clogged with landslides and debris. Flood flows at Cable and Devil Canyon were higher in February than January. Both erosion and debris deposition were about 3 times higher in these locations. At Day, East Etiwanda and San Sevine Creek, flood flows were smaller in February than January. Flood control facilities in these locations however saw greater damage in February than January. Almost the exact same flows seen in the January event at Cucamonga Creek were again experienced in February. The same homes and businesses that had been flooded in January were again flooded and further damages were done. Many of the repairs that had been done to roads, utility infrastructure, bridges, water and sewer lines, railroad lines, personal property and flood control facilities were destroyed. Chino Creek had higher flood flows in February than January. San Antonio Canyon flood flows were smaller in February than January; however several businesses and homes were destroyed in the February event. A father and his 3 children were killed when a landslide crashed into their house at Mount Baldy Village. Downstream destruction was worse in February due to the erosion of levees from the January event. At Prado reservoirs elevations rose higher, causing more agricultural lands to be inundated and minor damages to roads and telephone lines. At the Mojave River, the February event was 10 times greater than the January event. The railroad bridge at Victorville was damaged, and a 25 car freight train was derailed and overturned. Agricultural lands were heavily eroded and irrigation systems washed out or destroyed. Residential property was much greater in February as more than 100 homes were damaged and in Barstow 3,000 people were evacuated due to flooding. Roads, bridges, business property, rail lines, and utility facilities all saw damages in February. Estimated peak flow at the Mojave River for February event was 40,000 c.f.s. The water supply to the City of Adelanto and George Air Force Base is threatened when a well is almost washed out and heavily damaged. Estimated peak flow at the Santa Ana River for February event was 45,000 c.f.s.

The total combined flood damages from the January and February floods amounted to more than $54 million dollars in San Bernardino County. The flooding events left at least 13 people dead in San Bernardino County.

May, 1969

Mud flow, as a result of rapidly melting snow caused a 40 day mud flow at Wrightwood beginning in May of 1969 at Heath Canyon. This mud flow froze as temperatures dropped at night and rose during the day, causing flooding of homes, roads and infrastructure. Volume of mud flow is estimated at 130,000 cubic yards.

1975

September 8-12, 1975

Thunderstorms closed highways in San Bernardino County due to washouts, debris and flooding. A 50 mile stretch of Highway 62 east of Twentynine Palms was washed out due to flash floods in the area. 23 miles of Route 66 was washed out between Ludlow and Newberry Springs. And Highway 95 was closed at Needles south to the Nevada State line. Highway 18 was closed near Big Bear Lake due to mud and landslides. The airport at 29 Palms was closed for about 3 hours due to several inches of flood waters on the runway.

1976

September 23-25, 1976

President Ford declared San Bernardino a disaster area after a tropical storm brought heavy rains to the area. Zanja Creek overflowed with flood waters and flooded much of downtown Redlands. Mud and water flowed up to 3 feet deep and resulted in substantial damages to businesses, homes, public property, highways, roads, streets and flood control facilities. The estimated total cost of this flood exceeded $ 4 mil.

1978

February 5-13 and February 27-March 6, 1978

Beginning February 5th a series of storms began to move through Southern California and San Bernardino County, causing considerable rainfall, accumulated runoff, flooding, and associated problems. The estimated cost of these events was $25 mil. Five deaths are attributed to these floods. On February 11, 1978 President Carter declared the County of San Bernardino a disaster area. The hardest hit regions of this event were on the west end of the County in the Ontario, Rancho Cucamonga, and Upland areas. Roads, vehicles and homes were all damaged in this event. Hundreds of people were evacuated from unsafe locations. San Antonio Creek changed its course twice. Cucamonga Creek overflowed and caused a lot of damages to Foothill Boulevard, and also many other roads, including the Arrow Highway. Homes were flooded. Landslides, triggered by the heavy rains, fell into homes in the Carbon Canyon area, ruining some fancy house. Homes were also washed away in Lytle Creek, along with roads and bridges. Yucaipa, Highland, and

Loma Linda also had flooding, as well as San Bernardino. The crossing at the Santa Ana River, Alabama Street was washed away. These severe storms also caused the Mojave Rive to flood, causing roads crossing the river to be flooded and impassable. The Hinkley area was compromised heavily. Road crossings along Mojave River are destroyed, impeding transportation routes in high desert locations. Cost to San Bernardino County in the high desert areas is $1+ mil.

1980

January 8- February 18, 1980

January and February four separate storms caused debris flows at Harrison Canyon to fill the basin and overflow, flooding houses below the basin. The last storm brought debris flows that destroyed or damaged 40 houses buried to the eaves with debris and flood flows. Over 100 people were left homeless by this event. 25 homes from this location were removed permanently and the area converted to flood channels. An elementary school is also flooded and removed. Other public property was damaged and flooded as well, including street, culverts and flood control infrastructure. The Mojave River flooded, damaging roads at crossings and impeding transportation routes. The crossing at Lenwood was completely destroyed. Both Victorville and Barstow are impacted. Utilities including electric power, cable, water supply lines have been disrupted. The cost of this event was estimated at $2.5 mil.

1983

March 1-5, 1983

Thunderstorms in the high desert cause the Mojave River to flood. Road crossings at Hinkley, Victorville and Lenwood all have damage.

Spring, 1983

Colorado River flooding was a result of rapidly melting record snowfalls in the Upper Watershed. This resulted in high volumes of water to be released from Glen Canyon Dam, Hoover, Davis and Parker Dams. This caused flooding to low laying areas in the Lower Colorado River Watershed, at Needles. Damage to recreational facilities, such as camp grounds, boat docks, launch sites and the businesses services these facilities. Sewage treatment plants were also subject to flooding.

1987

October 22, 1987

Heavy rain, localized at Blue Jay in the San Bernardino Mountains caused flash flooding that caused more than a million dollars worth of damages. 2 people lost their lives and there were 10 injuries, some serious.

1993

January and February, 1993

A series of winter storms brought heavy rains to the area, especially to the high desert communities of Apple Valley, Hesperia and Victorville. This is the 4th time in two years this area is hit hard by flooding. This storm damaged roads, utilities, and 340 homes were flooded. 6 houses in the Victorville area lost the backyards when the Mojave River overflowed. Part of one house was also lost. In the Redlands area, 2 major bridges over the Santa Ana River were damaged. Orange Street suffered erosion damage. Lake Arrowhead, Big Bear Lake, and Lake Gregory were all filled to capacity.

1995

March 10-11

Three boys in the City of San Bernardino were riding their bikes in flood control channel and were swept away by flood water. However they were rescued by emergency personnel treated for hypothermia and released.

1997

October 7, 1997

A rain event hit the area of Sand Creek and Little Sand Creek in the cities of San Bernardino and Highland. 1.65 inches of rain fell in 45 minutes in this small geographic area. Because of an earlier fire on the watershed above (Hemlock Fire, July 5-9, 1997) vast amounts of run-off, debris, and mud were produced that caused heavy flooding to 42 homes, 24 units of an apartment building along with 14 cars, and major damages to a private High School (Catholic owned). Flooding occurred over 2 miles away from storm channels that had become clogged with storm debris which caused flows to break out of concrete channels and create a path of its own. At a dip crossing water reached a depth of 6 feet. Approximately 140,000 cubic yards of earth were carried down the creeks and deposited below. Public damage estimated at $530,000. Private property estimated damage was $448,000. Removal of flood debris and repair to flood works was estimated to be $110, 400.

1998

February 14-23, 1998

Over 14 and a half inches of rain fell during February of 1998. On Feb. 23rd alone over 3 inches were recorded near the center of the City of San Bernardino, and the day previous, February 22 brought 2.18 inches. Roads were flooded, rail lines were washed out and levees were eroded. Some flood control basin filled to overflowing, and caused flooding

in nearby residences. Pipelines for water supply were washed out. Restoration to flood control works, including repairs to channels, levees and inverts, and removal of debris from basin was an enormous undertaking, costing close to 1 million in public property works.

1999

July 11, 1999

There was a severe thunderstorm in the Forest Falls area that caused considerable flooding in that area. Almost 4 inches of rain fell in about 2 hours time, most of it in a 45 minute time period. Eight houses were destroyed outright, 28 more had severe damages, and 105 more homes had minor damages. Several businesses had minor flooding. Vehicles, roads, utilities, and household goods all washed away in this event. Left behind were 5-8 foot piles of debris and boulders as large as 5 feet in roads, yards and other places not usual for them to be. Two people died, and dozens were injured. There was flooding and mudslides in Oak Glen, Big Bear and Apple Valley as well.

2003

December 25-26, 2003

This flood event was generated by heavy rain including over 8 inches in the Lytle Creek area, and in other locations with over 3 inches of rain. Intense rainfall rates caused mud, water and rock slides that began near Crestline and continued down through Waterman Canyon. At Camp Sofia 14 people were swept to their deaths. This event also washed out two bridges downstream. At Lytle Creek flooding destroyed the road in the Scotland area, and debris were pushed across the frontage road at Interstate 15 near Glen Helen. Debris flows at City Creek in Highland covered a portion of the runway at San Bernardino International Airport with 18 feet of mud. At Cable Canyon a slide of mud and water killed 2 people at the KOA campground, a bear and a horse. 32 trailers were destroyed. 33 of 34 debris basins along the foothills in the San Bernardino Mountains were filled with debris.

2004

August 13-14, 2004

In Victorville thunderstorms produced heavy rains in a short duration causing flash floods. Homes in the Spring Valley Lake area and in Hesperia were flooded. Vehicles were flooded in 5 feet of floodwaters. 60 trains were backed up in Cajon Pass when the rail lines became compromised due to 8 feet of water on tracks. This caused major delays at connection points such as harbors or points east.

October 20-27, 2004

Extremely heavy rains caused widespread flooding. A bridge in Wrightwood was washed out, and one person was killed in floodwaters near Lytle Creek. Many land, mud and rock slides caused roads to be damaged and closed especially in mountain locations. Rail lines were washed out and trains derailed because of it. Some live stock, most notably horses were neck deep in flood water.

2005

January 7-11, 2005

Five days of heavy rains caused widespread rain throughout Southern California. On February 4, 2005 President Bush declared 7 counties in Southern California disaster areas, including San Bernardino County. Run-off was high from this event as the ground was saturated from heavy storms preceding it. A pregnant woman was swept away and drowned (and her unborn child) by City Creek in Highland. Lytle Creek was over 200 feet wide and flooded homes. The Mojave River flooded 3 homes and caused severe damages in the Hesperia and Oro Grande areas. In the Devore area debris on Interstate 215 blocked and closed the freeway. In Big Bear City 111 homes, businesses and schools were flooded. In the Lake Arrowhead area 3 homes were destroyed by mudslides and 7 others damaged. A hotel in Crestline was destroyed by a mudslide. Most highways in the San Bernardino Mountains were closed due to wash outs, landslides or flooding. Lake Arrowhead had almost 32 inches of rain for this time period alone with Lytle Creek receiving almost 20 inches.

2006

October 13, 2006

Eighteen homes and businesses were flooded when a large thunderstorm dropped heavy rains. Two vehicles were also damaged by flood waters and one swift water rescue had to be made due to someone in danger in a flood control channel. Much mud and debris were left in its wake. A couple of big sinkholes opened up and caused transportation problems.

San Diego County Flood History

1916

January, 17-30, 1916

This is a two storm event separated by 3 days, and was the largest flood of record since 1862. This heavy rain event caused flooding in San Diego, with over 36 inches of rain falling in some locations. This flooding event washed out 110 bridges, and destroyed Lower Otay dam, which was 130 feet high. The water held by the Lower Otay dam washed 10 miles or more, and it took about 2.5 hours for all the water (40,000 acre feet) to empty. Most of the deaths in San Diego occurred because of the dam failure. The water held by this dam was in large part the domestic water supply for San Diego which

was another loss along with the destruction it caused at failure. Although Sweetwater Dam did not break, it did overtop and a large section of the south abutment was washed out. Flood water continued to overtop the Sweetwater Dam for about 9 hours. The water supply lost because of the Sweetwater failure caused the reservoir to lose about 2/3rds of its capacity. The water supply in San Diego County was severely disrupted by this flooding event. 135 people were left homeless. This flood cost San Diego County nearly $4.5 mil in damages. All the agricultural lands along the rivers in San Diego suffered loses from flooding, either eroded by new channels from the rivers, or covered with silt and debris. A million and half dollars worth of agriculture land was destroyed by the flood. Only two bridges in the County survived the flood. One bridge that was destroyed at Old Town was a concrete arch 300 feet long across the San Diego River. Many culverts, roads, sidewalks and other street improvements were destroyed. Many wells, pipes, and pumps were also lost. The San Diego and Southeastern Railway Co. lost 93 miles of track. All rail lines in the San Diego area were damaged, washed out, or undermined. It was a month or more for normal rail traffic to resume between San Diego and anywhere else. The State Highway in San Diego was washed out and closed for over a month. Landslides in the mountainous areas were common. Telegraph and telephones lines were destroyed, and service to San Diego was interrupted for a week. Utilities such as natural gas and electricity were washed out and service disrupted, in some remote areas for up to 6 weeks or more. A gravel company in San Diego was completely buried and all equipment lost. The Western Salt Company was covered in silt and 2500 tons of salt lost. 20 people lost their lives due to drowning in the Tia Juana River.

1921

Dec. 19-26, 1921

Moderate flooding from this event, but this flood was not as disastrous as the 1916 flood. No dams gave way, and although rail lines were washed out, along with roads and bridges again lost to flooding, the impact of this flood is much less. Far fewer people have built in floodways, making for far fewer dangerous situations. Trees and structures that had been in the floodplains had washed away in 1916, and had not been replaced, causing this to be much smaller and far fewer damages were the result.

1927

February 11-17, 1927

Heavy rainstorm caused flooding in Mission Valley, and led to an outbreak of typhoid fever when the sewer system was washed away. The flood waters filled the reservoirs with a water supply for many years. Streets, homes and businesses flooded. Old Towne Railroad Bridge was washed out. San Diego dams overtopped and caused widespread flooding downstream. 6.33 inches of rain fell in this time period. Estimated damages due to this flood were $117,000.

1937

February, 1937

This medium flood event had a peak flow on Tia Juana River at Nestor Bridge of 50,000 c.f.s. This flood was centered on the San Luis Rey River, and flooding there was severe.

1938

March, 1938

Of all areas in Southern California, San Diego was less impacted from the 1938 flood. However, there was some flooding in the San Luis Rey River that caused an estimated $600,000.00 worth of damages, mostly severe sedimentation of the reservoirs.

1961

August 4, 1961

A storm centered in the Lakeside area, northeast of the City of San Diego, caused considerable flooding. 1.75 inches of rain fell in 90 minutes at the El Capitan reservoir. The flooding of homes, highways, and agricultural lands caused an estimated $78,300.00 in damages. This area had some encroachment of the creek beds which may have contributed to the flooding issues.

1965

November and December, 1965

The President declared San Diego County a disaster areas after this event destroyed public and private property. San Diego River, Sweetwater River and Tia Juana Rivers and their tributaries were all flooded. Forester Creek flooded Santee with 4 to 5 inches of water. The flood waters from Sweetwater River damaged commercial and residential property. The lower parts of Mission Valley was hit with flooding, resulting in one motel with up to a foot of water, and the bridge at Zion Road washed out. Six deaths were attributed to this flooding event. There were widespread landslides which impaired transportation in San Diego County. Highway 101 was closed.

1969

February, 1969

San Diego did not receive major damages from the 1969 floods, except for some clean up of channels, minor road wash outs, beach debris clean up, and general clean up operations following this event. The State of California was declared a disaster area by President Nixon during this event. Total cost to San Diego County $2.7 mil.

1976

September 10, 1976

Tropical Storm Kathleen brings heavy rain to San Diego desert regions. This event caused severe damage to Highway 8 in the Laguna Mountain region. The rail lines in the same general area also were washed out. This impacted transportation routes between San Diego County and Imperial County and Riverside County. The brunt of the storm was at Mt. Laguna where more than 10 inches of rain fell. Myers Creek was especially impacted, where an old arch bridge had stood for at least 50 years washed out. One man was swept to his death here. County Road S-2 was washed out. The Canebrake Water District facilities were almost completely destroyed. Airports at Ocotillo, Agua Caliente and Jacumba were closed. Farm equipment and outbuildings in the Jacumba area were destroyed by this flash flood. Many homes in this area saw considerable damages. $1.14 mil in damages was the estimated cost.

1977

August, 15-17, 1977

Tropical Storm Doreen is responsible for heavy rains that cost San Diego County in excess of $1.5 mil in damages from flooding. This event was mostly localized in the DeAnza Desert area in Borrego Valley. About 100 homes were flooded, 60 of them seriously with mud flows up to 5 feet deep. Montezuma Road took the brunt of the damage, as flow out of Henderson Canyon shifted south.

1978

January 14-19, 1978

Total damages were $12 mil. Along the San Diego River, the dip in the road at Mission Valley was flooded and closed to traffic. Fashion Valley Road had major damages due to levee and pump failure. There was severe damage to roads in the Mission Valley area. Two people died trying to cross Mission Center Road. 3 deaths total for San Diego County, and 15 injuries from this flood event. Sewer and water supply lines were washed out. The San Diego Stadium had debris over their 57 acres of parking lot. 15 businesses suffered flood damages, including a vehicle storage yard that was flooded with 5 feet of water. Channel Road Bridge washed out taking out sewer and water supply lines. Water lines from several different agencies had lines washed out. Extensive damages to channels and other flood control facilities. Flood control channels overtopped and caused flooding in a few residences, and parking lots of businesses with about 2 feet of water. Channel Road crossing was washed out forcing the evacuation of a preschool, church and retirement complex. Damages to 98 houses, outbuildings or corrals, and 57 businesses were damaged. Sycamore Canyon Creek lost their sewer line, and channel embankment. The dikes at Santee Recreation Lakes eroded. Along the San Luis Rey River the Deutsch

Company had extensive damage. There was road damage at dip crossings. The State Highway suffered damages. The sewage treatment plant at Pauma Valley had damages. Water Supply lines were washed out. Railroad lines were washed out, bridges destroyed. A few golf courses had damage. 500 feet of embankment was washed out at the Tijuana River which also caused damages to the San Ysidro Athletic Area.

March 5, 1978

Flooding in Lakeside region caused over $15 mil in damages, and 4 deaths. 21 are injured in this event, 5 homes were destroyed, 616 homes were damaged, and 118 businesses were left damaged. Thousands of people were evacuated. Lake Hodges overflowed. Roads and highways were flooded.

1979

Flooding in the cities of La Mesa, Lemon Grove, National City, San Marcos and San Diego caused considerable damage. This was a high intensity, short duration flooding event. Damages due to this flood exceed $2.5 mil.

1980

February 19-22, 1980

San Diego River floods, and tops out in Mission Valley causing $120 mil in damages. This is the 3rd largest flood behind the 1916 flood and 1927 respectfully. All reservoirs were over full and all had to spill during the duration of this event. San Diego County was declared a disaster area on Feb. 20th.

1982

December 8-9, 1982

Heavy rains in eastern San Diego County resulted in massive flooding in Ocotillo. Roads, homes, and businesses were all damaged by flood waters.

1986

November 17-18, 1986

Early winter storm brought with it lots of rain. The San Diego River overflowed its banks and roads were closed due to street flooding, especially in the Mission Valley area. Encinitas also had flooding of streets.

1987

January 4-5, 1987

Pacific storm brought heavy rains to San Diego County. San Diego River overflowed and flooded the Mission Valley. Cars were stranded, and roads were closed. Sewage treatment lines washed out and untreated sewage spilled into Mission Bay, posing a health risk.

1988

February 2, 1988

A tropical storm lashed San Diego County with heavy rain. 50 homes in Imperial Beach were flooded with up to 6 feet of water. 30 families were evacuated from Imperial Beach. Roads were flooded and utility outages bringing a cost of $.5 million in damages from this event.

1991

March 26-27, 1991

A winter storm dropped heavy rains in San Diego County. The San Diego River overflowed and flooded golf courses, and shopping centers in Mission Valley. An apartment in the North Park area flooded Highway 78 east of the Wild Animal Park was damaged.

1993

January and February, 1993

San Diego County declared a disaster area by Governor Wilson. Flooding in the areas of Fallbrook, Bonita and Lakeside areas are due to heavy rainstorms. 15 people died as a result of this event in their attempt to cross the flooding Tijuana River. All roads in the De Luz and Rock Mountain areas were flooded. 1,000 people were isolated in the Fallbrook area for 5 days as all access roads were damaged. San Luis Rey River also caused damages on its way through the city of Oceanside to the ocean. Camp Pendleton was flooded when Santa Margarita River overflowed. The flood damage here was severe. The runway, aircraft and outbuilding were flooded with water and mud up to 10 deep and the runway remained under 4 feet of water for days.

1995

January 4-24, 1995

A series of storms struck Southern California beginning January 4th. San Diego County is declared a disaster area January 10th by President Clinton. A San Diego woman drowned when her basement flooded. The Santee area was flooded when the San Diego River

overflowed its banks. The result is many million of dollars in losses. On January 22 rain soaked cliffs collapsed in La Jolla and killed two people on the beach below. .

1998

February 23, 1998

Widespread flooding led to a Presidential Disaster Declaration that covered four counties, including San Diego County. The San Diego River peaked on the 24th at 15.1 feet, which is 3.8 feet above flood stage. 200 people were evacuates from three mobile home parks in Oceanside.

2000

August, 29, 2000

Heavy run-off from rainfall in the Borrego Springs area, which included 5 foot boulders that destroyed sections of Country Road S-22. This event trapped motorists at higher sections for many hours. A foot of water, mud and rocks churned down the road, causing scour in its path.

2004

September 10, 2004

In the Borrego Springs area a wall of water some 8-10 feet high and 150 yards wide came down Borrego Palm Canyon inundating homes in the Sun Gold community. Some 70 to 90 homes were damaged some with up to 2 feet of debris, water and mud flowed through them. A campground was washed out and major damage was done to a golf course. In Johnson Valley, Highway 247 was washed out in several places and some homes were flooded with minor damages seen.

2004

October 27, 2004

Heavy rains brought flooding to homes below the areas burned by the Cedar Fire in October 2003 wildfires. At the Harbison Canyon area, homes in the San Diego County Estates were flooded. This was a heavily sediment laden run-off due to the watershed burn above.

2005

January 7-11, 2005

Five days of heavy rains caused widespread rain throughout Southern California. On February 4, 2005 President Bush declared 7 counties in Southern California disaster areas, including San Diego County. Run-off was high from this event as the ground was saturated from heavy storms preceding it. San Luis Rey River overflowed and caused flooding in Oceanside and tore out Pacific Street. Many trees were lost in San Diego County during this event, and killed one person when it fell on them. There was also damage to roads, and agricultural lands.

February 23, 2005

Mission Valley at the Fashion Valley Mall saw stage flooding from the San Diego River. State Route 6 had a 20 foot section washed out. El Cajon area had several homes flooded.

San Luis Obispo County Flood History

1911 flood was mentioned in reports but no supporting documentation found at this time

1914

January, 1914

This flooding event was caused by very heavy rains over a long period. This was a large flooding event which washed out rail lines, roads, and nearly every bridge. Considerable damage was the result to agricultural lands. This was a major flood and not until 1969 did San Luis County flood like it did in 1914. The small communities that make up San Luis Obispo County were isolated from one another and from the outside world due to this flood. All rail traffic stopped because damage to rail lines here and in other locations. Many homes carried away by the Salinas River in Atascadero. All forms of communications were cut off, telephone lines and telegraph lines were both out.

1952

January, 1952

The Salinas River was in full flood in 1952. The flood had a maximum discharge at Arroyo Grande of 5,370 c.f.s. This flood did major damage to the banks of Arroyo Grande River and too many of the homes and other structures below the City of Arroyo Grande.

1958

April, 1958

In early April heavy rains produced flooding in San Luis Obispo County. Roads and highways were flooded. Agricultural lands suffered heavy damages. The dam at Nacimento spilled for the first time ever during 1958. The reservoir behind it had become too full to hold any more water. The Salinas River overflowed and caused widespread flooding. The County highways were closed due to flooding, debris on the roadways and landslides.

1969-Great Flood

January, 1969

The State of California was declared a disaster area by President Nixon during this event. The 1969 was the largest flooding event since 1914. January flooding event led to damages to businesses, residential, public and agricultural property, bridges, streets, parks, schools, utilities, channels, levees, and flood control infrastructure. In the North coastal areas; Flooding overflows on Villa, Cayucos, Morro, Little Morro, Chorro, and Los Osos Creeks. State Highway 1 was flooded. In Morro Bay a trailer park flooded with 6 to 18 inches of floodwaters, as were 4 houses which had 6 to 12 inches of flood water. Seven apartments were flooded with 18 inches of water and mud, and a dozen businesses sustained flooding damages, including the Pacific Telephone Company. Morro Bay State Parks had damage, and Cuesta Jr. College lost land. The US Forest Service facilities at Morro Bay had damages as well. 200 acres of agriculture land was flooded. Bridges at San Simeon Creek, State Route 1 in San Simeon, 6 bridges in Cambria were all damaged, as were miles of roads both public and private. 17 power poles were damaged due to erosion, Natural gas lines were damaged, and Cambria water supply lines were damaged. Morro Bay lost sewer and water supply lines, and 3 power poles, and one gas line. In the Central Coastal areas debris clogged channels and culverts causing flooding of the City of San Luis Obispo's main business district with 3 inches to 4 feet of flood waters. Total damages for this area: $1,476 Mil. In San Luis Obispo, 86 homes were flooded with 2 inches to 5 feet of flood water. 30 homes in See canyon had flooding. In Avila Beach, 10 homes were damaged, 1 apartment building, 11 trailers, and a motel had 1 foot to 4 feet of flood waters. 82 businesses in San Luis Obispo had flood damages with up to 2 feet of flood waters. Two public schools in San Luis Obispo had damages. The field office of CA State Transportation yards were flooded, as was the Los Padres National Forest station. The Cuesta County Park and a civic organization building had damages with 3 feet of water. Avila Beach had massive debris on the beach. See Canyon road was destroyed, along with 12 private bridges were destroyed. Roads in San Luis Obispo were damaged, and were roads in Avila Beach. In the South Coast areas, many creeks overtopped banks in this area, from a few inches to 4 feet. At Pismo Beach 2 houses were damaged and 8 apartments (in one building) had flooding damages. In Arroyo Grande area, 10 houses were damaged by flood waters. In Pismo a motel was damaged by flood waters. In Nipomo a shopping center had flood damages to 4 businesses. Dolliver Park had damages. North Coast campground and a golf course all had flood waters. Debris covered the beach that had to be removed. Arroyo Grande High School had flood damage. US Forest Service campgrounds were damaged in the Garcia Mountains. The post office in Nipomo filled with a foot of flood water. About 1,500 acres of agriculture

land was damaged, including strawberry crops, and alfalfa crops. 3 bridges in Pismo Beach, 6 bridges in Arroyo Grande and State Route 166 were damaged. Sewer lines and plant had damages, a gas-line, and 15 power poles were ruined in Nipomo. Rail lines were out in 3 places. Total damages for just the January flooding event exceeded $4 Mil.

February, 1969

The flood event in February were not as great as January events, but because they came so quickly on the heels on the other, many areas hadn't had time to be fixed so damages in some cases grew worse with second event. Mostly the February event prevented the repair and restoration work to continue. There was some additional erosion along channels and on agricultural lands. Debris at beaches returned. The total cost to the Feb event for the County was $849,800.00. Floods total cost for both flood events-almost $5 Mil in damages**.**

1973

February, 1973

Severe flooding along the Central Coast area resulted in road and agricultural land damage. This flood caused $13.6 million of damages, mostly along Stenner Creek, Brizziolari Creek, Prefumo Creek and See Canyon Creek. Homes, businesses, roads, bridges, rail lines and agricultural lands were all destroyed. Many people had to be evacuated. The 1973 event was the most costly flood in San Luis Obispo. The under the city flood culvert in San Luis Obispo became clogged with debris and sediments, and it was too small to handle such high run off. San Luis Obispo Creek quickly overflowed its banks and flooded an area 3 miles from downtown. A major intersection in San Luis Obispo is at this location. In other locations in the County agricultural lands were damaged, along with roads, flood control works and utilities.

1978

February and March, 1978

At Tally Ho Road and Corbit Canyon Creek 20 homes were damaged by flood waters. At Pismo Beach at Highway 1 a trailer park was flooded from overflow from the Highway. There were lots of damages to the Highways in the County due to flooding. Cuyama River overflowed during the flood and destroyed the road along its side, which resulted in over $10 million in damages to the road alone. Bridges were washed out as well. The total cost to San Luis Obispo County from this flood was over $11 mil. Damage to agricultural lands was significant. Irrigation works, domestic water supply and other utilizes were also washed out.

1995

January and March 1995

A powerful storm system dropped large amounts of rainfall causing flood conditions throughout the County. San Luis Obispo Creek that bisects the City of San Luis Obispo overflowed it banks and caused flooding up to 3 miles downstream. In the Town of Avila in both January and March high flows of run-off were blocked by debris and flooded the town homes and businesses. San Luis Obispo Creek had major damage to its banks because of erosion and high flow rates. Many people were evacuated from their homes because of the danger from flooding.

1998

February 25, 1998

Flooding of the Cuyama River near Santa Maria destroyed Highway 66. Two California Highway Patrol officers traveling the route washed away with the road and drowned. Damage to agricultural lands was high. Record peak flows on the Cuyama River were 26,200 c.f.s. San Luis Obispo Creek at Higuera and Marsh once again overtopped its banks and flooded downstream. Many people were evacuated from low lying areas to protect them from floodwaters.

Santa Barbara County Flood History

1914

January 15-30, 1914

With heavy rains for nearly 2 weeks Santa Barbara experienced heavy flooding. Over 16 inches of rainfall caused widespread damages to agricultural lands, roads, bridges, rail lines and houses.

1938

March 1-3, 1938

This was a major flood event for much of Southern California, including Santa Barbara County. The Santa Ynez River near Lompoc estimated peak discharge was 50,100 c.f.s. Widespread flooding was seen, but compared to areas further south; Santa Barbara escaped the brunt of event. Roads, agricultural lands and rail lines did see damages. Debris removal, channel repair and clean-up were all a result.

1952

January, 1952

Fifty homes were flooded in the Mission Creek area when it overflowed. Large numbers of people were evacuated from this area as well. This event prompted the creation of a Flood Control District.

1964

November, 1964

Rains fell on recently burned watershed in Santa Barbara County causing flooding. The Coyote Fire in the foothills above the areas of Montecito, Hot Springs, Cold Springs and San Ysidro Creek areas cause high run-off rates from the San Antonio and Montecito Creeks. Hundreds of people were evacuated. Eyewitnesses said that a wall of water 20 feet high flooded much of these areas. 12 homes were washed away or completely destroyed. 6 bridges were lost in the Mission Creek area. In Carpentaria, Franklin Creek overflowed and flooded several homes. In Goleta San Pedro Creek overflowed and flooded developed areas. In Santa Maria, Bradbury Channel was damaged by erosion.

1969-Great Flood

January and February, 1969

The State of California was declared a disaster area January 25, 1969 by President Nixon during this event. The 1969 floods are the project flood of record, especially the January event. On the Santa Ynez River near Lompoc the estimated peak flow were 100,000 c.f.s. The Twitchell Reservoir on the Cuyama River spilled for the first time since its completion in 1959. At Guadalupe on the Santa Maria River peak discharges were 27,200 c.f.s. Five people lost their lives. The Alamo Pintado Creek and Zaca Creek, along with many of the tributaries of the Santa Ynez River overflowed. Franklin Creek and Santa Monica Creek overflowed into residential areas. Hundreds of people were evacuated from their homes, and some homes were completely destroyed. Almost all highways and roads were closed. The spillways of Gibraltar and Cachuma dams spilled flows exceeding the design flow. Solvang and Lompoc areas had severe flooding. In Santa Barbara flood flows were of unprecedented magnitude. This flood cost over 4.5 mil in damages to the County of Santa Barbara.

1971

Santa Barbara was declared a disaster area when high flows in Romero Canyon Creek, Garrapata Creek and Toro Canyon Creek overflowed after heavy rains and flooded much of the Montecito and Summerland areas.

1978

February and March, 1978

Along the Santa Maria River 340 acres of agricultural land was damaged. 2 bridges and some public road damage also occurred when channels and bridge underpasses filled with debris causing flooding. Silting was 10 feet deep in areas. Along San Antonio Creek, 200 acres of agricultural land was damaged with over 8 feet in water damage. A bridge was damaged beyond repair and removed. Silt filled channels causing flooding. At the Santa Ynez River 700 acres of agricultural land were damaged with 10 feet of silt and water destruction and over 80 acres of agricultural land was washed away as well. Bridges, roads, and equipment were destroyed, as well as pipelines, irrigation works, feed and truck products destroyed. 5 parks sustained damages. A bridge was destroyed, and 7 miles of roads were damaged. Another bridge sustained major damages. Flood control infrastructure was damaged, including channels, and basins. Vandenburg Air Force Base had damages to roads, bridges and other flood related damages. The Solvang Treatment plant was damaged including wells, lines and ponds. In the South Coastal stream area excessive flows in the Mission Creek channel caused flooding in the city of Santa Barbara. Luckily no residential or business damages occurred, but the channel itself had damages. This caused flooding down stream of a nearby apartment which was undermined, and over 50 structures were affected with mostly minor damages. Sewer lines were damaged. Roads damages needed debris removal and minor repairs. Goleta treatment plant suffered damages, and did IslaVista, as well as Montecito and Carpentaria. Rail lines and State Highways suffered damages. This flooding event caused nearly $7 Million is damages to the County of Santa Barbara.

1993

January and February, 1993

A series of winter storms hit Santa Barbara County that caused some flooding especially in the Lompoc and Buellton areas. President Clinton declared Santa Barbara a disaster area on February 3, 1993 due to this flooding event. This was a very wet winter for Santa Barbara, and although the rivers have been full, flooding was not severe. Three dams in the County spilled during this event; Cachuma Dam, Gibraltar Dam and Juncal Dam. 12 creeks received damages, and $1.4 mil in damages in costs.

1995

January and March, 1995

On February 9th, President Clinton declared Santa Barbara County a disaster area after a series of winter storms hit with heavy rains. The events in January displaced a large number of people and the Red Cross opened emergency shelters for those people who needed housing. 510 structures flooded in January, and all transportation routes were closed in the City of Goleta. During the March floods two died as a result of flooding in Santa Barbara. Four feet of floodwaters closed areas of downtown, the boardwalk and beach areas. A Santa Barbara convalescent hospital was flooded with storm run-off and 43 residents were evacuated to other facilities. State Street flooded and a foot of mud was left behind. In the March events US Highway 101 in Santa Barbara was closed near

Manchester Canyon. A local Judge was drowned when a wave of water from Sycamore Creek hit his home and he was washed away. In Goleta 300 more structures were flooded and transportation routes were again shut down. These events cost an estimated $100 Mil in damages.

1998

February 25, 1998

Flooding of the Cuyama River near Santa Maria destroyed Highway 66. Two California Highway Patrol officers traveling the route washed away with the road and drowned. Damage to agricultural lands was high. Record peak flows on the Cuyama River were 26,200 c.f.s.

2005

January 7-11, 2005

Five days of heavy rains caused widespread rain throughout Southern California. On February 4, 2005 President Bush declared 7 counties in Southern California disaster areas, including Santa Barbara County. Run-off was high from this event as the ground was saturated from heavy storms preceding it. A slow moving Pacific storm moved into Santa Barbara County in late December and brought with it copious amounts of rain by the time it had moved on in mid January. By January 12th 320% of normal rainfall totals had been made. All 3 of the reservoirs on the Santa Ynez River were full and spilling. Widespread flooding was the result of the hardy amounts of rain. Road and rail lines were damaged and closed. Power failures and urban flooding were seen. Highway 101 was closed and San Marco Pass was closed as well due to a large landslide. The runways at the Santa Barbara Airport were underwater, and a mudslide closed the Amtrak rails south. Highway 1 collapsed south of Lompoc at a creek crossing. A mudslide severed a cell phone cable and many local area users were without service. Estimates of total costs of damages to public property were over $30 mil.

Ventura County Flood History

1911

March 9, 1911

In January and February there was heavy rainfall and by March the soil was completely saturated. In March there was a serious flood on the Ventura River. The Ventura River ran very high and overflowed its banks from Casitas to the ocean. The Bridge at Casitas was underwater, although it was built 17 feet above normal flow for the River. The western part of Ventura is flooded, and the steel railroad bridge has been torn out and washed out to sea.

1914

January, 1914

Extremely heavy rains in January caused widespread flooding. January saw well over 12 inches of rain in one month's time with a rain total for the year of 28.98 inches. Homes flooded, roads damaged, and agricultural lands destroyed by flood waters. Railroad lines are out, and transportation is severely hampered. Telegraph lines down, utility services interrupted. The State Highway Bridge and the Telegraph Road Bridge were both destroyed in this flood. The estimated cost of this flood for the County of Ventura amounted to $237,301.00.

1938

March 1-4, 1938

This was a major flood event for much of Southern California. Calleguas Creek had an estimated peak flow of 17,000 c.f.s. at Simi Valley and at Moor Park of 4,100 c.f.s. On the Santa Clara River estimated peak discharges of 120,000 c.f.s. The estimated peak discharge at Sespe Creek near Fillmore was 58,000 c.f.s. It caused damages and destruction to agricultural lands, to the railroad, to roads and bridges and to private homes. The cost of the flood was estimated to be $3,640,504.00. All rivers in Ventura County flooded. The Fillmore area was completely isolated for more than 10 days as all the roads, bridges, and rail lines were washed out, and food had to be brought in via horseback. Many homes in the Santa Paula area were badly flooded and some completely destroyed. The sewer plant was completely destroyed, endangering the health of residents. Highway 101 was washed out in the Oxnard area, and Oxnard and El Rio sustained considerable flooding. The bridge on State Route 118 was washed out and destroyed. Over 100 large eucalyptus trees fell over roads, completely blocking them for use. One person died as a result of the flood.

1943

January 21-22, 1943

Heavy storms caused flooding on all rivers of Ventura County. Los Angeles road was damaged by Arroyo Simi flooding and scouring of the channel that washed out the roadbed. This was the second largest flood on the Santa Clara River which recorded a peak flow of 80,000 c.f.s at Montalvo. On Sespe Creek near Fillmore estimated peak discharges were 44,000 c.f.s. Roads, agricultural lands, and bridges all were damaged or destroyed in this event. Road culverts, ditches and small dikes were all destroyed by this event. Mudslides in steeper locations occurred. The State Fish Hatchery was destroyed, killing some 500,000 fish. The estimated total cost of this event to the County of Ventura was $333,500.00.

1944 Ventura County Flood Control District created

1952

January 18, 1952

The Hueneme Bridge at Calleguas Creek washed out, as well as the Los Angeles Crossing at Arroyo Simi. Las Posas Bridge was also washed out. Nearly all bridges along Calleguas Creek were destroyed by this flooding event. It also destroyed the stream gages, so accurate readings are impossible. Estimated peak flow on the Santa Clara River at Montalvo was 40,000 to 50,000 c.f.s.

1958

April, 1958

This was a large flooding event, flooding on all rivers of Ventura but especially so on the Santa Clara River which had an estimated peak flow of 42,170 c.f.s. Peak discharges on Sespe Creek near Fillmore were 28,400 c.f.s. Roads, agricultural lands, and bridges all were damaged or destroyed in this event.

1962

February 7-20, 1962

Heavy rain brought about flooding on all rivers of Ventura. President Kennedy declared Ventura County a disaster area. At Revolon Slough 3435 acres of land were underwater. Breaks in the channel took about another 100 acres. 5 small earth fill irrigation dams were eroded and badly damaged, and other irrigation works were destroyed including concrete channel lining. Small bridges used and built by farmers were also destroyed. At Live Oak Creek the Soule Park Golf Course experienced some washout along the creek. At Sespe Creek, citrus groves had flood damage, as well as road and channel damage. The Santa Ana Bridge was washed out at the Ventura River. Channel damage along Ventura River. The estimated peak flows on the Santa Clara River was 47,000 c.f.s., on the Ventura River at 17,800 c.f.s. and on the Arroyo Simi at 2,600 c.f.s. The estimate peak discharges at Sespe Creek near Fillmore were 25,600 c.f.s. The estimated cost of this event was $425,000.00.

1965

November and December, 1965

Heavy flooding caused heavy road damage in the Thousand Oaks area. This event also washed out utilizes, including sewer lines and water supply infrastructure. $490,000.00 in damages was the estimated cost of this event for the County of Ventura. Simi Valley and Moor Park took the brunt of the damages. President Johnson declared Ventura County a disaster area. Roads, agricultural lands, and bridges all were damaged or

destroyed in this event. The Santa Clara River had an estimated peak discharge at Montalvo was 51, 900 c.f.s. The estimated peak discharges at Sespe Creek near Fillmore were 21,600 c.f.s.

1967

November and December, 1967

This is the second largest flooding event in the Simi Valley and Moor Park areas along the Calleguas Creek. Most of the damages were to residential property and to channel improvement. This flood caused an estimated $510.000.00 in damages. Ventura County was declared a disaster area by President Reagan. Storm channels and drains became plugged with debris and silt and resulted in flood water backing up and flooding in the Santa Susana Knolls area. Scores of families were evacuated, and 63 homes were flooded and damaged. Later in November the Santa Ana Bridge was washed out by flood waters as well as a few more minor bridges along the Ventura River. State Highway 150 was closed due to landslides and flooding as well as many other roads. Two Ventura hydrographers were drowned when they were attempting to measure the flow of the Santa Clara River.

1969-Great Flood

January, 1969

The State of California was declared a disaster area by President Nixon during this event. One person lost their life to a mudslide, but 12 people died as a result of drowning in January. Sewer and water supply lines were washed out, posing a health risk to residents. The estimated peak discharges on Sespe Creek near Fillmore where the highest recorded at 60,000 c.f.s., and on the Santa Clara River at 88,000 c.f.s. Families were evacuated from the Fillmore area. Along State Route 126 residential homes were inundated by a diverted by debris, Sespe Creek. A railroad trestle bridge collapsed over Sespe Creek. 3,000 acres of agricultural lands were flooded near Fillmore. A golf course west of State Route 23 was badly silted and a dip crossing on the Santa Clara River was destroyed. The entire City of Santa Paula (6,000+) was evacuated because of the threats from the flood waters of Santa Paula Creek. Highway damage was heavy in Ventura County.

February, 1969

The February event was the largest flood of record in the Simi Valley and Moor Park areas. It led to the flooding of all rivers of Ventura County. Sespe Creek overflowed its east bank and families were evacuated in the Los Serenos area along State Highway 126. Bridges and roads were destroyed and transportation was interrupted. There sewer plants in Ventura County were damaged and untreated sewage flowed into the Santa Clara River, Ventura River, and San Antonio Creek for 2 weeks until repairs were made. 90 acres of citrus groves were washed away at the confluence of the Sespe and Santa Clara River. Again, the entire City of Santa Paula (6,000+) was evacuated because of the

threats from the flood waters of Santa Paula Creek. In Ventura County flood flows were of unprecedented magnitude. The cost of the 1969 flood for Ventura County was estimated at $43 mil.

1970

Flooding by the Calleguas Creek caused $180,000.00 in estimated damages to the Simi Valley and Moor Park areas.

1978

Along the Santa Clara River 1300 feet of levee was washed out, and 2100 feet of riprap were destroyed. Also bank erosion occurred. Heavy damages to agriculture-including crops destroyed, and washed away. Public Utilities were damaged, including water and sewage lines. Roads and highways were blocked by debris and the town of Piru was cut off and 30 people emergency airlifted out to be evacuated. The town of Fillmore had to be evacuated when Sespe Creek could no longer hold the flow of water. One life was lost. Sespe Creek overtopped, and inundated the railroad track. About 300 feet of RR track was lost, and 1,000 feet of RR track bed. A fire station had heavy damages as did a metal foundry which had over 2 feet of silt inside those structures. 204 houses and 2 apartments were filled with between 2 to 5 feet of water/silt/debris. 140 acres of agricultural land were destroyed. Fillmore was cut off due to road destruction-washouts and mudslides. Bridges were washed out. The State Highway was closed due to slides, as was access to Piru. The Sewage treatment plants lost pipelines. A park along Santa Paula Creek lost about 50 feet of bank. At the Ventura River 26 homes and businesses in the Ojai Valley were damaged. 200 people were evacuated from this area. Roads and bridges in this area were damaged. RR lines were damaged. Utilities in this area had severe damages to lines. Power lines were toppled when poles became undermined by flowing water. 7 homes in the Matilija Canyon were damaged. Matilija Lake Campground was 80% destroyed. Main Street Bridge at Ventura River was severely damaged and closed. In the Calleguas Creek area 690 acres of agricultural lands were damaged. Rail lines were damaged and channel was lost. The levee at Moorpark College was eroded. Treatment lines washed out, and the park damaged. Water supply lines and infrastructure was damaged. Total cost for this flood period for Ventura County: $20 Million

1983

February 26-March 1, 1983

Winter storms brought heavy amounts of rain to Ventura County, and President Reagan declared it a disaster area. The Calleguas Creek was the hardest hit, where records floods occurred. The channels in Simi Valley and Moor Park had major damage from erosion and flood waters inundated many thousands of acres of agricultural lands. Damages were estimated for the County of more than $39 Mil. 1400 in Simi Valley were evacuated when the Sinoloa Dam was threatened with failure. Because this flooding event

coincided with extremely high tides-the highest of the year-damages to Ventura County were compounded. Highways, homes, recreational lands, and utilities were all destroyed by this combination of events. The areas residing near Calleguas Creek suffered the highest rates of flood damages. Besides the high evacuation numbers, new meanders in the river destroyed rail lines and threatened homes near Moor Park. Emergency crews were able to divert the water by quickly building groins to slow the erosion, and only 2 homes were lost. The floods closed 28 roads in the County.

1992

February 10-15, 1992

President Bush declared Ventura County a disaster area February 21 after a series of thunderstorms brought heavy rains to the area earlier in the month. The Ventura River at Highway 101 peak flow was estimated at 45,800 c.f.s. Live Oak Creek got jammed with debris backing up at bridges in the Oak View area and a nursing home was flooded. The Ventura River overflowed at Ventura and overtopped the west bank at the Highway 101 Bridge. Flows from this flooded agricultural lands, the Ventura Beach Recreational Vehicle Resort and Highway 101. Highway 101 was closed to traffic, for about 3 hours. 110 people were rescued from the Resort and motor homes were evacuated from the location. Some were swept out to sea, or flooded however. One person died as a result of flooding in this location. Arroyo Simi eroded badly in the Simi Valley/Moor Park area. Walls and bridges were damaged. Calleguas Creek overflowed due to debris build up, and the Lewis Street Bridge abutments were undermined.

1993

January and February 1993

Minor flooding occurred in Ventura County, with localized flooding in the Live Oaks Acres area when Coyote Creek overflowed and flooded Santa Ana Road. Mudslides, and minor road wash outs were the extent of the problems in Ventura County from this event.

1995

January and March, 1995

A series of strong storms brought heavy rains to Ventura County and on March 10, 1995 President Clinton declared Ventura County a disaster area. Flooding damaged homes, businesses, public faculties, highways, bridges and flood control infrastructure. It also ruined or damaged agricultural lands. One person died in January due to this flooding event. More than 12.5 inches of rain fell on Matilija Creek, and caused homeless encampments to scurry to higher ground. Two people had to be rescued from the river. Highway 101 was flooded and an RV Park was flooded with up to 6 feet of water. Emergency rescue crews in helicopters had to evacuate 33 people stranded in this location. Many transportation routes were hindered by flood waters and debris. La

Conchita, a small seaside village along the coast was hit hard by a landslide that crushed 9 houses. Another 140 houses in this location were evacuated, but all 700 residents were given evacuation warnings.

2005

January 7-11, 2005

After 5 days of very heavy rains, a landslide at the small town of Conchita was triggered and demolished 13 houses, severely damaged 23 others, and led to the deaths of 10 people. The landslide coincided with the heaviest rain of this storm. On February 4, 2005 President Bush declared 7 counties in Southern California disaster areas, including Ventura County.