# Arizona Flood History

•Winter 1916 –Gila River 200,000 CFS at Yuma

•1970 Tropical Storm Norma –Deadliest Arizona Flooding Storm in History –12 inches in 24 hours.

•1972 Hurricane Joanne Floods Much of Arizona

•1976 Hurricane Kathleen –Floods Tucson

•1978 Thousands homeless 10 die, 2/3rds of state Declared Federal Disaster

•1980 Salt River Flooding, Verde River Flooding, Agua Fria Flooding, and Gila Record flow. Phoenix Bridges wash out.

•1983 Hurricane Octave and a tropical storm cause 14 Dead and 975 Injuries

•1993 $250 Million Flood Damage on 17 Rivers and Streams

•1997 Antelope Canyon Flash Flood –11 Hikers Dead

•2000 Wendon Centennial Wash Flood 1 Dead –500 Evacuated $8 Million Damage

•2004 Oak Creek Flooding

•2005 Verde River Flooding

•2005 Salt River Flooding

Southeat Arizona History:  A summary of most of the floods and flash floods that have impacted southeast Arizona, along with peak flow data (courtesy of the USGS)

July 7 & 13, 1887

Nogales experienced unusually heavy rains which flooded streets, destroyed bridges, and washed away railroad tracks (Ingram 5).

February 19-22, 1890

Rain covered the Arizona Territory for three days straight with little let-up. The rains melted snow in higher elevations, causing rapid rises in runoff. The newly completed $600,000 Walnut Grove Dam in Yavapai County burst on the 22nd, drowning about 50 people. The Salt, Gila, Colorado, and Santa Cruz rivers all overflowed their banks (Ingram 6).

February 15-23, 1891

Two Pacific storms dumped rain over the Arizona Territory, causing damage in almost every town. The Gila River at Fort Thomas was very high on the 19th, preventing travel to west to Black Rock. Clifton also suffered severe flooding. Holbrook and Fort Thomas reported the highest water levels ever known on the 24th. The Gila at Eagle Pass was seven feet above the previous high water mark. Much destruction occurred and many lives were lost (Ingram 7).

October 1, 1896

Two cloudbursts in the Whetstone Mountains sent flash floods through Benson, drowning two mothers and four children (Ingram 10).

December 1906

Warm rains on the 1st-4th caused rapid snow melt of November accumulations. This runoff filled river beds, causing high flows in many streams and severe floods on the San Francisco river on the 3rd, 4th and 5th, whereby many lives were lost from drowning, much property was destroyed, and railroad traffic was delayed for more than a week. Additional rains in the latter half of the month kept many rivers, including the San Francisco, Gila, and San Pedro, above fordable stages (Ingram 11).

PEAK FLOWS:

San Francisco R at Clifton: 70,000 cfs (12/03/06)

July 1919

Thunderstorms accounted for record-breaking rainfall. Amounts in excess of 2 inches in 24 hours fell at sixteen stations. Benson reported 2.43 inches in less than one hour. The heavy rains washed out roads and caused loss to railroads from wrecks, bridges destroyed, and track washed out. Some damage to irrigating systems was reported on the San Pedro River. The Gila also reached its highest stage of the year (Ingram 14).

August 1921

Excessively heavy rains occurred throughout the mountain regions of the state from the latter part of July through August. Channel water continued in the Gila River over most of its length, preventing crossing except at bridges. Many floods occurred. The total damage, including crops, irrigation ditches, equipments, loss of records, etc is estimated at $240,000 (Ingram 14).

September 15-19, 1925

General rainstorms with thunder and high winds occurred over the entire state. The Gila River crossing at Gillespie Dam was closed to traffic for three days, because 4.5 feet of water poured over the dam. The Winkleman branch of the Southern Pacific railroad was washed out (Ingram 15).

PEAK FLOWS:

Santa Cruz R @ Tucson: 3,400 cfs (9/18/25)

Rillito Creek: 3,500 cfs (9/17/25)

September 26-27, 1926

One of the most damaging rainstorms in Arizona history swept over central and southeastern Arizona. Bisbee reported the heaviest monthly rainfall ever known: 10.19 inches. The Agua Prieta River ran half a mile wide, submerging bridges and highways. The Gila River was above flood stage at Kelvin. The Southern Pacific Railroad experienced damaged roadbeds, washed out bridges, and suspended traffic west of Douglas. Thatcher, Douglas, Nogales and Safford were flooded and many adobe houses crumbled. Camp Little at Nogales damage was $12,000. State Bureau of Highways placed the damage to improved roads and small bridges at $60,000 (Ingram 16).

STORM PRECIPITATION TOTALS:

Douglas: 6.90"

Hereford: 8.27"

Naco: 6.50"

PEAK FLOWS:

San Pedro R. @ Charleston: 98,000 cfs (9/28/26)

San Pedro R. @ Redington: 90,000 cfs (9/28/26)

San Pedro R. @ Winkleman: 85,000 cfs (9/28/26)

Gila R. @ Kelvin: 81,000 cfs (9/28/26)

Santa Cruz R. @ Tucson: 11,400 cfs (9/28/26)

September 11-13, 1927

Heavy rains caused washouts of railroad tracks between Pima and Central in Graham county, and Pearce and Kelton in Cochise county. Many rivers, streams, and washes over flowed and a rise of six feet occurred on the Gila River at Ray Junction (Ingram 16).

PEAK FLOWS:

San Francisco R. @ Clifton: 4,060 cfs (9/12/27)

Gila R. @ Solomon: 9,320 cfs (9/13/27)

September 19-24, 1929

Damaging wind and rain storms occurred in south central and southeastern Arizona. A cloudburst occurred between Pima and Safford in Graham county. Highway 80 east and west of Douglas was washed away. Benson was isolated by washouts on railroads and highways. Four men were struck by lightning in Nogales. Damage to roads, culverts and bridges was estimated by the State Highway Department at $50,000 (Ingram 16).

PEAK FLOWS:

Santa Cruz R. @ Tucson: 10,400 cfs (9/24/29)

Rillito Creek: 24,000 cfs (9/23/29)

August 1-10, 1930

Unusually heavy rains on the mountains south and west of Nogales on the 1st, 7th, and 8th caused small stream flooding. Due to rushing waters and accumulated water and mud, four deaths occurred in Nogales, Sonora, Mexico. In Nogales, Arizona many adobe buildings collapsed, and damage to stores and residences occurred. Total damage was estimated at $20,000 (Ingram 17).

PEAK FLOWS:

Gila R near Solomon: 10,100 cfs (8/11/30)

San Pedro R at Charleston: 9,740 cfs (8/7/30)

San Pedro R at Winkleman: 25,000 cfs (8/8/30)

Gila R at Kelvin: 42,600 cfs (8/8/30)

February 11-16, 1931

Heavy rains caused flash rises on the Gila River and its tributaries. The San Pedro River rose to 6.5 feet at Kelvin (Ingram 17).

August 1-7, 1931

Especially heavy rains over the San Pedro River basin caused flood stages at Kelvin on the 10th. A heavy rainstorm at Continental inundated the village, and the Tucson-Florence Junction road was impassable (Ingram 17).

PEAK FLOWS:

San Simon R at Solomon: 27,500 cfs (8/9/31)

San Pedro R at Charleston: 24,500 cfs (8/9/31)

Santa Cruz R at Tucson: 9,200 cfs (8/10/31)

July 8, 1932

Floodwater rushing down from the Mexican watershed of Sonora inundated the two border cities of Nogales to a depth of four feet, crumbling adobe buildings, flooding homes and businesses, overturning and demolishing automobiles, and tearing down the international boundary fence. Damage was estimated at $75,000 (Ingram 18).

August 1934

One of the worst floods in thirty years occurred on the Gila River. The flood drove many residents from Duncan, Greenlee county, swept livestock away, and stopped railroad and highway traffic. Damage was estimated at $15,000 (Ingram 19).

PEAK FLOWS:

Gila R @ Clifton: 17,000 cfs (8/26/34)

San Francisco R @ Clifton: 11,700 cfs (8/26/34)

Gila R @ Solomon: 23,000 cfs (8/27/34)

Gila R @ Calva: 18,000 cfs (8/28/34)

Sonoita Creek @ Patagonia: 11,000 cfs (8/?/34)

August 28-31, 1935

Heavy rains resulted in numerous floods and flash rises of ordinarily dry washes which caused considerable loss of life and property. On the 28th, a transcontinental bus was hit by a wall of water at the Dragoon underpass near Willcox, and five lives were lost. On the 31st, flood waters inundated sections of the Rillito Valley, and considerable damage occurred at Helvetia and other locations between Tucson and Nogales. Property loss was estimated at $30,000 (Ingram 19).

PEAK FLOWS:

Gila R at Kelvin: 21,000 cfs (8/29/35)

Santa Cruz R at Nogales: 12,000 cfs (8/31/35)

Rillito Creek: 13,400 cfs (8/31/35)

July 25, 1936

Heavy rains occurred in central and southern Arizona, which washed out railroad tracks (Ingram 19).

PEAK FLOWS:

Aravaipa Creek @ Mammoth: 6,500 cfs (7/25/36)

March 3-5, 1938

Monthly precipitation for southern Arizona was 74 percent above normal. Floods on the Gila, Salt, and Verde Rivers, and on various other smaller creeks and washes did a total damage in the state estimated at $248,228 (Ingram 20).

PEAK FLOWS:

San Carlos R @ Peridot: 8,640 cfs (3/4/38)

September 28-29, 1941

Heavy rains on the tributaries of the upper Gila River caused one of the worst floods ever experienced in Duncan and vicinity, Graham county. Flooding also occurred in Safford. A large part of the residential areas and farmlands were inundated. Damage to crops and homes along the Gila River from Duncan to Coolidge Dam was estimated at $500,000 (Ingram 21).

PEAK FLOWS:

Gila R @ Clifton: 28,200 cfs (9/29/41)

Gila R @ Solomon: 31,900 cfs (9/30/41)

Gila R @ Safford: 33,000 cfs (9/30/41)

September 23-26, 1944

Intense local thunderstorms on the slopes of the Graham and Gila mountains caused severe local flooding south of Safford and at Thatcher. Extensive damage occurred to canal systems, county highways, city water works, growing crops, farmlands, and other property. Total damage was estimated at $700,000 (Ingram 22).

PEAK FLOWS:

San Pedro R @ Redington: 19,000 cfs (9/24/44)

August 9, 1945

Thunderstorms caused dry washes to overflow in Pima county. Flood waters tore a fifteen foot gap in a bridge on the highway four miles south of Tucson. Four automobiles plunged into raging torrent, and ten persons drowned. Total damage was estimated at $26,000 (Ingram 22).

PEAK FLOWS:

San Simon R @ Solomon: 7,350 cfs (8/10/45)

San Pedro R @ Redington: 14,600 cfs (8/10/45)

Santa Cruz R @ Tucson: 10,800 cfs (8/10/45)

Santa Cruz R @ Cortaro: 14,000 cfs (8/10/45)

August 17,1945

A storm at and above Clifton, Greenlee county, washed huge quantities of mud and rock down through the main part of Clifton. Water and silt covered downtown streets to a depth of two or three feet, many stores were flooded, automobiles on the streets were almost buried in rocks and mud. Damage was estimated at $150,000 (Ingram 22).

August 3, 1946

A highway bridge in the vicinity of Cortaro was washed out. Damage was evaluated at $8,000 (Ingram 22).

January 13-15, 1949

Warm rains on the upper reaches of the Gila River caused melting of considerable snow. The resultant heavy runoff caused minor floods on the Gila River. Considerable flooding of farmland occurred in the Duncan and Safford areas. Major damage to rural property was to fences in river bottoms and to young alfalfa and oat crops (Ingram 22).

PEAK FLOWS:

Gila R below Blue Creek near Virden, NM: 15,600 cfs (1/14/49)

San Francisco R at Clifton: 24,100 cfs (1/13/49)

Gila R at Solomon: 25,200 cfs (1/14/49)

July 14, 1953

A thunderstorm with heavy rain occurred at Tucson, which damaged power lines and transformers, eroded streets, broke the gas main, and damaged homes and stores. Estimated damage was $350,000 (Ingram 26).

PEAK FLOWS:

Santa Cruz @ Cortaro: 10,800 cfs (7/14/53)

Rillito Creek @ Tucson: 5,470 cfs (7/16/53)

July 24-25, 1955

Heavy rains over the south central portion of Arizona totaled three to four inches for the two-day period. There was considerable flooding of dips and washes.

PEAK FLOWS:

Gila R @ head of Safford Valley near Solomon: 11,700 cfs (7/24/55)

July 26, 1957

Heavy rains caused flooding of homes, stores, and farmlands in and near Safford and Thatcher. Property damage was in excess of $100,000 and crop damage alone was $65,000 (Ingram 27).

PEAK FLOWS:

San Francisco R @ Clifton: 5,230 cfs (7/26/57)

Eagle Creek above Morenci:  4,210 cfs (7/26/57)

Gila R @ head of Safford Valley near Solomon: 5,980 cfs (7/26/57)

San Carlos @ Peridot: 7,310 cfs (7/26/57)

October 14, 1957

Heavy rains in the Picacho area caused floodwater to race through a labor camp flooding about fifty cabins and a dozen homes. About 250 migrant workers were homeless during the storm. Property damage was estimated at $20,000, and considerable damage was done to cotton by flooding of fields (Ingram 29).

July 29, 1959

Thunderstorms with heavy rain in Tucson and vicinity caused bout $50,000 damage to county roads by flooding and $25,000 to automobiles and home interiors by water.

August 17/20, 1959

On the 17th, heavy rains caused about $75,000 damage with Pima county. On the 20th, an estimated $50,000 damage was caused when stores, warehouses, and homes were flooded.

PEAK FLOWS:

Eagle Creek above Morenci: 4,780 cfs (8/17/59)

Gila R @ Kelvin: 5,930 cfs (8/17/59)

Pantano Wash @ Vail: 9,310 cfs (8/17/59)

Santa Cruz R @ Cortaro: 8,000 cfs (8/20/59)

October 29-30, 1959

Heavy rains occurred over central and eastern Arizona. Seven people were killed and fifty injured. Estimated damaged to the state cotton crop was $1 million, and $2 million to property and roads.

July 22,1961

Thunderstorms with heavy rains caused $30,000 damage to city streets in Tucson. Heaviest damage was in the suburbs were many homes suffered roof and structural damage. Several cars were washed away in arroyos (Ingram 29).

PEAK FLOWS:

Gila R @ Kelvin: 9,600 cfs (7/22/61)

August 22, 1961

A thunderstorm with unusually heavy rain in Tucson produced over two inches of rainfall in one hour. The heavy runoff caused severe damage to roads and property. Estimated damage was: $100,000 to city streets, $200,000 to county roads, and $25,000 to personal property (most of which was to automobiles caught in flash floods (Ingram 29).

PEAK FLOWS:

Santa Cruz R @ Tucson: 16,600 cfs (8/23/61)

San Simon R @ Solomon: 7,750 cfs (8/22/61)

Gila R @ Safford: 6,990 cfs (8/22/61)

July 31, 1964

Thunderstorms caused damage over a wide area from Tucson westward to Ajo. Most of the damage in the Tucson area was to homes and automobiles due to flooding (Ingram 30).

PEAK FLOWS:

San Francisco R @ Clifton: 8,670 cfs (7/31/64)

August 1964

Heavy local runoff from thunderstorms damaged roads, and high winds damaged roofs and utilities near Douglas. No date given (Ingram 31).

July 17, 1965

A powerful thunderstorm forming over the Rincon Mountains dumped up to 1.2 inches of rain on Tucson's east side. Flooding caused damage to a grocery store, apartment complex, and many of Tucson's low lying roads. Much of Tucson, including Tucson Medical Center, experienced power failures for up to an hour.

December 1965

Statewide precipitation was above normal for the entire month. Precipitation on the 23rd caused flooding along the Santa Cruz River and along the Gila River west of Coolidge Dam. Several hundred acres of cotton and grain land along the Santa Cruz were flooded, and Rillito Creek ruptured sewage lines, contaminating a number of wells in the Tucson area. Palisade Ranger Station in the Santa Catalina Mountains reported 89.0 inches of snow during the month (Ingram 32).

PEAK FLOWS:

San Francisco R at Clifton: 30,500 cfs (12/23/65)

Gila R at head of Safford Valley, nr Solomon: 43,000 cfs (12/22/65)

San Carlos R @ Peridot: 36,300 cfs (12/22/65)

Rillito Creek @ Tucson: 12,400 cfs (12/22/65)

February 8, 1966

A cold winter storm put up to 1.26 inches of rain in many areas of Tucson. Eleven accidents from

slick roads and flooding produced most of the damage.

July 18, 1966

A woman drowned in Alamo creek after her vehicle was inundated with raging flood waters. This brief storm dumped .64 inches of rain to Tucson causing other minor gas and power outages.

August 10, 1966

In Sabino Canyon, heavy runoff from the Catalina Mountains caused considerable damage in the Sabino Canyon recreation area (Ingram 32).

PEAK FLOWS:

Sabino Creek @ Tucson: 6,400 cfs (8/10/66)

September 14, 1966

In a two day span of heavy rain, Mt. Lemmon received 2.49 inches of rain with heavy flooding of Sabino Canyon ( 6500 c.f.s. at the dam in lower Sabino Canyon ).

August 11-12, 1967

Heavy rain on the headwaters of the Gila and San Francisco Rivers caused flooding in Graham and Greenlee counties. The flood waters damaged roads, utilities, homes, businesses, irrigation canals and crops (Ingram 32).

PEAK FLOWS:

Gila R near Virden, NM: 11,500 cfs (8/12/67)

San Francisco R @ Clifton: 34,700 cfs (8/12/67)

Eagle Creek near Morenci: 7,650 cfs (8/12/67)

Gila R @ Solomon: 34,800 cfs (8/12/67)

December 1967

In the middle of the month, a series of winter storms hit the entire state producing heavy snows. The " Worst storm in Arizona's history " produced local flooding after snow gave way to rain. The Papago Indian Reservation, inundated with torrential rains, had many of it's citizens rescued from floodwaters. The first day of winter, the 21st, brought a continuation of the onslaught of successive storms with heavy rains and snows. In southern Arizona, the already saturated ground produced flood conditions along the Santa Cruz river. In Amado, the floodwaters backed up to the foothills of the Santa Rita mountains, washing out roads and railroads. All in all, 3.39 inches of precipitation fell at the Tucson airport with significant flooding in Pima and Santa Cruz counties. Flood damage in the two counties totaled $750,000.

PEAK FLOWS:

Aravaipa Creek near Mammoth: 15,300 cfs (12/17/67)

Gila R at Kelvin: 27,600 cfs (12/20/67)

Santa Cruz R at Tucson: 16,100 (12/20/67)

August 7, 1968

An intense, fast moving storm swepted across Tucson producing heavy rain and hail. This extremely local storm, typical of summer thunderstorms in southern Arizona, produced up to 2 inches of rain with golf ball sized hail stones on the north and east sides of Tucson. However, only .15 inches of rain fell along the northwest side of town. Only .04 inches of rain was recorded at the Tucson airport.

November 14, 1968

A strong winter storm dumped up to two inches of rain in the valleys and heavy snow in the higher elevations of southern Arizona. This storm ended a two month drought with the best drenching of rain since the monsoon in August. The storm continued through the 15th totaling 2.4 inches in Tucson causing most creeks and washes to run at full capacity.

July 20, 1970

Three people drowned when their vehicle stalled in a wash and was caught in a flash flood. Overnight, 1.4 inches of rain fell at the Tucson airport deeming the storm as the worst of the year. The rain helped to curb an epidemic of forest fires throughout southern Arizona.

September 4, 1970

Tropical storm Norma produced heavy precipitation along and east of the Baboquivari Mountains and northward to Tucson and Avra Valley. Rapid runoff washed out roads and several bridges near Tucson and flooded homes (Ingram 34).

STORM PRECIPITATION TOTALS:

Kitt Peak: 8.08"

Tucson: 2.52"

PEAK FLOWS:

Altar Wash near Three Pts: 22,000 cfs (9/4/70)

August, 1972

Heavy rain near Pima and the surrounding mountains caused flood waters to breach canals and irrigation ditches, flood a

number of homes and businesses, and caused considerable damage to roads and farmland (Ingram 37).

October 4-6, 1972

Tropical Storm Joanne moved into Arizona from southwest of Baja California. The rains washed out numerous secondary dirt roads and urban streets. A highway bridge on US 89 south of Tucson was lost. $5 million damage was incurred to the cotton crop in the Salt River, Santa Cruz, and lower Colorado Valleys (Ingram 37).

October 17-19, 1972

Tropical moisture caused heavy rain over most of the state. The ground was already saturated from tropical storm Joanne earlier in the month. The heaviest flooding occurred along the San Francisco and Gila Rivers. The towns of Safford, Clifton, and Duncan suffered extremely heavy losses due to flooding. Nearly $8 million in property damage occurred, with most of this in Graham and Greenlee counties. Agricultural losses in Graham county totaled $8 million, and in Greenlee county $2 million damage occurred. Some deaths were caused by drowning (Ingram 38).

August 6, 1974

Heavy rain (2 inches in three hours) caused flash flooding of washes and creeks leading into Clifton in Greenlee county. Hardest hit was Chase Creek. Large stones and rocks, mud, and other debris covered a number of streets up to three feet deep. Three cars were buried (Ingram 40).

September 6-8, 1975

Heavy rains over southeastern Arizona caused flooding of the Gila, San Francisco, and Blue rivers. Hardest hit was Clifton where the San Francisco river rose 2.5 feet above flood stage. 300 person were evacuated from their homes, and water rose to a depth of 3 feet in the streets. Estimated damage to public sector was $91,000; and to private was $275,000 (Ingram 41).

July 9-11, 1976

Heavy rains caused flooding in the north and northwest side of Tucson. Cars and trucks were stranded in three feet of water (Ingram 41).

August 22, 1976

A thunderstorm with heavy rain caused flooding to the southwest Tucson (Ingram 41).

September 24, 1976

In Tucson, thunderstorms with heavy rain filled washes, especially the Pantano Wash and Rillito River. Flooding occurred on almost one hundred streets and roads, particularly on the north and east sides of town. Nearly a dozen cars were swept into washes on the east side. One man was missing and presumed drowned. Two boys were carried down the Rillito River 1.5 miles before they could reach ground (Ingram 43).

PEAK FLOWS:

Alamo Wash @ Tucson: 3,200 cfs (9/24/76)

Rillito Creek near Tucson: 9,400 cfs (9/24/76)

October 6-10, 1977

Tropical Storm Heather caused four days of heavy rains and severe flooding in the Santa Cruz and San Pedro Rivers. The greatest destruction was along the Santa Cruz between Nogales and Marana, where peak discharge occurred. Four-day rainfall amounts ranged from 4 to 14 inches, exceeding average annual precipitation amounts in some places. 700 people were evacuated from their homes, and severe damage occurred to crops, livestock, water supplies, and property (Ingram 44, Sellers et al. 66).

STORM PRECIPITATION TOTALS:

Bisbee: 5.75"

Douglas: 5.30"

Nogales: 8.30"

Patagonia: 7.64"

PEAK FLOWS:

Santa Cruz R @ Nogales: 31,000 cfs (10/9/77)

Santa Cruz R @ Continental: 26,500 cfs (10/9/77)

San Pedro R @ Charleston: 23,700 cfs (10/9/77)

March 4-20, 1978

9.53 inches of rainfall occurred on Mt Lemmon. Overflows of the Gila River flooded Duncan and 1000-2000 acres of farmland in Safford Valley. The Rillito Creek, Pantano and Tanque Verde Creeks in Tucson were near bankfull (PHX HSM).

PEAK FLOWS:

Rillito Creek near Tucson: 7,500 cfs (3/2/78)

Gila River flooding at Duncan photo

Gila River flooding at Duncan photo# 2

Flooded House photo near Safford

Farmland Flooding near Duncan photo

December 17-20, 1978

Almost every major river in Arizona overflowed its banks. Mt Lemmon received 8.46 inches of rainfall, and the Gila and Salt River basins were saturated from previous rainfall and snowmelt. Waters from the Gila River were seven feet deep in the town of Duncan, and 75 homes were destroyed when a dike broke. Flood waters inundated much of Safford Valley, with major agricultural damage. Along the San Francisco River near Clifton, 1000 people were evacuated from homes. In Graham county, one man died of a heart attack while being evacuated. Downstream from Coolidge Dam, the Gila and San Pedro Rivers caused localized flooding near Kelvin, Kearney, Riverside, Hayden, and Winkelman. The Santa Cruz River overflowed near Green Valley and Marana.

PEAK FLOWS:

San Francisco R at Clifton: 56,000 cfs (12/19/78)

Gila R at head of Safford Valley, near Solomon: 100,000 cfs (12/19/78)

San Carlos R near Peridot: 22,500 cfs (12/18/78)

Santa Cruz R at Tucson: 13,500 cfs (12/19/78)

August 13, 1980

Very heavy rains in the area and upstream on the Santa Cruz River in Mexico caused considerable flood damage to mobile homes, houses, commercial buildings and streets in Santa Cruz County (Sellers et al. 72).

PEAK FLOWS:

Brawley Wash near Three Points: 4,400 cfs (8/13/80)

Santa Cruz R @ Tucson: 2,760 cfs (8/13/80)

San Pedro R @ Tombstone: 1,400 cfs (8/15/80)

September 9, 1980

An infant girl and her 2-year-old brother drowned after they were swept from their mother's arms by the raging water of Railroad Wash, near Franklin. A 3-year-old sister also drowned as they were trying to reach the highway on higher ground a short distance from their mobile home. They were caught in a very sudden surge of water that had built up as a result of 4 inches of rain upstream in New Mexico during the afternoon and evening (Sellers et al. 72).

PEAK FLOWS:

Gila R below Blue Creek, Virden, NM: 4,300 cfs (9/10/80)

Gila R near Clifton: 8,500 cfs (9/10/80)

May 1, 1981

A severe thunderstorm hit the tri-city area of Hayden, Winkelman, and Dudleyville. A dike broke on the San Pedro River at Dudleyville, sending a four-foot wall of water, mud and rocks into a residential section, damaging 14 homes, 4 with

major damage. Fifty people had to be evacuated (Sellers et al. 72)

PEAK FLOWS:

Green Lantern Wash @ Winkleman: 3,700 cfs (5/1/81)

July 26, 1981

Eight persons lost their lives when a wall of water 15 feet high rushed down the Tanque Verde Canyon and over the 100-foot Tanque Verde Falls. Most of the victims were killed when their bodies were battered against the rocks and debris. Some of the bodies were not recovered for several days. Tanque Verde Falls is about 15 miles east of Tucson (Sellers et al. 73).

PEAK FLOWS:

San Pedro R near Redington: 3,460 cfs (7/29/81)

Santa Cruz R @ Tucson: 2,700 cfs (7/27/81)

Tanque Verde Creek: 6,700 cfs (7/30/81)

August 2, 1982

A thunderstorm dropped nearly 2 inches of rain in 90 minutes in parts of Tucson, flooding many streets and roads from 1 to 5 feet deep. Two young girls were rescued as they were being swept down an arroyo. There was road damage and water damage to cars (Sellers et al. 74)

August 10, 1982

Severe thunderstorm winds, accompanied by 2.5 inches of rain and flash flooding, injured three people in Ajo. The storm also damaged 200 homes and businesses, 73 of them severely (Sellers et al. 74)

August 13, 1982

A very strong thunderstorm dumped up to 2.5 inches of rain over Tucson, damaging many city and county roads and streets and reducing rush hour traffic to a crawl. A man floated down a flooded arroyo in his car. Forty main intersections in the city were flooded 1-4 feet deep. At one intersection, where flood waters washed away the pavement, a hole 8 feet deep was scoured out (Sellers et al. 75).

PEAK FLOWS:

Blue R near Clifton: 2,620 cfs (8/14/82)

Sabino Creek near Tucson: 2,000 cfs (8/13/82)

August 16, 1982

A severe thunderstorm produced extensive flood and wind damage to homes and farm buildings in the Safford area. The storm also produced ping-pong-size hail which destroyed 600 acres of prime cotton (Sellers et al. 75).

August 23, 1982

A fierce thunderstorm with up to 4 inches of rain, marble-size hail and wind up to 50-60 mph, caused considerable street flooding and extensive property damage. About 40 mobile homes were damaged, a dozen seriously, and several totally destroyed in a west-side trailer park (Sellers et al. 75).

PEAK FLOWS:

Tanque Verde Creek near Tucson: 2,460 cfs (8/23/82)

Pantano Wash near Vail: 3,400 cfs (8/23/82)

Rincon Creek near Tucson: 1,800 cfs (8/23/82)

Santa Cruz R @ Cortaro: 13,300 (8/23/82)

August 27, 1982

After a torrential rain storm of 2.5 inches in 2 hours, streets were flooded and a four-foot wall of water came roaring down

Brewery Gulch, in Bisbee. A man trying to remove his car from a flooded street was carried downstream and into an underground culvert. The body was recovered four miles downstream (Sellers et al. 75).

September 11, 1982

Several severe thunderstorms with a total of 2 to 4 inches of rain and local hail up to 3/4 inch in diameter caused considerable street flooding, closing numerous Tucson intersections. The hardest hit was the northeast side. Over a dozen persons were rescued from their stalled cars in deep water. A car was swept down Arroyo Chico, but the driver escaped without injury (Sellers et al. 75-76).

PEAK FLOWS:

San Pedro R @ Palominas: 4,260 cfs (9/10/82)

San Pedro R @ Charleston: 8,800 cfs (9/10/82)

San Pedro R @ Tombstone: 6,500 cfs (9/10/82)

San Pedro R @ Redington: 7,190 cfs (9/11/82)

San Pedro R @ Winkleman: 4,950 cfs (9/12/82)

Gila R @ Kelvin: 3,530 (9/12/82)

August 7, 1983

Several cars were trapped by flash floods in Tucson washes when a severe thunderstorm with winds up to 81 mph at Davis-Monthan Air Force Base and 77 mph at Tucson International Airport caused considerable damage (Sellers et al. 77).

September 29 - October 3, 1983

Extremely heavy rain deluged much of the state. During the previous week, a serious of minor disturbances associated with a strong low-pressure trough off the California coast had passed through the state, touching off widespread thunderstorm activity that saturated the ground. On the 30, another disturbance entered the state at the same time as a surge of moisture from Tropical Storm Octave off the coast of Baja California. The result was torrential rains and very destructive flooding over the southeast quarter of the State in broad zones along rivers, creeks, and washes. About 10,000 people were displaced from their residences. Water, mud and debris severely damaged or destroyed over 1300 homes; 1700 received lesser damage. Many persons who fled from their homes were cut off from help because roads, bridges, and phone and electric lines were washed away. Twenty main highways were closed, isolating dozens of towns. I-10, the main link between Phoenix and Tucson, was washed out at the Gila River. 9 people drowned trying to cross

flooded washes; 4 others were killed when 2 aircraft got caught in downbursts and crashed. Numerous people were rescued from rooftops and stranded cars by helicopters. In many communities, water and sewer lines were severed. The hardest hit cities were: Clifton, Tucson, Marana, Nogales, Safford, Winkelman, and Hayden. New record flows were set on the San Francisco at Clifton with an estimated 125,000 cfs; on the Santa Cruz at Tucson with an estimated 45,000 cfs. Flow on Aravaipa Creek near its mouth rose from 10,000 cfs to 70,000 cfs in only four hours. Although this peak was 25,000 cfs greater than the Santa Cruz at Tucson peak, the basin has only about 1/4 the area. Damage to agriculture was enormous in all categories: crops, land, irrigation canals and ditches, wells, livestock and machinery. About one-seventh of the state's cotton crop was severely damaged or destroyed. Much of the rich topsoil was washed downstream into large reservoirs. This was Arizona's most destructive flood and the 7th major flood in less than six years (Sellers et al. 77).

STORM PRECIPITATION TOTALS:

Eloy: 4.51"

Miami: 6.58"

Nogales: 9.72"

Oracle: 6.76"

Safford: 6.36"

Tucson: 6.40"

PEAK FLOWS:

Gila R near Clifton: 15,300 cfs (10/02/83)

Blue R @ Clifton: 24,300 cfs (10/01/83)

San Francisco R @ Clifton: 90,900 cfs (10/02/83)

Eagle Creek above Morenci: 36,400 cfs (10/02/83)

Gila R @ head of Safford Valley near Solomon: 132,000 cfs (10/02/83)

Gila R @ Calva: 150,000 cfs (10/03/83)

San Carlos R near Peridot: 10,300 cfs (10/01/83)

San Pedro R near Tombstone: 13,600 cfs (10/02/83)

San Pedro R near Redington: 25,400 cfs (10/02/83)

Aravaipa Creek near Mammoth: 70,800 cfs (10/01/83)

San Pedro R @ Winkelman: 135,000 cfs (10/01/83)

Gila R @ Kelvin: 100,000 cfs (10/02/83)

Santa Cruz R @ Nogales: 16,200 cfs (10/02/83)

Santa Cruz R @ Continental: 45,000 cfs (10/02/83)

Santa Cruz R @ Tucson: 52,700 cfs (10/02/83)

Rillito Creek near Tucson: 29,700 cfs (10/02/83)

Santa Cruz R @ Cortaro: 65,000 cfs (10/02/83)

July 7, 1990

In a 3-hour period ending about 1315 MST, up to 3.03 inches of rain fell along the Canada del Oro and Tanque Verde watersheds near Tucson, AZ. Several vehicles reported to have stalled in washes and five motorists were rescued by the Sheriff's Department (Storm Data).

July 10, 1990

Numerous thunderstorms forced the closure of State Route 86 in the Ryan Field area. Two U.S. Border Patrol agents were rescued from their stranded vehicles. There were flooded washes and highway dips in other parts of eastern Pima County. Wind gusts of 46 mph were reported in the area (Storm Data).

July 14, 1990

Thunderstorms caused flooding in the Kino Springs area, 4 miles east of Nogales. The Santa Cruz was reported running full and several roads were washed out and homes flooded. Minor street flooding also occurred in Sierra Vista, Benson, Tombstone, and Elfrida (Storm Data).

July 20, 1990

Heavy flooding occurred on some Tucson roads and several motorists were stranded while trying to cross flooded dips. Several homes and businesses were flooded and damage was estimated to exceed $30,000. A wall at an apartment complex also suffered $100,000 worth of damage. A reclamation plant was also flooded. A Tucson man was killed when he fell 40 feet over a waterfall in the Tanque Verde Falls area (Storm Data).

July 24, 1990

Widespread severe flooding affected many areas of eastern Pima County. One unidentified man fell into the swollen

Santa Cruz River at St. Mary's Road and was swept away. More than 50 river rescues were made during the morning. Up to 4.00 inches of rain resulted in 25 road closures in the county, and 24 roads were closed within the city of Tucson. One automatic gage had 3.55 inches, with 2 inches in only 30 minutes. Several homes were flooded in the Oracle area. About 150 people were evacuated voluntarily at the 49'ers Country Club. The Public Works Department reported 21,000 cfs in the Santa Cruz River, making this the highest July discharge since 1910. At the height of the storm, 6 feet of water had accumulated in the Stone underpass (Storm Data).

August 3, 1990

Sheriff's office reported a downed power pole and a flooded house in southeast Tucson. Several vehicles were stuck in flood waters in the Tanque Verde area. One and eight-tenths inches fell in just 15 minutes (Storm Data).

August 9, 1991

A 60-year-old man was rescued from his pickup truck after it was caught in a raging wash on the south side of Tucson. The fire department received 80 calls in 2.5 hours as thunderstorms downed wires and started a few tree fires (Storm Data).

PEAK FLOWS:

Santa Cruz R @ Tucson: 2,130 cfs (8/9/91)

August 14, 1991

Winds in parts of Graham county were estimated at 65 mph as 8 power poles were downed and large trees blown over. There was also widespread urban and roadway flooding between Safford and Thatcher which lasted until about midnight. A spotter in Thatcher recorded 1.95 inches of rainfall. Cotton crops sustained widespread damage. Most storm movement was from north to south (Storm Data).

August 22, 1991

About 10 people were pulled from swollen washes as heavy rains rapidly filled low spots. One observer reported that 6th and Tucson Blvd. received 1.78 inches. More than 100 calls came into the Fire Department dispatch office. Pea-size hail and winds to 47 mph were also reported. At least one airliner was diverted to Phoenix. The temperature dropped from

102 to 70 degrees in about 20 minutes (Storm Data).

September 5, 1991

Rainfall was locally heavy around many areas of the state this afternoon. A very moist and unstable air mass set the stage for strong thunderstorms that developed by late afternoon. A motorist near Clifton escaped her car just before raging flood waters along Ward's Canyon Road swept it away. Attempts to save the car and the motorist's belongings failed (Storm Data).

PEAK FLOWS:

Eagle Creek above Morenci: 3,120 cfs (9/6/91)

Bonita Creek near Morenci: 3,220 cfs (9/5/91)

Gila R @ head of Safford Valley near Solomon: 7,770 cfs (9/6/91)

Gila R @ Calva: 4,880 cfs (9/7/91)

August 6, 1992

Downburst winds damaged aircraft at Davis-Monthan Air Force Base and downed a few power lines in South Tucson. Peak winds were 61 mph at Tucson Airport and 46 mph at Davis Monthan. The Pima County Sheriff's Office reported flooding of city streets after heavy rains. One spotter had 2.41 inches at Dodge and Fort Lowell. Motorists had to be rescued from cars that had stalled on flooded streets. Up to two inches of rain fell near Prince Road and Campbell Ave, with 1.25 inches in 30 minutes (Storm Data).

PEAK FLOWS:

San Carlos R @ Peridot: 4,160 cfs (8/6/92)

Santa Cruz R @ Tucson: 5,970 cfs (8/6/92)

Canada del Oro below Ina Rd.: 2,760 cfs (8/7/92)

Santa Cruz R @ Cortaro: 3,350 cfs (8/6/92)

December 28-29, 1992

Nine people were stranded by runoff from melting snow and moderate rains in Sabino Canyon. All were rescued without any injuries. On the 29th, about 2.05 inches of rain fell in the foothills and over 4.00 inches fell on top of Mt. Lemmon, yet only .70 fell at the airport on the 29th. The Sheriff's Office reported the Santa Cruz beginning to breach its banks near the Pinal County line. Pima County emergency services reported that all unbridged road crossings were closed on major washes, creeks, and rivers in the Tucson area (Storm Data).

PEAK FLOWS:

San Francisco R @ Clifton: 5,200 cfs (12/29/92)

Gila R @ head of Safford Valley near Solomon: 10,800 cfs (12/30/92)

San Carlos near Peridot: 24,800 cfs (12/30/92)

Rillito Creek @ Dodge Blvd.: 17,700 cfs (12/28/92)

January 7-19, 1993

Roads, bridges, homes and businesses suffered considerable damage in Pima County beginning on the 7th. A new all-time January record of 4.81 inches fell in Tucson, eclipsing the 4.00 inches in 1916. Numerous rescues were made throughout southeast Arizona as motorists tried to drive vehicles through creeks and low spots. Several thousand people were isolated in their homes as flood waters from the Rillito River cut off all roads. A weather-related crash in Tucson left 7 people hospitalized. Two major bridges over the Santa Cruz River were closed. Many roads closed in both Greenlee and Graham Counties due to flooding. Duncan was the hardest hit. Half of the town was under water when a dike broke and later left at least 150 people homeless. The San Francisco River and Gila River flooded some farmland near Safford. Uncontrolled flow passed over the Coolidge Dam spillways for the first time since it was built (Storm Data).

STORM PRECIPITATION TOTALS:

Arivaca: 5.12"

Benson: 4.11"

Bisbee: 5.08"

Clifton: 4.03"

Duncan: 4.09"

Kitt Peak: 7.28"

Nogales: 5.25"

Tucson WSO: 4.62"

Willcox: 6.11"

PEAK FLOWS:

Gila R below Blue Creek: 30,000 cfs (1/11/93)

San Francisco R @ Clifton: 20,600 cfs (1/11/93) & 42,900 cfs (1/18/93)

Eagle Creek near Morenci: 28,800 cfs (1/8/93) & 36,800 cfs (1/18/93)

Bonita Creek near Morenci: 4,180 cfs (1/11/93) & 19,500 cfs (1/18/93)

Gila R @ head of Safford valley near Solomon: 75,600 cfs (1/11/93) & 86,200 cfs (1/19/93)

Gila R @ Calva: 105,000 cfs (1/12/93) & 109,000 cfs (1/20/93)

San Carlos R @ Peridot: 54,800 cfs (1/8/93) & 26,400 cfs (1/18/93)

Gila R @ Winkelman: 37,200 cfs (1/20/93)

San Pedro R @ Charleston: 11,500 cfs (1/19/93)

San Pedro R @ Redington: 15,000 cfs (1/8/93) & 19,100 cfs (1/19/93)

Aravaipa Creek near Mammoth: 7,840 cfs (1/8/93) & 13,000 cfs (1/11/93)

Gila R @ Kelvin: 43,900 cfs (1/11/93), 33,100 cfs (1/14/93), 74,900 cfs (1/19/93) & 57,900 cfs (1/21/93)

Santa Cruz R @ Nogales: 8,800 cfs (1/18/93)

Santa Cruz R @ Continental: 6,870 cfs (1/11/93) & 32,400 cfs (1/19/93)

Santa Cruz R @ Tucson: 9,600 cfs (1/11/93) & 37,400 cfs (1/19/93)

Tanque Verde Creek @ Tucson: 24,500 cfs (1/8/93), 9,690 cfs (1/11/93) & 10,600 cfs (1/18/93)

Pantano Wash (Broadway Blvd.): 4,340 cfs (1/18/93)

Rillito Creek (Dodge Blvd.): 24,100 cfs (1/8/93), 7,750 cfs (1/11/93), & 11,400 cfs (1/18/93)

Rillito Creek (La Cholla Blvd.): 24,400 cfs (1/8/93), 12,100 cfs (1/11/93), & 11,600 cfs (1/18/93)

Santa Cruz R near Marana: 4,950 cfs (1/12/93)

Photo of Winkelman Flooding

Photo 2 of Winkelman Flooding

Coolidge Dam Photo

Gila River near Solomon photo

July 18, 1994

Heavy downpours from thunderstorms inundated the streets and an apartment complex 5 miles southwest of Tucson. Water, six inches deep, flowed through Mission Park Apartments, and destroyed the irrigation system. Also, at one point, water flowed about a foot deep on Valencia and Mission Streets (Storm Data).

August 12, 1994

A thunderstorm produced a torrential downpour at Lukeville, located within the southeast border of Organ Pipe Cactus National Monument. The chief ranger reported nearly two inches of rain within an hour. All washes were running heavy, to the point that ADOT road crews were on the scene, clearing mud and debris from the roads.

August 19, 1994

A devastating severe thunderstorm occurred just northeast of downtown Tucson, Arizona between approximately 225 and 330 pm. Along with wind damage, flash flooding occurred in both eastern Pima and Santa Cruz counties. Normally dry washes in the Pantano Wash area were running with two feet of water in some places. City streets were considerably flooded, especially between Broadway and Grant. A vehicle became stranded in one of the underpases and eventually the car was totally under water...but no one was injured. Washes were running over and streets were like rivers. Considerable flooding also occurred in Santa Cruz County as well, from an entirely different storm during the warning period (from local storm report).

August 21, 1994

Thunderstorms around Nogales caused extensive flooding and heavy runoff. In some places, at least three inches of rain fell in the afternoon and early evening hours. The Santa Cruz river was reported flowing, and the Nogales Wash was nearly bankfull. A Mexican woman and her two children were drowned when their pickup truck was caught in flood waters on Cinco de Febrero Street in Nogales, Sonora. The bodies were swept downstream, two miles north of the border, where they were found near the Chula Vista subdivision. Many homes and businesses were flooded, but no estimates of damage were made and no evacuations were necessary (Green Valley News and Sun, circ:7,500).

December 4-6, 1994

A slow-moving subtropical low pressure system west of Baja California circulated tropical moisture northeastward into Arizona. During the storms passage, up to three inches of rain was reported around the area. The National Weather Service in Tucson reported a storm total of 2.56 inches during the three day period. All washes and rivers in the area were reported running heavily, and one Mexican national was stranded in his van at Arroyo Chico. Three traffic fatalities that were initially attributed to the rains were later ascribed to other causes. No other damage or injuries were reported.

STORM PRECIPITATION TOTALS:

Arivaca: 3.36"

Bisbee: 2.24"

Kitt Peak: 3.11"

Patagonia: 2.65"

Tucson WSO: 2.56"

Tumacacori: 3.51"

PEAK FLOWS:

Gila R below Blue Creek, near Virden, NM: 22,700 cfs (12/6/94)

San Francisco R near Clifton: 10,800 cfs (12/6/94)

Gila R @ head of Safford Valley near Solomon: 32,000 cfs (12/6/94)

Gila R @ Calva: 30,200 cfs (12/7/94)

San Pedro R @ Charleston: 7,500 cfs (12/6/94)

Tanque Verde Creek @ Tucson: 3,470 cfs (12/5/94)

Rillito Creek (La Cholla Blvd.): 3,500 cfs (12/6/94)

August 14, 2003

Heavy rainfall (1.75 inches in 30 minutes) on two recent burn areas just south of Oracle (Aspen and Oracle Hill Fires) caused an 8 to 12 foot wall of water to rush down Campo Bonito Wash on the backside of the Santa Catalina Mountains. What amounted to a 25 year rainfall resulted in pre-burn 100 year flood. A local resident was swept out of his home to his death downstream. (WR TA No. 03-10).

August 17, 2004

Widespread flash flooding affected the Safford Valley from Fort Thomas in the west and Safford in the east. Radar-indicated rainfall totals of 1.00 to 2.00 inches were widespread throughout the valley and on north facing slopes of Mount Graham. Highway 70 was closed just west of Pima due to Matthew's Wash. A truck was stuck in Talley Wash north of Thatcher. The Eastern Arizona Railroad track received extensive damage west of Pima. The town of Central and part of Thatcher were

without phone service due to the flooding. Rain fell on the Nuttall Fire burn area on Mount Graham. High flows from the burn area affected Frye Creek, Deadman Canyon, Marijilda Canyon, Noon Creek, and Wet Canyon. Bridges along Highway 366 at Wet Canyon and Noon Creek were overtopped and impassible till crews could clear debris. Frye Creek ran high enough to isolate portions of Daley Estates. The stream gage in Deadman Canyon was destroyed while the

gage in Marijilda Canyon was damaged.

February 12-14, 2005

Rain on snow event produced moderate flooding along the Gila River at Duncan where a section in the town’s dike system broke flooding one occupied structure and the state highway near the Duncan high school. Minor flooding in the Safford Valley and near Bylas along the Gila River flooded numerous agricultural fields. Several bridge approaches in Solomon, Safford, Thatcher, and Pima were closed due to flooding. Flood waters reached the bottom of the rail bridge in Clifton.

August 14, 2005

Heavy rainfall of upwards of 3.00 inches over about a 2-hour period led to channel breakouts just north of the Highway 86 bridge near Three Points. That same day, a small tributary of Brawley Wash coming out of the west-side of the Tucson Mountains experienced a vehicle related fatality as a family attempting to cross a swollen wash was forced to abandon their vehicle. The causative event was a SHARS (Subtle Heavy Rainfall Signature) event.