California's Flood Future

Recommendations for Managing the State's Flood Risk

Attachment C: History of Flood Management in California

Appendices A through F

FINAL November 2013

California's Flood Future is provided to help inform local, State, and Federal decisions about policies and financial investments to improve public safety, foster environmental stewardship, and support economic stability

FloodSAFE CALIFORNIA

PUBLIC SAFETY ENVIRONMENTAL STEWARDSHIP ECONOMIC STABILITY

US Army Corps of Engineers ®

STATEWIDE FLOOD MANAGEMENT PLANNING PROGRAM

FloodSAFE CALIFORNIA

FINAL APPENDICES

Attachment C: California Flood History

November 2013

STATE OF CALIFORNIA
THE NATURAL RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

UNITED STATES ARMY CORPS OF ENGINEERS
FLOOD PLAIN MANAGEMENT SERVICES PROGRAM

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Table of Contents

Appendices

Table of Contents

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Appendix A: Flood Future Report Components

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Appendix A: Flood Future Report Components

California's Flood Future Report is composed of three layers of documents, which were developed with different audiences and purposes, as shown in Figure C-A-1. The three main layers are the Policy Brief, Highlights, and main report including the technical attachments (or technical memoranda).

The Policy Brief document provides a high-level summary of the key information contained in the Flood Future Report and its technical attachments. This document is meant to inform legislators, legislative staff, and agency executives about the report.

The Highlights document, which is an Executive Summary of the Flood Future Report, is more detailed than the Policy Brief slightly expanding the level of detail of the information provided in the Policy Brief. The Highlights document is intended for use by legislators, legislative staff, agency executives, and the public.

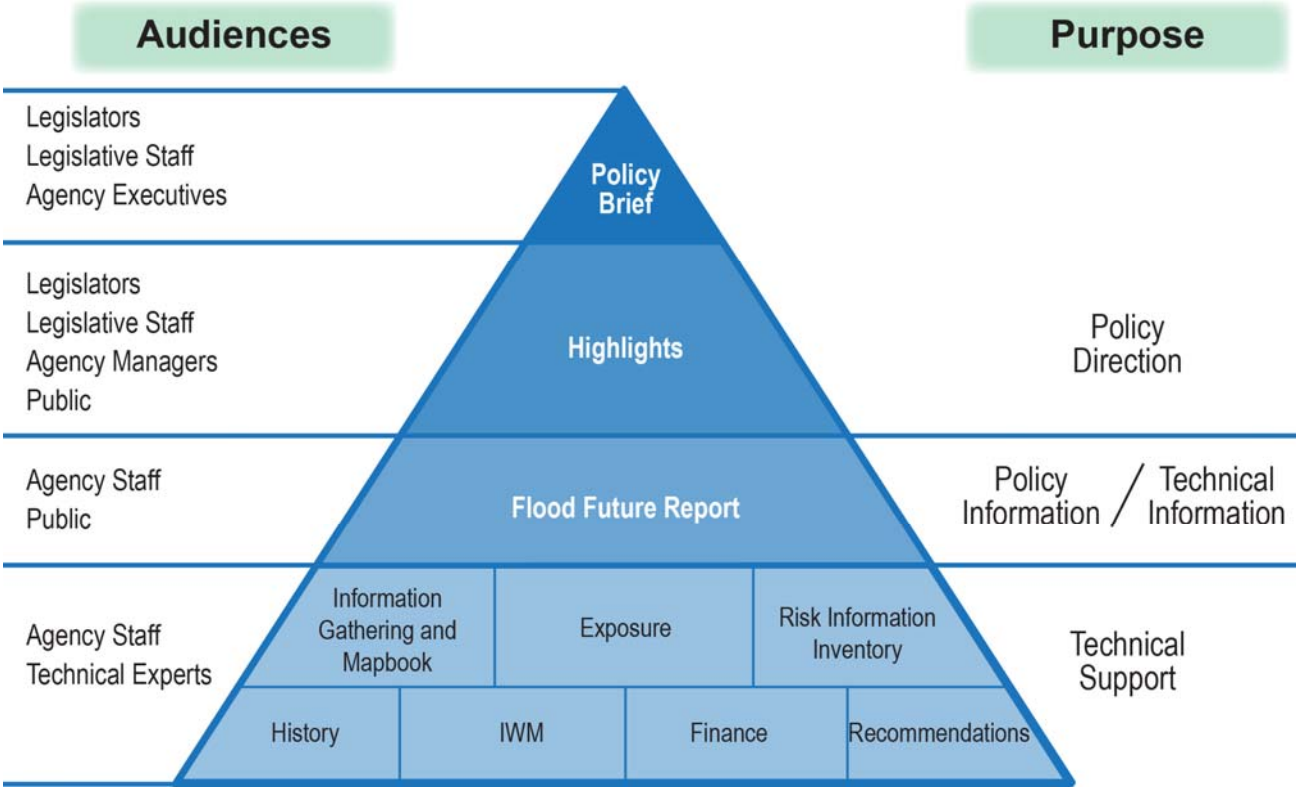

Figure C-A-1. Flood Future Report Components Diagram

The Flood Future Report provides a compilation of the information developed in the technical attachments. This document contains a comprehensive look at flooding throughout the state, and it describes the challenges and opportunities facing flood management. The Flood Future Report also provides information to make decisions about policies and financial investments to improve public safety, environmental stewardship, and economic stability.

This report is supported by eight technical attachments:

- ***Attachment A: References***
- ***Attachment B: Glossary***
- ***Attachment C: History of Flood Management in California.*** This attachment provides a detailed history of flooding in the 10 major California Water Plan hydrologic regions.
- ***Attachment D: Summary of Exposure and Infrastructure Inventory by County (Mapbook).*** This attachment is a mapbook organized by county providing information on exposure to flooding, flood infrastructure, flood types present, list of major floods, and information on the planned/proposed projects.
- ***Attachment E: Existing Conditions of Flood Management in California (Information Gathering Findings).*** This attachment provides an overview of the information gathering effort to collect flood management information from local, State, Tribal, and Federal agencies, as well as a detailed summary of the results of the information gathering effort. The purpose of this effort was to develop a better understanding of flood risk management in the State of California.
- ***Attachment F: Flood Hazard Exposure Analysis.*** This attachment describes the methodology used to identify flood hazard exposure statewide as well as the results of the flood hazard exposure analysis. This analysis was performed to provide insight into potential flood risks throughout the state.
- ***Attachment G: Risk Information Inventory.*** This attachment provides a better understanding of flood risk statewide, based on the best available information. To characterize flood risk in the California, the SFMP developed a risk exposure analysis used in conjunction with an inventory of risk-relevant information gathered from agency meetings.
- ***Attachment H: Practicing Flood Management Using an Integrated Water Management Approach***. This attachment provides a description of the evolution of flood management practices toward and using an IWM approach, an overview of IWM, the benefits of using an IWM approach, and sample case studies of projects that have used an IWM approach.
- ***Attachment I: Finance Strategies.*** This attachment provides an understanding of the current status of flood management financing and the challenges that lie ahead as California develops recommendations to address flood management issues.
- ***Attachment J: Recommendations to Improve Flood Management in California.*** This attachment provides a detailed description of how the Flood Future Report recommendations were developed and outlines the recommendations along with other high-level challenges.

Each of the documents follows a color scheme that was developed for the Highlights document. The documents are formatted using different-colored headers to indicate the purpose of a given section. The color scheme follows the following coding format:

- Introduction (light blue)
- Understanding the Situation (brown)
- The Problem (goldenrod)
- The Solution (royal blue)
- Recommendations (green)
- The Path Forward (yellow)

Any and all appendices to an attachment were coded using a light blue to represent that this is background or supporting information.

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Appendix B: Historical Flood Events in California

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Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Central Coast	1812	December		Santa Barbara		Santa Barbara Coast	A tsunami damaged missions, moved ships inland, and inundated lowlands along the Santa Barbara coast in December 1812. A tsunami was reported to have occurred at Santa Barbara on December 21, 1812, but no accurate figures are available on the actual height of the wave. Probably the most accurate study now available is that made by Marine Advisors, Inc., of La Jolla, California, for the Southern California Edison Company on the occasion of the building of the San Onofre Nuclear Generating Station. That study indicated that a "35-foot wave" in Santa Barbara on December 21, 1812, was probably no greater than 15 to 20 feet. at the most. **Source:** City of Santa Barbara, June 12, 2012, *Tsunami Response Plan*.							Tsunami	http://www.santabarbaraca.gov/civicax/filebank/blobdload.aspx?BlobID=16558
Central Coast	1812-1813			Santa Barbara	Late Winter Storms	North of Santa Barbara	Flood reported north of Santa Barbara. **Source:** H.B. Lynch, August 1931, *Rainfall and Stream Run-off in Southern California since 1769*, prepared for Metropolitan Water District of Southern California.							Flash, Slow Rise	http://www.cepsym.org/history/RainfallStreamRunoffSoCA_since1769.pdf
Central Coast	1822			Santa Cruz		San Lorenzo River	A flood occurred in the year 1822 when the water covered all the low lands and rose to a greater height than ever before. Had the country been settled then as it is now, the disaster would have been very great. **Source:** Daniel McMahon, 1997, "The History of Floods on the San Lorenzo River in the City of Santa Cruz,"*Santa Cruz County History - Disasters & Calamities*.							Slow Rise	http://www.santacruzpl.org/history/articles/289/
Central Coast	1832			Santa Cruz		San Lorenzo River	The next memorable flood occurred in 1832, the water not reaching the extreme heights of 10 years before, but still covering the low lands to a great extent. **Source:** Daniel McMahon, 1997, "The History of Floods on the San Lorenzo River in the City of Santa Cruz," *Santa Cruz County History - Disasters & Calamities*.							Slow Rise	http://www.santacruzpl.org/history/articles/289/
Central Coast	1842			Santa Cruz		San Lorenzo River	In 1842, there occurred another great flood. **Source:** Daniel McMahon, 1997, "The History of Floods on the San Lorenzo River in the City of Santa Cruz," *Santa Cruz County History - Disasters & Calamities*.							Slow Rise	http://www.santacruzpl.org/history/articles/289/
Central Coast	1852			Santa Cruz		San Lorenzo River	The pioneer settlers of California remember distinctly the flood of 1852, and it is not necessary to dwell upon the particulars. **Source:** Daniel McMahon, 1997, "The History of Floods on the San Lorenzo River in the City of Santa Cruz," *Santa Cruz County History - Disasters & Calamities*.							Slow Rise	http://www.santacruzpl.org/history/articles/289/
Central Coast	1861-1862	December-January		Santa Barbara, Santa Cruz, Ventura	The Great Flood	Mission Hill, San Lorenzo River	Three storms between December 1861 and January 1862, collectively called the Great Floods, produced some of the largest flood discharges ever experienced in California. **Santa Barbara:** These storms changed the landscape of Santa Barbara County. **Santa Cruz:** The first serious flood to hit the growing town was in the winter of 1861-62, and it was a shock to residents, as bridges and mills upstream were destroyed, buildings built on the banks of the river within the city were washed out to sea (one barn allegedly went to sea in an upright position). Water ran against the base of Mission Hill and eroded 30 feet of it away. This flood was different from later floods in that more damage resulted from erosion, both at the north end of town and at the "Cathcart Orchard" than from actual inundation. The water level was described later as being comparable with 1871, or about 16 feet, and thus the flooding of what we now call downtown was not that widespread. (Of course, neither was the downtown at that time, which was concentrated in a few blocks near the lower plaza.) The river did not follow its present course to the north of town, and there was a curve in the channel that directed high water at the bank near the town's north edge, near the base of Mission Hill. After the 1862 flood, it was claimed that the river was "several hundred feet nearer to the town" than it had been before. While damage from inundation and moving water laden with debris were to characterize later floods, the flood of 1862 raised fears about the loss of land underneath the buildings, land that was valuable for expansion of the town. The river ate lots of land, and destroyed many buildings. (There were many buildings closer to the river in 1862 than would later be the case.) The "bulkhead" at today's Bulkhead Street was built after this flood, to prevent water flowing down Main and Willow Streets (Front Street and Pacific Avenue). There were attempts to alter the course of the river as well, which at that time ran very close to the bluff below the mission, where North Pacific Avenue is today. 1862 became the legendary flood for late 19th and early 20th century Santa Cruz oldtimers, yet the correct date is often listed incorrectly in the newspapers after 1871. **Ventura:** Floods of sufficient magnitude to cause extensive damage occurred in 1862. **Source:** County of Santa Barbara Office of Emergency Management, September 13, 2011 (updated March 2012),*2011 Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan* ; Daniel McMahon, 1997, "The History of Floods on the San Lorenzo River in the City of Santa Cruz," *Santa Cruz County History - Disasters & Calamities;* Ventura County, December 2010, 2010 Ventura County Hazard Mitigation Plan.	X	Statewide				X	Coastal, Flash, Slow Rise	Santa Barbara County HMP http://scplweb.santacruzpl.org/history/disaster/scflood4.shtml http://scplweb.santacruzpl.org/history/disaster/scflood1.shtml Ventura County HMP 2010
Central Coast	1867			Ventura			Ventura: floods of sufficient magnitude to cause extensive damage occurred in 1867. **Source:** Ventura County, December 2010, *2010 Ventura County Hazard Mitigation Plan* .	X	Ventura County					Flash	Ventura County HMP 2010
Central Coast	1871			Santa Cruz		San Lorenzo River	A bridge across San Lorenzo River was damaged. "Considerable loss and inconvenience." First mention of bridge damage, as bridges had spanned the San Lorenzo River since the last flood in 1862. Water levels compared to 1862, but damage estimated at half as much. **Source:** Daniel McMahon, 1997, "The History of Floods on the San Lorenzo River in the City of Santa Cruz," *Santa Cruz County History - Disasters & Calamities*.	X	Santa Cruz County					Slow Rise	http://www.santacruzpl.org/history/articles/289/ http://scplweb.santacruzpl.org/history/disaster/scflood4.shtml
Central Coast	1878	January	14	San Luis Obispo, Santa Barbara, Santa Cruz		Goleta, San Lorenzo River	**Santa Barbara** : At Santa Barbara, near Goleta, an old abandoned wharf was destroyed and its debris destroyed 300 feet of the new wharf near the surf line. **Santa Luis Obispo:** The San Luis Obispo *Tribune* (January 19, 1878, "A Furious Storm") and the Ventura *Signal* (January 19, 1878, "The Great Storm at Sea") confirm the damage and the heavy winds and rain. The effects covered much of the state, including a 5-foot flooding of the "Lovenze" River (Lorenzo) at Santa Cruz on January 25. ***Source*** : Lander et al., April 1997, *Tsunamis Affecting the West Coast of the US 1806-1992*; Daniel McMahon, 1997, "The History of Floods on the San Lorenzo River in the City of Santa Cruz," *Santa Cruz County History - Disasters & Calamities*.	X	Santa Barbara					Slow Rise	ftp://ftp.ngdc.noaa.gov/hazards/publications/Kgrd-29.pdf http://www.santacruzpl.org/history/articles/289/ http://scplweb.santacruzpl.org/history/disaster/scflood1.shtml
Central Coast	1878	November	22	San Luis Obispo, Santa Barbara		Point Sal, Avila, Cayucos	A tsunami in November 1878 drowned one person and destroyed a wharf at Point Sal, destroyed a wharf at Avila, and damaged a wharf at Cayucos. **Source:** National Oceanic and Atmospheric Administration (NOAA) West Coast & Alaska Tsunami Warning Center, 2013, "November 22, 1878 Southern California Tsunami."				1		X	Tsunami	http://oldwcatwc.arh.noaa.gov/web_tsus/18781122/damage.htm
Central Coast	1880			Santa Cruz		San Lorenzo River	Flooding occurred along San Lorenzo River. **Source:** Daniel McMahon, 1997, "The History of Floods on the San Lorenzo River in the City of Santa Cruz," *Santa Cruz County History - Disasters & Calamities*.							Slow Rise	http://www.santacruzpl.org/history/articles/289/ http://scplweb.santacruzpl.org/history/disaster/scflood1.shtml
Central Coast	1881			Santa Cruz		San Lorenzo River	Debris flow and stormwater floods. **Source:** Daniel McMahon, 1997, "The History of Floods on the San Lorenzo River in the City of Santa Cruz," *Santa Cruz County History - Disasters & Calamities*.							Debris Flow, Stormwater	http://www.santacruzpl.org/history/articles/289/ http://scplweb.santacruzpl.org/history/disaster/scflood4.shtml
Central Coast	1884			San Luis Obispo, Ventura		San Luis Obispo Creek	In 1884, the region experienced an unusually long wet season, receiving rains well into June and more than doubling the seasonal average. Damaging flood occurred in San Luis Obispo Creek watershed. **Source:** DWR, 2009, *California Water Plan Update 2009*; Ventura County, December 2010, *2010 Ventura County Hazard Mitigation Plan*; San Luis Obispo County Flood Control and Water Conservation District Zone 9, 2013, *History of Flooding Problems*.							Slow Rise	CWP 2009 - Central Coast, Ventura HMP
Central Coast	1889-1890	December-February		Santa Clara, Santa Cruz		San Lorenzo River, Pajaro River Basin, San Jose	**Santa Cruz County:** January 25, 1890, brought a severe flood. River was "Highest Yet Known." Water was deep but "Damage Resulting Will Not Be Very Great." The rail bridge at the mouth of the river is believed to have made this flood much worse, by backing up water behind a debris dam collected against the pilings. The failure of the rail bridge was immediately followed by a drop in the flood's level. (The practice of using pilings to span the river was stopped after this flood.) This flood was well remembered for 40 to 50 years. (SC Sentinel, 1/25/90, p.1, c.7) The Pajaro River Basin had stages resulting in overflow near Watsonville in 1890. **Santa Clara County:** The flood in the Santa Clara Valley near San Jose was said to have been the greatest since 1862. Bridges were destroyed at several points in the San Francisco Bay region, railroad tracks were washed out, towns and farms were flooded, and at least two persons were drowned. **Source:** Daniel McMahon, 1997, "The History of Floods on the San Lorenzo River in the City of Santa Cruz," *Santa Cruz County History - Disasters & Calamities*; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California* .	X	Santa Cruz and Santa Clara Counties				X	Slow Rise	http://www.santacruzpl.org/history/articles/289/ USGS, 1939, Water Supply Paper 843

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Central Coast	1894			Santa Cruz		Watsonville	In the Pajaro River Basin stages resulting in overflow occurred near Watsonville. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California.
Central Coast	1895	January		Santa Cruz		San Lorenzo	Cellars, yards, and lots reported to be covered with water - a railroad bridge dislodged – "Pacific Avenue looked like a lake." Water went over the bulkhead in the North Pacific area, filled the "burned out district" on Front Street, and crossed Pacific Avenue at Laurel. **Source:** Daniel McMahon, 1997, "The History of Floods on the San Lorenzo River in the City of Santa Cruz," *Santa Cruz County History - Disasters & Calamities*.							Slow Rise	http://scplweb.santacruzpl.org/history/disaster/scflood4.shtml
Central Coast	1896	December	17	Santa Barbara		Santa Barbara	In December 1896, a tsunami washed away part of the embankment and main boulevard of Santa Barbara. **Source:** Environmental Geology, Carla W. Montgomery, 2010 . "List of Notable Tsunamis," 2013..	X	Santa Barbara					Tsunami	http://faculty.coastalbend.edu/acdem/science/geol1305/tsunam.htm
Central Coast	1897			San Luis Obispo		San Luis Obispo Creek	Damaging Flood occurred. **Source:** San Luis Obispo County FCWCD Zone 9, 2013, *History of Flooding Problems*.							Slow Rise	http://www.coastalrcd.org/zone9/history/history.html
Central Coast	1907	March		Monterey, San Benito, San Luis Obispo, Santa Cruz		Regionwide	Major Flood occurred. **Source:** DWR, 2009, *California Water Plan Update 2009*.						X	Slow Rise	CWP 2009 - Central Coast
Central Coast	1907			Santa Barbara, Santa Cruz		Santa Ynez River	After 4 days of rain, flood flows on the Santa Ynez River engulfed the entire Lompoc Valley. The floods caused significant damage to structures and crops, and all but one of the bridges along the river were washed out.**Santa Cruz:** In the Pajaro River Basin, stages resulting in overflow occurred near Watsonville. **Source:** County of Santa Barbara Office of Emergency Management, September 13, 2011 (updated March 2012),*2011 Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan* ; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*						X	Flash	Santa Barbara County HMP, USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California
Central Coast	1909			Santa Cruz		Watsonville	In the Pajaro River Basin, stages resulting in overflow occurred near Watsonville. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California.
Central Coast	1911	January-March		Monterey, San Luis Obispo, Santa Clara, Santa Cruz, Ventura		Santa Margarita, Pajaro River Basin, Coyote Creek, Madrone, San Luis Obispo Creek Watershed	**Santa Cruz:** In the Pajaro River Basin, stages resulting in overflow occurred near Watsonville in 1911. The stream-flow record for Coyote Creek near Madrone, started in 1902, shows a high peak-discharge of 15,000 second-feet on March 31, 1903, exceeded only in March 1911 for the periods of record 1902-12 and 1916-38. The maximum recorded discharge at the gauging station on Coyote Creek near Madrone was in 1911, probably on March 7. This gauging station has been operated since 1902, except for the period 1913-15. **Monterey:** Historical records from 1911 through 2005 indicate that flood conditions and flood damage were experienced in portions of Monterey County during March 1911. **San Luis Obispo:** 1911 flood was mentioned in reports. Damaging flood occurred in San Luis Obispo Creek watershed in 1911. Santa Margarita residents generalized this event as an "especially large flood." **Ventura:** A 1945 report by the Ventura County Flood Control District reported that floods of sufficient magnitude to cause extensive damage occurred in January 1911. In January and February, heavy rainfall completely saturated the soil. In March, a serious flood occurred on the Ventura River. The Ventura River ran 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. The western part of Ventura was flooded, and the steel railroad bridge was torn out and washed to sea. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*; Ventura County, December 2010, *2010 Ventura County Hazard Mitigation Plan*; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; Monterey County OES, September 2007, *Multi-Jurisdictional Hazard Mitigation Plan;* San Luis Obispo County FCWCD Zone 9, 2013, *History of Flooding Problems.*							Slow Rise, Alluvial Fan	USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California http://www.coastalrcd.org/zone9/history/history.html Monterey County Local Hazard Mitigation Plan (LHMP); AFTF Study Area Flood History, Water Resources Institute at California State University, Ventura County MHMP Monterey County LHMP
Central Coast	1914			Santa Cruz		Watsonville	In the Pajaro River Basin, stages resulting in overflow occurred near Watsonville. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California.
Central Coast	1914	January		Monterey, San Luis Obispo, Santa Barbara, Ventura	Heavy Rain of 1914	Regionwide	**Monterey:** Portions of Monterey County experienced flood conditions and flood damage during this time. **San Luis Obispo:** This flooding event was caused by heavy rains over a long period. This flooding event washed out rail lines, roads, and nearly every bridge. Considerable damage was the result to Agricultural lands suffered considerable damage. 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 rail lines here and in other locations were damaged. Many homes were carried away by the Salinas River in Atascadero. All forms of communications were cut off, including telephone lines and telegraph. **Santa Barbara:** January 15 through 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. The 16 inches of rainfall, climaxed by over 4 inches in 2 hours on the final day, caused enormous damage in both suburban and rural areas. These storms also resulted in the destruction of 12 homes and 6 bridges in the Mission Creek area. Two dams were destroyed, and 22 deaths.**Ventura:** Extremely heavy rains in January caused widespread flooding. January saw well over 12 inches of rain in 1 month, with a rain total for the year of 28.98 inches. Homes flooded, roads were damaged, and agricultural lands were destroyed by floodwaters. Railroad lines were out, and transportation is severely hampered. Telegraph lines were down, and utility services were 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. **Source:** DWR, 2009, *California Water Plan Update 2009*; Monterey County OES, September 2007, *Multi-Jurisdictional Hazard Mitigation Plan* ; County of Santa Barbara Office of Emergency Management, September 13, 2011 (updated March 2012),*2011 Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan* ; Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.	$ 237,301	Ventura	1914				Slow Rise, Alluvial Fan	AFTF Study Area Flood History, Water Resources Institute at California State University, CWP 2009, Monterey county HMP, Santa Barbara HMP
Central Coast	1915			Santa Cruz		Watsonville	In the Pajaro River Basin, stages resulting in overflow occurred near Watsonville. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California.
Central Coast	1916			Santa Cruz		Watsonville	In the Pajaro River Basin, stages resulting in overflow occurred near Watsonville. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California.
Central Coast	1922	February		Monterey, Santa Cruz			**Santa Cruz:** In the Pajaro River Basin, stages resulting in overflow occurred near Watsonville in the year 1922. **Monterey:** Flood conditions and flood damage were experienced in portions of Monterey County during this time. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California;* Monterey County OES, September 2007, *Multi-Jurisdictional Hazard Mitigation Plan* .	X	Monterey County					Slow Rise, Flash	USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California. http://www.co.monterey.ca.us/oes/LHMP/Final-Draft-Plan-and-Figures/Final-Draft-MJHMP-Sept-2007.pdf
Central Coast	1926	November		Monterey			Flood conditions and flood damage were experienced in portions of Monterey County during this time. **Source:** Monterey County OES, September 2007, *Multi-Jurisdictional Hazard Mitigation Plan* .	X	Monterey County					Flash, Slow Rise	http://www.co.monterey.ca.us/oes/LHMP/Final-Draft-Plan-and-Figures/Final-Draft-MJHMP-Sept-2007.pdf
Central Coast	1927			Santa Cruz		Watsonville	In the Pajaro River Basin, stages resulting in overflow occurred near Watsonville. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California.
Central Coast	1931	December		Monterey, Santa Cruz		San Lorenzo River, Watsonville	**Santa Cruz** : (12/28/1931) On the San Lorenzo River, Sand Island was submerged. In the Pajaro River Basin, stages resulting in overflow occurred near Watsonville. **Monterey:** Flood conditions and flood damage were experienced in portions of Monterey County during this time. **Source:** Daniel McMahon, 1997, "The History of Floods on the San Lorenzo River in the City of Santa Cruz," *Santa Cruz County History - Disasters & Calamities*; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California;* Monterey County OES, September 2007, *Multi-Jurisdictional Hazard Mitigation Plan* .	X	Santa Cruz County					Flash, Slow Rise	http://scplweb.santacruzpl.org/history/disaster/scflood3.shtml http://www.co.monterey.ca.us/oes/LHMP/Final-Draft-Plan-and-Figures/Final-Draft-MJHMP-Sept-2007.pdf
Central Coast	1932	February		Ventura	February 1932 flood	Santa Clara River	Santa Clara River peak flows leading to flooding in Ventura County. **Source:** Ventura County, December 2010, *2010 Ventura County Hazard Mitigation Plan* .							Slow Rise	Ventura County MJHMP 2005

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Central Coast	1933			Santa Cruz		Watsonville	In the Pajaro River Basin, stages resulting in overflow occurred near Watsonville. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California.
Central Coast	1937	February		Monterey			Flood conditions and flood damage were experienced in portions of Monterey County during this time. **Source:** Monterey County OES, September 2007, *Multi-Jurisdictional Hazard Mitigation Plan.*							Flash, Slow Rise	http://www.co.monterey.ca.us/oes/LHMP/Final-Draft-Plan-and-Figures/Final-Draft-MJHMP-Sept-2007.pdf
Central Coast	1937			Santa Clara, Santa Cruz		Llagas Creek, Watsonville	Llagas Creek overflowed and damaged the Gilroy-Morgan Hill-San Martin area. In the Pajaro River Basin, stages resulting in overflow occurred near Watsonville. **Source:** Santa Clara Valley Water District, 2013, *Upper Llagas Project History;* USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	Santa Clara Valley Water District Upper Llagas Project History (http://www.valleywater.org/Services/UpperLlagasHistory.aspx) USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California.
Central Coast	1938	January	31	Santa Cruz		San Lorenzo River	Flood on the San Lorenzo River called "worst flood in 15 years." **Source:** Daniel McMahon, 1997, "The History of Floods on the San Lorenzo River in the City of Santa Cruz," *Santa Cruz County History - Disasters & Calamities*.							Slow Rise	http://scplweb.santacruzpl.org/history/disaster/scflood3.shtml
Central Coast	1938	February-March		Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz, Ventura	Great Flood	Regionwide, Santa Ynez River near Lompoc, Calleguas Creek, Santa Clara River, Sespe Creek near Fillmore, Santa Paula, Oxnard, El Rio	Major floods. The 1938 flood extended throughout the area; damages totaled $1.2 million, a considerable sum for the small amount of development in the region at that time. Monterey: Flood conditions and flood damage were experienced in portions of Monterey County during this time. Santa Barbara, March 1-3: 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 cfs. Widespread flooding was seen, but compared to areas farther south, Santa Barbara escaped the brunt of the event. However, roads, agricultural lands, and rail lines had damages. Debris removal, channel repair, and cleanup were a result. Santa Clara River Peak Flows Leading to Flooding in Ventura County. Ventura: March 1-4, 1938 was a major flood event for much of Southern California. Calleguas Creek had an estimated peak flow of 17,000 cfs at Simi Valley and at Moor Park of 4,100 cfs. On the Santa Clara River estimated peak discharges of 120,000 cfs. The estimated peak discharge at Sespe Creek near Fillmore was 58,000 cfs. 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. All rivers in Ventura County flooded. The Fillmore area was completely isolated for more than 10 days because 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 were 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 across roads, completely blocking the roads for use. One fatality occurred as a result of the flood. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History;* Monterey County OES, September 2007, *Multi-Jurisdictional Hazard Mitigation Plan* ; DWR, 2009, *California Water Plan Update 2009*; Ventura County, December 2010, *2010 Ventura County Hazard Mitigation Plan*.	$1.2 million	Regionwide	1938	1	Ventura County	X	Slow Rise, Flash, Alluvial Fan	California Water Plan 2009; AFTF Study Area Flood History, Water Resources Institute at California State University Study Area Flood History, Water Resources Institute at California State University http://www.co.monterey.ca.us/oes/LHMP/Final-Draft-Plan-and-Figures/Final-Draft-MJHMP-Sept-2007.pdf
Central Coast	1940	February	27?	Santa Cruz		San Lorenzo River	Severe damage. Banner headline was "San Lorenzo On Worst Rampage of Century." "100 routed from homes by torrent. **Source:** Daniel McMahon, 1997, "The History of Floods on the San Lorenzo River in the City of Santa Cruz," *Santa Cruz County History - Disasters & Calamities*.	X	Santa Cruz County					Flash	http://scplweb.santacruzpl.org/history/disaster/scflood4.shtml
Central Coast	1941	February		Santa Cruz		San Lorenzo	Feb. 9, 1941: Moderate flood, but exasperated reaction as "Third Flood In Four Years Hits City Property." Calls for flood control. **Source:** Daniel McMahon, 1997, "The History of Floods on the San Lorenzo River in the City of Santa Cruz," *Santa Cruz County History - Disasters & Calamities*.							Slow Rise	http://scplweb.santacruzpl.org/history/disaster/scflood4.shtml
Central Coast	1941	March		Monterey			Flood conditions and flood damage were experienced in portions of Monterey County during this time. **Source:** Monterey County OES, September 2007, *Multi-Jurisdictional Hazard Mitigation Plan.*							Flash, Slow Rise	http://www.co.monterey.ca.us/oes/LHMP/Final-Draft-Plan-and-Figures/Final-Draft-MJHMP-Sept-2007.pdf
Central Coast	1941			Ventura		Countywide	A 1945 report by the Ventura County Flood Control District reported that floods of sufficient magnitude to cause extensive damage occurred in 1941. **Source:** Ventura County, December 2010, *2010 Ventura County Hazard Mitigation Plan*.							Flash	Ventura County HMP
Central Coast	1943	January	21-22	Ventura		Countywide	Santa Clara River peak flows leading to flooding in Ventura County. 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 road bed. This was the second largest flood on the Santa Clara River, which recorded a peak flow of 80,000 cfs at Montalvo. On Sespe Creek near Fillmore, estimated peak discharges were 44,000 cfs. Roads, agricultural lands, and bridges all were damaged or destroyed in this event. Road culverts, ditches, and small dikes were 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. **Source:** Ventura County, December 2010, *2010 Ventura County Hazard Mitigation Plan;* Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.	$ 333,500	Ventura	1943				Alluvial Fan	Ventura County HMP, AFTF Study Area Flood History, Water Resources Institute at California State University
Central Coast	1943	January		Monterey			Flood conditions and flood damage were experienced in portions of Monterey County during this time. **Source:** Monterey County OES, September 2007, *Multi-Jurisdictional Hazard Mitigation Plan.*							Flash, Slow Rise	http://www.co.monterey.ca.us/oes/LHMP/Final-Draft-Plan-and-Figures/Final-Draft-MJHMP-Sept-2007.pdf
Central Coast	1945	February	1	Monterey, Santa Cruz		Regionwide, San Lorenzo River	February 1, 1945: Light reaction. "River's flood peak believed past despite continued rain." The river "...threatened to inundate parts of Santa Cruz..." but only limited flooding occurred. **Monterey:** Flood conditions and flood damage were experienced in portions of Monterey County during this time. **Source:** Daniel McMahon, 1997, "The History of Floods on the San Lorenzo River in the City of Santa Cruz," *Santa Cruz County History - Disasters & Calamities*; Monterey County OES, September 2007, *Multi-Jurisdictional Hazard Mitigation Plan.*							Flash, Slow Rise	http://scplweb.santacruzpl.org/history/disaster/scflood4.shtml http://www.co.monterey.ca.us/oes/LHMP/Final-Draft-Plan-and-Figures/Final-Draft-MJHMP-Sept-2007.pdf
Central Coast	1944			Ventura			A 1945 report by the Ventura County Flood Control District stated that floods of sufficient magnitude to cause extensive damage occurred in 1944. **Source:** Ventura County, December 2010, *2010 Ventura County Hazard Mitigation Plan*.	X	Ventura County					Flash	Ventura County HMP
Central Coast	1946	April		Monterey, San Luis Obispo, Santa Barbara, Santa Cruz		Santa Cruz, Cowell Beach, Pismo Beach, Avila	On the west coast of the United States, a tsunami wave caused one fatality at Santa Cruz and about $10,000 in damages. The wave had maximum height of about 10 feet at Coos Bay, Oregon; and at Santa Cruz and Half Moon Bay, California. Pismo Beach: The Santa Barbara News Press reported waves breaking high against the breakwater. Avila O'Brien (1946) gives a total height of 8.5 feet. The Santa Barbara *News Press* (April 2, p. 1) reports that the water was over the top of the breakwater and rose to within 2 feet of the top of the San Luis Obispo pier. It was also recorded. A surge in April 1946 caused the death of a man walking at Cowell Beach when water rose 15 feet above normal after an earthquake near Alaska **Source:** Lander et al., April 1997, *Tsunamis Affecting the West Coast of the US 1806-1992; Santa Cruz Sentinel,* March 3, 2011, "Tsunami Wreaks Havoc on the Harbor: Surge Sinks, Damage Vessels as Crowds Flock to The coast for Rare Spectacle."	$ 10,000	Santa Cruz		1			Tsunami	ftp://ftp.ngdc.noaa.gov/hazards/publications/Kgrd-29.pdf http://www.santacruzsentinel.com/ci_17597857
Central Coast	1948			San Luis Obispo		San Luis Obispo Creek	Damaging flood occurred in San Luis Obispo Creek watershed in 1948. **Source:** San Luis Obispo County FCWCD Zone 9, 2013, *History of Flooding Problems*.	X	San Luis Obispo					Slow Rise	http://www.coastalrcd.org/zone9/history/history.html
Central Coast	1950	November-December		Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz, Ventura			November: Floods. statewide CA OCD 50-01(11/21/50). TOTAL-$32,183,000. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D.*	$32,183,000+ $200 million	Statewide	1950			X	Slow Rise	Taming Natural Disasters Appendix D
Central Coast	1951-1952	December-January		Alameda, Napa, Solano		San Francisco Bay Area	Floods of January 1952 on the west side of the Santa Cruz Mountains. **Source:** USGS, 1988, *Professional Paper 1434: Landslides, Floods, and Marine Effects of the Storm of January 3-5, 1982, in the San Francisco Bay Region.*							Debris Flow, Coastal, Slow Rise	

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Central Coast	1952	January		Monterey, San Luis Obispo, Santa Barbara, Ventura			**Monterey:** Flood conditions and flood damage were experienced in portions of Monterey County during this time. **San Luis Obispo** : The Salinas River was in full flood in 1952. The flood had a maximum discharge at Arroyo Grande of 5,370 cfs. This flood did major damage to the banks of Arroyo Grande River and to many of the homes and other structures below the City of Arroyo Grande. **Santa Barbara:** More than 50 homes were inundated, and there were large-scale evacuations. During January 1952, there were devastating floods on the *South Coast* that propagated the formation of the Santa Barbara County Flood Control District. During these floods, more than fifty homes around Mission Creek were inundated and there were many large-scale evacuations. (EIR) (1993 Precipitation Report). **Ventura:** On 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 gauges, so accurate readings were impossible. Estimated peak flow on the Santa Clara River at Montalvo was 40,000 to 50,000 cfs. **Source:** Monterey County OES, September 2007, *Multi-Jurisdictional Hazard Mitigation Plan;* Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*; County of Santa Barbara Office of Emergency Management, September 13, 2011 (updated March 2012), *2011 Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan* .	X	Monterey, San Luis Obispo, Santa Barbara, Ventura Counties				X	Flash	http://www.co.monterey.ca.us/oes/LHMP/Final-Draft-Plan-and-Figures/Final-Draft-MJHMP-Sept-2007.pdf AFTF Study Area Flood History, Water Resources Institute at California State University Santa Barbara County HMP
Central Coast	1952	November		Santa Cruz		Santa Cruz	As a result of the November 1952 earthquake in East Russia, the Kamchatka Tsunami was generated, which damaged the fishing launch in Santa Cruz. **Source:** Western States Seismic Policy Council, 1952, *Kamchatka Tsunami.*	X	Santa Cruz					Tsunami	http://www.wsspc.org/TsunamiCenter/Tsunami_files/SignificantTsunamis/TsuCenSigEv_1952Kamchatka.pdf
Central Coast	1952			San Luis Obispo		San Luis Obispo Creek	Damaging flood occurred in San Luis Obispo Creek watershed in 1952. **Source:** San Luis Obispo County FCWCD Zone 9, 2013, *History of Flooding Problems*.							Slow Rise	http://www.coastalrcd.org/zone9/history/history.html
Central Coast	1955	December		Monterey			Monterey December 1955: Flood conditions and flood damage were experienced in portions of Monterey County during this time. **Source:** Monterey County OES, September 2007, *Multi-Jurisdictional Hazard Mitigation Plan* .							Flash, Slow Rise	http://www.co.monterey.ca.us/oes/LHMP/Final-Draft-Plan-and-Figures/Final-Draft-MJHMP-Sept-2007.pdf
Central Coast	1955-1956	December-January		San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz, Ventura	1955 Christmas Flood	Regionwide	In December 1955 major floods inundated 14,400 acres in the northern portion of the Central Coastal region and caused $16 million in damage, 80 percent of which was agricultural, residential, and commercial. **Santa Cruz** : The costliest, deadliest, and most well-known flood in the history of Santa Cruz was on December 22, 1955. The river moved well out of its banks on both sides, and flowed down Pacific Avenue at a depth of 3 to 4 feet. Water reached the steps of city hall on Center Street and was over 8 feet deep in places on the east side of Front Street. At the time this was called a 100-year flood, but it is generally called a 40-year flood today. But the water level was unquestionably higher in 1955 than in any other historical flood. Nine people were killed in Santa Cruz, two of these in their house on Garfield Street. Water flow had reached the maximum possible at the Riverside Avenue bridge, and the river had begun to back up behind it as the flood peaked. Had this peak occurred at high tide, the level of water could have been higher, and the damage to Santa Cruz would have been even worse. **Source:** DWR, 2009, *California Water Plan Update 2009*; Daniel McMahon, 1997, "The History of Floods on the San Lorenzo River in the City of Santa Cruz," *Santa Cruz County History - Disasters & Calamities.*	$16 million	Regionwide	1956	9	Santa Cruz County	X	Slow Rise	California Water Plan 2009; Report on Floods of December 1955 and January 1956 in Northern California Coastal Streams; http://scplweb.santacruzpl.org/history/disaster/scflood1.shtml
Central Coast	1956	January		Monterey			**Monterey,** January 1956: Flood conditions and flood damage were experienced in portions of Monterey County during this time. **Source:** Monterey County OES, September 2007, *Multi-Jurisdictional Hazard Mitigation Plan* .							Flash, Slow Rise	http://www.co.monterey.ca.us/oes/LHMP/Final-Draft-Plan-and-Figures/Final-Draft-MJHMP-Sept-2007.pdf
Central Coast	1958	February	26	Santa Clara, Santa Cruz			Storm and Flood Damage, Northern California (Southern boundaries of Santa Cruz, Santa Clara, Stanislaus, Tuolumne, Alpine Counties to the Oregon border). **Source:** Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D.*	X	Regionwide					Slow Rise, Flash	Santa Clara HMP, Taming Natural Disasters Appendix D
Central Coast	1958	April		Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz, Ventura		Regionwide, Watsonville, Carmel-by-the-Sea, San Lorenzo River	**Monterey County:** Torrential rains of early April 1958 brought flood conditions to numerous counties. Floodwater swept through Monterey County as streams in Salinas and Carmel valley watersheds overflowed their banks, closed roads, endangered residents, drowned poultry, and damaged homes. San Lorenzo River had fairly high water, but the damage was limited because many buildings that would have been flooded had been torn down as the flood control project progressed. Water flooded lower the lower Ocean Street area, and flowed along Front Street, reaching the back of businesses on Pacific Avenue. The recent experience of 1955 had led merchants along Front and Pacific to empty their basements of merchandise, and the police, city government, and rescue workers were well equipped and out in force. Declared: statewide (4/2/58) Federal: 82 (4/4/58) Casualties: 13 deaths, several injuries Damage: $20 million, plus $4 million agricultural. **San Luis Obispo:** 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 Nacimiento spilled for the first time ever during 1958. The Salinas River overflowed and caused widespread flooding. The County highways were closed due to flooding, debris on the roadways and landslides. **Ventura:** This was a large flooding event, flooding on all rivers of Ventura but especially on the Santa Clara River, which had an estimated peak flow of 42,170 cfs. Peak discharges on Sespe Creek near Fillmore were 28,400 cfs. Roads, agricultural lands, and bridges all were damaged or destroyed in this event. **Source:** Daniel McMahon, 1997, "The History of Floods on the San Lorenzo River in the City of Santa Cruz," *Santa Cruz County History - Disasters & Calamities* ; Monterey County OES, September 2007, *Multi-Jurisdictional Hazard Mitigation Plan* ; Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History;* DWR, 2009, *California Water Plan Update 2009*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D.*	$24 million Statewide	Statewide	1958	13		X	Slow Rise, Alluvial Fan, Debris Flow	http://www.co.monterey.ca.us/oes/LHMP/Final-Draft-Plan-and-Figures/Final-Draft-MJHMP-Sept-2007.pdf http://www.mcwra.co.monterey.ca.us/Floodplain%20Management/Historical%20Flooding.htm http://scplweb.santacruzpl.org/history/disaster/scflood4.shtml
Central Coast	1960	February	9	Santa Cruz			High tides and high winds caused flooding in coastal areas. **Source:** City of Capitola, May 2013, *Local Hazard Mitigation Plan.*							Coastal	City of Capitola LHMP 2013
Central Coast	1960	May		Monterrey, San Luis Obispo, Santa Barbara		Monterey, Moss Landing, Pacific Grove, Pismo, Santa Barbara	A tsunami in 1960 produced severe currents in Monterey, Moss Landing, and Pacific Grove and is blamed for one death. At **Santa Barbara** , a drifting oil exploration barge repeatedly rammed the new dredge and caused at least $10,000 in damage. An additional $10,000 in damage was done elsewhere, including damage to 40 small craft set adrift. Moss Landing: Lagoon (1962) reports a 5-foot maximum wave observed with periods of 2 and 25 minutes, and severe currents in the entrance channel. **Monterey:** The Monterey Peninsula Herald (May 23, 1960, p. 1) reports waves surging into the bay. The partially completed frontal seawall was completely submerged, but there was no damage. The water rose to within a few feet of the city beach parking lot. Heights based on visual observations by the Monterey Department of Public Works shows a maximum range of 7 feet between 9:40 and 9:50 A.M. Pismo Beach: The Arroyo Grande Valley Herald Recorder (May 27, 1960) reported a 9-foot differential in tide (range) at Pismo Beach, standing 2 feet on the seawall. The only damage was the unseating of a concession cabin on the beach. Mom Bay: A fresh tide here, which followed earthquakes in another part of the world, indirectly caused the death of Earl Walker McCutcheon, 34. McCutcheon was killed when he was struck by a falling boom from the hoist on his dock. The harbor, which was nearly empty, was filled in a matter of minutes. **Santa Barbara:** About 20 boats were tom loose from their moorings, and the cables and chains of a dozen others were tangled. The highest swell washed the harbor at 9:30 A.M. and rose to a height of 7 feet 11 inches, and then the level dropped 9 feet—all in less than 10 minutes. **Source:** Monterey County OES, September 2007, *Multi-Jurisdictional Hazard Mitigation Plan;* USGS, 2013, *Historic Earthquakes* , "Chile 1960 May 22 Magnitude 9.5, The Largest Earthquake in the World"; Lander, J. et al., April 1997, *Tsunamis Affecting the West Coast of the United States, 1806-1992.*	$ 10,000	Santa Barbara	1960	1			Tsunami	Monterey County MHHMP USGS "Historic Earthquakes Chile 1960 May 22" http://earthquake.usgs.gov/earthquakes/world/events/1960_05_22_articles.php ftp://ftp.ngdc.noaa.gov/hazards/publications/Kgrd-29.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Central Coast	1962	February	7-20	Monterey, Ventura		Countywide, Revolon Slough, Live Oak Creek, Sespe Creek, Santa Ana Bridge, Ventura River, Santa Clara River, Arroyo Simi	**Ventura,** February 7 to 20: Heavy rain brought about flooding on all rivers of Ventura County. President Kennedy declared Ventura County a disaster area. At Revolon Slough, approximately 3,435 acres of land were underwater. Breaks in the channel took about another 100 acres. Five small earth-fill irrigation dams were badly damaged, and other irrigation works were destroyed, including a 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 flow on the Santa Clara River was 47,000 cfs, on the Ventura River 17,800 cfs, and on the Arroyo Simi 2,600 cfs. The estimated peak discharges at Sespe Creek near Fillmore were 25,600 cfs. The estimated cost of this event was $425,000. **Monterey,** February: Flood conditions and flood damage were experienced in portions of Monterey County during this time. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*; Monterey County OES, September 2007, *Multi-Jurisdictional Hazard Mitigation Plan*.	$ 425,000	Ventura	1962			X	Alluvial Fan, Slow Rise, Flash	AFTF Study Area Flood History, Water Resources Institute at California State University Study Area Flood History, Water Resources Institute at California State University http://www.co.monterey.ca.us/oes/LHMP/Final-Draft-Plan-and-Figures/Final-Draft-MJHMP-Sept-2007.pdf
Central Coast	1962			San Luis Obispo		San Luis Obispo Creek Watershed	Damaging flood occurred in San Luis Obispo Creek watershed in 1962. **Source:** San Luis Obispo County FCWCD Zone 9, 2013, *History of Flooding Problems*.							Flash	http://www.coastalrcd.org/zone9/history/history.html
Central Coast	1963	January-February		Monterey, Santa Clara, Santa Cruz, Ventura		Gilroy, Morgan Hill, Santa Cruz, Soquel, Pajaro, Corralitos, Soquel, Aptos, Guadalupe River, Salsipuedes Creek	**Regionwide:** February 1963 - Flood and Rainstorms. Santa Clara, Santa Cruz. Declared Federal 2/25/63. Abnormally heavy and continuous rainfall in Northern California, including San Luis Obispo and Ventura counties. Declared Federal 2/25/63. Flooding, debris deposits and damage to public works in Gilroy and Morgan Hill. The San Lorenzo River and Soquel Creek overflowed, causing major damage in Soquel and flooding in Felton and Gold Gulch. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D;* USGS Water Resources Division, 1963, *Floods of January-February 1963 in California and Nevada;* Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update.*	X	Soquel				X	Slow Rise, Debris Flow, Flash, Stormwater	Taming Natural Disasters; http://pubs.usgs.gov/unnumbered/70039077/report.pdf Santa Clara HMP
Central Coast	1964	March		Monterey, San Luis Obispo, Santa Barbara, Santa Cruz		Avila, Capitola, Cayucos, Morro Bay, Moss Landing, Oceano, Oxnard, Pacific Grove, Rio del Mar, San Simeon, Santa Barbara, Santa Cruz, Ventura	**Avila**: Waves came to within 2 feet of the top of the pier, and a few boats broke loose from their moorings. **Capitola**: Water surged over the Esplanade seawall. A 14-foot wave was reported at Capitola, along with a maximum of 5 feet and minimum of minus 1 foot mean lower-low water level for a total height of 6 feet at Seacliff. **Cayucos**: The most obvious result of the wave was the mud and debris left in the parking lot near the Cayucos Memorial Building. Observers reported that they could have walked around the end of the Cayucos Pier when the water went down. At Morro Strand, residents reported seeing rocks not previously seen when the water withdrew with a sucking sound. **Morro Bay:** Worst hit was the Morro Bay Marina, which lost its fuel dock. The dock broke free and damaged floats, pilings, and several boats. The Morro Bay Yacht Club lost its houseboat that had been moored near the south Embarcadero boat-launching ramp. It broke free, along with the walkway, and sailed down the bay on a 20-mile-per-hour outgoing tide. It rammed into the end of the C&L dock, splintering the houseboat completely as it sank. Brown's Oyster Barge also broke loose and came down the bay at a great speed. It destroyed two lumber pilings at the same pier. The barge ran into another boat. Approximately $10,000 damage was done to the newly planted oyster beds by silting and washing oysters to sea. An early warning helped save much equipment. The trestle was in danger of being washed out. The tide changed about 10 feet in 10 minutes. The current carried away an 18-foot inboard motorcraft after first swamping it at the dock. Many small boats broke loose from the dock and were lost. Others were in "dry dock" having been washed aground on a sand spit inside the harbor. **Moss Landing:** A maximum wave height of 5 feet, a damaged skiff, and strong currents. **Monterey:** Waves 8.5 feet high surged into the bay. A finger float was broken off, and some utilities were cut. Losses of $1,000 and a maximum elevation of 7.5 feet were reported. Whirlpools were formed at the seaward end of Monterey breakwaters. **Oceano:** Water rose to the dunes but did not reach the community. Heavy surf action was reported along a 3-mile strip. **Oxnard:** Large swells were reported after daylight. **Pacific Grove:** A maximum elevation of 7 feet above mean lower-low water and a maximum wave height of 6 feet. **Rio del Mar:** Wrecked ship washed to shore at Seacliff. **San Simeon:** Campers and trailers were evacuated from San Simeon State Park, Cambria, and Cayucos Beaches. No damage was reported to the beaches, but campers were drenched when the waves struck high on the beaches. **Santa Barbara:** Five-foot surges on 20-minute cycles continued through the day, making boat-handling hazardous. Two boats caught in the harbor entrance slammed into a piling on the slip nearest the entrance and snapped the piling off. One walkway was damaged. Several big mooring drums ended up in the middle of the channel, and several boats dragged their anchors. The gauge dropped from 5.4 feet to 2.7 feet in 10 minutes. **Santa Cruz:** Boats were damaged, and approximately $100,000 in damages were reported. The maximum wave was 12.4 feet above mean lower-low water (10-foot height). **Pismo Beach:** Waves washed up against the seawall. **Ventura**: The tide was said to have dropped 8 feet to an all-time-low low tide. **Source**: Lander et al., April 1997, *Tsunamis Affecting the West Coast of the United States, 1806-1992.*	$120,000+	$100,000 - Santa Cruz, $10,000 - Monterey, +	1964			X	Tsunami	ftp://ftp.ngdc.noaa.gov/hazards/publications/Kgrd-29.pdf
Central Coast	1964-1965	November-January		Santa Barbara		Cold Springs, Hot Springs, Montecito, San Antonio Streams, and San Ysidro Creek	In 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 caused high run-off rates from the San Antonio and Montecito Creeks. Eyewitnesses said that a wall of water 20 feet high flooded much of these areas. Twelve homes were washed away or completely destroyed. Six 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. Damage to public and private property was in the millions of dollars, and hundreds were forced to evacuate their homes. Eyewitnesses reported over 20-foot walls of water, mud, boulders, and trees moving down the channels at approximately 15 miles per hour. Bridges were swept away in seconds, and flows inundated large areas damaging structures and depositing debris. **Source:** County of Santa Barbara Office of Emergency Management, September 13, 2011 (updated March 2012), 2011 Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan; Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History.*	Millions of $	Regionwide	1964			X	Debris Flow, Flash, Slow Rise	AFTF Study Area Flood History, Water Resources Institute at California State University Study Area Flood History, Water Resources Institute at California State University https://www.countyofsb.org/uploadedFiles/ceo/Section_5_Hazards_Assessment.pdf http://www.fema.gov/pdf/news/pda/1952.pdf
Central Coast	1965	November-December		Santa Barbara, Ventura		Santa Maria, Goleta, Carpinteria, Santa Clara River	Bradley Creek severely damaged its channel in Santa Maria. San Pedro Creek flooded developed areas in Goleta, and Franklin Creek overflowed at Carpinteria, which damaged homes and lands. **Ventura:** Heavy flooding caused road damage in the Thousand Oaks area. This event also washed out utilizes, including sewer lines and water supply infrastructure. Approximately $490,000 in damages was estimated for this event in the County of Ventura. Simi Valley and Moorpark 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 of 51, 900 cfs. The estimated peak discharge at Sespe Creek near Fillmore was 21,600 cfs. **Source:** DWR, August 1967, *Bulletin 69-66: California High Water, 1965 – 1966;* Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History.* Ventura County, 2010, *Hazard Mitigation Plan.*							Slow Rise	California High Water 1965-1966 DWR Bulletin No. 69-66, August 1967; AFTF Study Area Flood History, Water Resources Institute at California State University, Ventura County MJHMP 2005

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Central Coast	1966-1967	December-January		Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz, Ventura		Salinas River, Mission Creek, Cienguitas Creek, Little Llagas Creek, Llagas Creek, Gilroy, Uvas Creek, Carnadero,	The antecedent moisture conditions and the characteristics and intensity of the December 1966 storm caused near-record peak flows on many streams in the **Central Coastal** area. Major flooding was experienced in the Salinas River Basin and Santa Barbara vicinity. During the December 1966 flood, one life was lost on the Arroyo Seco. USACE estimated that the flood damage in the Salinas River Basin totaled $6,138,000, with an additional $434,000 storm damage loss to conditions of streets. Major flooding occurred on the lower reach of Mission Creek, where the lack of adequate channel capacity and bridge openings caused overflow into residential areas. Flooding into residential areas also occurred near Cieneguitas Creek. Although Santa Barbara County was not declared a disaster area, the estimated flood damages amounted to $1.1 million. **Santa Clara,** January 21-24, 1967: Little Llagas Creek, West Branch of Llagas Creek, and Uvas Creek flooded roads. There was some minor intersection flooding in Gilroy. At the Gavilan College site, some distress was experienced at one of the existing check dams. In the Soap Lake area, the Carnadero Creek broke through its banks and added to the inundation in this area. Culverts flooded at the foothills. **Monterey,** December 1966: Flood conditions and flood damage were experienced in portions of Monterey County during this time. **Source:** DWR, June 1968, *Bulletin 69-67: California High Water, 1966 – 1967;* Santa Clara County Flood Control and Water District, January 1967, *Reconnaissance Report on Floods of January 21 - 24, 1967*; Monterey County OES, September 2007, *Multi-Jurisdictional Hazard Mitigation Plan* .	$1.1 million $6.1 million	Santa Barbara County Salinas River Basin	1967	1		X	Slow Rise, Stormwater, Alluvial Fan, Flash	http://www.water.ca.gov/waterdatalibrary/docs/historic/Bulletins/Bulletin_69/Bulletin_69__1967.pdf Santa Clara County Flood Control and Water District Reconnaissance Report January 1967 http://www.co.monterey.ca.us/oes/LHMP/Final-Draft-Plan-and-Figures/Final-Draft-MJHMP-Sept-2007.pdf
Central Coast	1969	January-February		Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Clara, Ventura	The Great Floods of 1969	Regionwide, San Luis Obispo County including Paso Robles, Avila, Pismo Beach, and San Luis Obispo Santa Barbara County including Santa Ynez River, Toro Creek, Oak Creek at Mouth, San Ysidro Creek, Buena Vista Creek, and Romero Canyon Creek	**Monterey:** Flood conditions/damage were experienced in portions of Monterey County during this time. **Santa Barbara:** Governor Reagan declared Santa Barbara County a disaster area on January 25, 1969, and the State of California was declared a disaster area by President Nixon. On the Santa Ynez River near Lompoc, the estimated peak flow was 100,000 cfs. 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 cfs. 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 had flows exceeding design flow. Solvang and Lompoc had severe flooding. In Santa Barbara, flood flows were of unprecedented magnitude. Highest flows in 29 years on Santa Ynez River, 16 inches of rain in 24 hours at Juncal Dam. The worst flood in 55 years drove hundreds from their homes and closed most highways leading out of the city. Flooding occurred at the East and West Santa Barbara County branches of Toro Creek, Oak Creek at Mouth, San Ysidro Creek, Buena Vista Creek, and Romero Canyon Creek. The 1969 storm was equivalent to a 100-year storm in the upper Santa Ynez watershed; and the Lompoc, San Antonio, Santa Maria, and Goleta Valleys experienced 5- to 10-year storms. There was additional erosion along channels and on agricultural lands. Debris at beaches returned. Floods total cost for both flood events-almost $5 million in damages. **Ventura:** One person died in a mudslide, and 12 people drowned 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 were recorded at 60,000 cfs and on the Santa Clara River at 88,000 cfs. Families were evacuated from the Fillmore area. Along State Route 126, homes were inundated by Sespe Creek. A railroad trestle bridge collapsed over Sespe Creek. Three thousand acres of agricultural land were flooded near Fillmore. A golf course west of SR 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 floodwaters of Santa Paula Creek. Highway damage was heavy in Ventura County. The February 1969 event was the largest flood of record in the Simi Valley and Moorpark 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. 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. Ninety acres of citrus groves were washed away at the confluence of the Sespe and Santa Clara rivers. Again, the entire City of Santa Paula was evacuated because of the threats from the floodwaters 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 million. **San Luis Obispo:** In January of 1969, storms delivered rainfall totals that ranged from approximately 12 inches in Paso Robles, to 21 inches in San Luis Obispo over an 8-day period. In February, more storms delivered over 5 inches of rain in Paso Robles and 9.5 inches in San Luis Obispo. The most severe damages to urban property occurred in the City of San Luis Obispo, where the San Luis Obispo Creek channel became clogged with debris and flow in the channel overtopped the channel banks and moved down the main streets of the city. Massive mobilization efforts during and after the January flood by the City of San Luis Obispo and the USACE prevented additional damages to urban property during the February flood. Severe damages were sustained by streets, highways, and utilities throughout the County. The water-supply system in Cambria was damaged in the floods, and large parts of the town were without electricity; residents were advised to drink only boiled water because of the possibility that the local water supply might be contaminated. The destruction and damage of sewer lines and sewage treatment plants at many locations posed a threat to the lives and health of many residents. The sewage-treatment plants at Morro Bay, Avila Beach, and Pismo Beach were inundated by both floods. Debris and raw sewage piled up on the beaches and carried in the streams posed serious threats to health until emergency cleanup operations were completed. Total damages for just the January flooding event exceeded $4 million. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*; Monterey County OES, September 2007, *Multi-Jurisdictional Hazard Mitigation Plan*; Ventura County, December 2010, *2010 Ventura County Hazard Mitigation Plan* ; County of San Luis Obispo, 2011, *County of San Luis Obispo Local Hazard Mitigation Plan* ; County of Santa Barbara Office of Emergency Management, September 13, 2011 (updated March 2012), *2011 Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan;* DWR, 2009, *California Water Plan Update 2009*.	$5 million (San Luis Obispo County); $21.9 million (Santa Barbara Co.); $43 million (Ventura)		1969			X	Slow Rise, Flash, Stormwater	AFTF Study Area Flood History, Water Resources Institute at California State University, Ventura County HMP 2010, San Luis Obispo County LHMP 2005, Santa Barbara County LHMP 2011 http://www.slocounty.ca.gov/Assets/OES/Plans/Hazard+Mitigation+Plan+2011.pdf; AFTF Study Area Flood History, Water Resources Institute at California State University https://www.countyofsb.org/uploadedFiles/ceo/Section_5_Hazards_Assessment.pdf http://www.fema.gov/pdf/news/pda/1952.pdf http://www.co.monterey.ca.us/oes/LHMP/Final-Draft-Plan-and-Figures/Final-Draft-MJHMP-Sept-2007.pdf
Central Coast	1970	January		Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz, Ventura		Salinas River Basin, Santa Ynez River	The 1970 floods were caused by a series of Pacific storms that brought severe, widespread damage to the Central Coast and the rest of California. Damage was most severe in the Salinas River Basin, in the Santa Ynez River Group, and in the Carpinteria-Montecito area. Flooding on the Salinas River and its tributaries was estimated to equal a 100-year flood. Farms and cities both sustained heavy damage. **Source:** DWR, 2009, *California Water Plan Update 2009*.	X	Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz, Ventura Counties				X	Slow Rise, Flash	California Water Plan 2009
Central Coast	1971	December		Santa Barbara		Romero Canyon Creek, Garrapata Creek, and Toro Canyon Creek	Federal Disaster Declaration. High flows and flooding along Romero Canyon Creek, Garrapata Creek, and Toro Canyon Creek. In December of 1971, flooding and high flows were recorded at Romero Canyon Creek, Garrapata Creek, and Toro Canyon Creek. Santa Barbara County, particularly the Montecito Summerland area, was declared a Federal disaster area. **Source:** County of Santa Barbara Office of Emergency Management, September 13, 2011 (updated March 2012), *2011 Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan* ; Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.	X	Montecito, Summerland				X	Flash	https://www.countyofsb.org/uploadedFiles/ceo/Section_5_Hazards_Assessment.pdf http://www.fema.gov/pdf/news/pda/1952.pdf
Central Coast	1972-1973			Monterey		Monterey County	During the 1972–1973 El Niño season, a landslide along the Big Sur coast resulted in one death. **Source:** Monterey County OES, September 2007, *Multi-Jurisdictional Hazard Mitigation Plan*.				1			Debris Flow	Monterey County HMP
Central Coast	1973	January-February		Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz, Ventura	Coastal Flooding	San Luis Obispo area, Santa Clara River, San Luis Obispo Creek, and its tributary, Stenner Creek, Regionwide	**Regionwide:** January 1973 coastal flooding. Heavy rains, winds, floods, and tidal actions. OEP 364-DR-CA. San Luis Obispo, Santa Barbara, Ventura. Federally declared 2/3/1973. Total Statewide damages $17,998,250. Severe flooding in February of 1973 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.** Flood culverts in San Luis Obispo became clogged with debris and sediments, and 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. **Santa Clara,** January 16: Flooding - Severe thunderstorm with heavy rains, floods. **Monterey,** February 1973: Flood conditions and flood damages were experienced in portions of Monterey County during this time. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; County of San Luis Obispo, July 2011, *County of San Luis Obispo Local Hazard Mitigation Plan* ; Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update;* Monterey County OES, September 2007, *Multi-Jurisdictional Hazard Mitigation Plan* .	$13.6 million $86206.9 - Santa Clara County	Regionwide	1973	1		X	Debris Flow, Coastal, Flash, Slow Rise	Water Resources Institute at California State University;Taming Natural Disasters Appendix D; AFTF Study Area Flood History, Water Resources Institute at California State University Study Area Flood History; Santa Clara County HMP; http://www.slocounty.ca.gov/Assets/OES/Plans/Hazard+Mitigation+Plan+2011.pdf http://www.co.monterey.ca.us/oes/LHMP/Final-Draft-Plan-and-Figures/Final-Draft-MJHMP-Sept-2007.pdf
Central Coast	1974	January		Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz, Ventura			Significant flooding occurred. **Source:** DWR, 2009, *California Water Plan Update 2009*.							Flash	California Water Plan 2009
Central Coast	1978	January		Santa Clara		Llegas Creek, Little Llegas Creek	Llegas Creek overtopped its banks and flooded surrounding areas. **Source:** Santa Clara Valley Water District, February 1978, *Flood Emergency Operations January 13,1978 through January 17,1978*.							Slow Rise	Santa Clara Valley Water District Flood Emergency Operations January 13,1978 through January 17,1978, February 1978

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Central Coast	1978	February, March		San Luis Obispo, Santa Barbara			**Santa Barbara:** Presidential Disaster Declaration. Inundation of agricultural areas, mudslides, and millions of dollars of damage. Along the Santa Maria River, 340 acres of agricultural land was damaged. Along San Antonio Creek, 200 acres of agricultural land was damaged with over 8 feet of water. 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. Vandenberg Air Force Base had damages to roads, bridges, along with 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. Goleta Treatment Plant suffered damages, as did Isla Vista, as well as Montecito and Carpentaria. Rail lines and State Highways, roads, bridges, parks, and sewer lines suffered damages. This flooding event caused nearly $7 million in damages to the County of Santa Barbara. **San Luis Obispo:** In February and March, 1978 at Tally Ho Road and Corbit Canyon Creek, 20 homes were damaged by floodwaters. At Pismo Beach on Highway 1, a trailer park was flooded from highway runoff. There was much damage to the highways in the County due to flooding. Cuyama River overflowed 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 million. Damage to agricultural lands was significant. Irrigation works, domestic water supply, and other utilities were washed out. **Monterey,** February 1978: Flood conditions and flood damage were experienced in portions of Monterey County during this time. **Source**: County of Santa Barbara Office of Emergency Management, September 13, 2011 (updated March 2012), *2011 Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan* ; Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History;* Monterey County OES, September 2007, *Multi-Jurisdictional Hazard Mitigation Plan* .						X	Flash, Debris Flow, Alluvial Fan, Slow Rise	https://www.countyofsb.org/uploadedFiles/ceo/Section_5_Hazards_Assessment.pdf http://www.fema.gov/pdf/news/pda/1952.pdf http://www.co.monterey.ca.us/oes/LHMP/Final-Draft-Plan-and-Figures/Final-Draft-MJHMP-Sept-2007.pdf
Central Coast	1980	January		Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz, Ventura		Regionwide	**Monterey,** February 1978: Flood conditions and flood damage were experienced in portions of Monterey County during this time. **Source** : County of Santa Barbara Office of Emergency Management, September 13, 2011 (updated March 2012), *2011 Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan* ; Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History;* Monterey County OES, September 2007, *Multi-Jurisdictional Hazard Mitigation Plan* .						X	Flash	California Water Plan 2009
Central Coast	1980	February	12-22	Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz, Ventura	Winter Storms	Regionwide	**Santa Barbara:** Severe winter storm waves threatened to undermine facilities at the Santa Barbara Yacht Club; revetment installed after winter. Presidential Disaster Declaration. Severe flooding, mudslides, and high tides throughout County. Storms in February, 1980 caused severe flooding mudslides and high tides throughout the County. Waves threatened to undermine a parking lot at Leadbetter Beach; revetment installed after the winter. **Santa Clara:** Uvas Creek damaged crops and washed out a bridge crossing. Floodwaters in Llagas Creek overtopped banks and flooded houses. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; FEMA and California Coastal Analysis and Mapping Project (CCAMP), December 2011, *Santa Barbara County Open Coast Study*; Santa Clara Valley Water District, April 1980, *Flood Emergency Operations February 13, 1980 – February 22, 1980;* County of Santa Barbara Office of Emergency Management, September 13, 2011 (updated March 2012),*2011 Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan* .	$ 316,640,817	Statewide	1980			X	Flash, Debris Flow, Coastal, Slow Rise	Taming Natural Disasters Appendix D, Flood Emergency Report February 13 - 22, 1980: http://www.valleywater.org/Services/FloodReports.aspx. ; http://www.r9map.org/Docs/Santa%20Barbara%20Kick-Off%20Meeting%20Brochure.pdf https://www.countyofsb.org/uploadedFiles/ceo/Section_5_Hazards_Assessment.pdf http://www.fema.gov/pdf/news/pda/1952.pdf
Central Coast	1980			Ventura			In 1980, Calleguas Creek breached its levee in the Oxnard Plain and caused approximately $9 million (in 1980 dollars) in damage to the Point Mugu Naval Base from flooding and sediment deposition. In addition, approximately 1,500 acres of farmland were covered by floodwaters. The peak discharge was 9,310 cubic feet per second (cfs) at the Madera Road Bridge in Simi Valley. **Source:** Ventura County, December 2010, *2010 Ventura County Hazard Mitigation Plan.*	$9 million	Ventura	1980				Slow Rise	Ventura County HMP 2010
Central Coast	1982	January-April		Santa Clara		South Santa Clara County, San Lorenzo basin, Felton, Ben Lomond, Brookdale, Lompico, Boulder Creek	Winter Storms, Heavy winds, rain, flooding, mud slides. The most severe flood damage occurred in South Santa Clara County in and around the cities of Morgan Hill and Gilroy. West Little Llagas, East Little Llagas, Corralitos, Tennant Edmunsdon, West Branch Llagas Lions, Day, Jones, and Llagas Creek, as well as North Morey, Morey Channels, and Miller Slough flooded areas in Morgan Hill, San Martin, and Gilroy. Flood waters in Llagas Creek at the Pajaro River and Santa Clara-San Benito County boundary flooded agricultural lands. Uvas Creek flooded areas in Gilroy. Floodwaters at the confluence of Pajaro River and Carnadero Creek flooded agricultural lands in Santa Clara and San Benito counties. **Santa Cruz:** January 1982, 10 people were killed at Love Creek. The rain started January 3 and on January 4, the San Lorenzo River jumped its banks and headed for the County Building. Early the next morning, a crack appeared in the Soquel Avenue bridge, and shortly thereafter the eastbound lane crumbled into the river. Houses tumbled from foundations and slid down muddy slopes at Lompico Road and at Aptos Creek. Deaths were recorded at Boulder Creek, Santa Cruz, Aptos, Felton, Soquel, Scotts Valley, and Love Creek. **Source:** Santa Clara Valley Water District, August 24, 1982, *Report on Flooding and Flood Related Damages January 1 to April 30, 1982; Santa Clara County, 2013, Local Hazard Mitigation Plan 2011 Update; San Jose Sentinel, Devastating disaster: Storm of 1982 left 22 dead, many more homeless, posted 01/06/2012.*	$100 million	Santa Cruz	1982	22	Santa Cruz County	X	Slow Rise, Debris Flow, Engineered Structure Failure	Report on Flooding and Flood Related Damages January 1 to April 30, 1982 Santa Clara County HMP http://www.mercurynews.com/central-coast/ci_19692582
Central Coast	1982	March	30	Santa Clara			Flooding. **Source:** Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update.*	$ 369,167	Santa Clara	2008				Flash, Stormwater	Santa Clara County HMP
Central Coast	1982-1983	November-March		Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz, Ventura	Winter Storms	Regionwide	**Regionwide:** Heavy rains, high winds, flooding, levee breaks. Declared Federal 2/9/83. Total damages $523,617,032. As a result of the 1982–1983 El Niño events, approximately 20 to 40 feet of the marine terraces by Scenic Drive in Carmel fell into the sea. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; Monterey County OES, September 2007, *Multi-Jurisdictional Hazard Mitigation Plan* .	$ 523,617,032	Regionwide	1983			X	Slow Rise, Stormwater	Taming Natural Disasters Appendix D; Monterey County LHMP
Central Coast	1982-1983			Santa Barbara	El Nino		Two Presidential Disaster Declarations. Several parts of southern California received over 200% of normal rainfall during what was the strongest El Nino event of record. Santa Barbara County had widespread slope destabilization and coastal flooding. **Source:** County of Santa Barbara Office of Emergency Management, September 13, 2011 (updated March 2012), *2011 Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan.*						X	Flash, Coastal	https://www.countyofsb.org/uploadedFiles/ceo/Section_5_Hazards_Assessment.pdf http://www.fema.gov/pdf/news/pda/1952.pdf
Central Coast	1983	January	22-30	Santa Clara		Llagas Creek Watershed, Uvas Creek Watershed	**Santa Clara:** The Llagas Creek Watershed south of Morgan Hill experienced flooding on West Little Llagas, East Little Llagas, Corralitos, Tennant, San Martin, Church, Rucker Skillet, San Ysidro, and West Branch Llagas Creeks. The Uvas Creek Watershed experienced flooding at the confluence of Uvas Little Arthur Creeks and in agricultural lands at the confluence of Pajaro River and Carnadero Creek. Heavy rains, high winds, flooding, levee breaks. **Source:** Santa Clara Valley Water District, October 1983, *Report on Flooding and Flood- Related Damages in Santa Clara County January 1 through April 1, 1983*; Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update.*	$388,461 - January 25th $8,341,666 - January 26h	Santa Clara	1983				Flash, Engineered Structure Failure, Slow Rise	Report on Flooding and Flood Related Damages January 1 to April 30, 1983; Santa Clara County HMP
Central Coast	1983	March	1	Santa Clara			Santa Clara, March 1, 1983: Flooding. **Source:** Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update.*	$ 500,000	Santa Clara	1983				Slow Rise	Santa Clara County HMP
Central Coast	1983	March		Monterey			Flood conditions and flood damage were experienced in portions of Monterey County during this time. **Source:** Monterey County OES, September 2007, *Multi-Jurisdictional Hazard Mitigation Plan.*							Flash, Slow Rise	http://www.co.monterey.ca.us/oes/LHMP/Final-Draft-Plan-and-Figures/Final-Draft-MJHMP-Sept-2007.pdf
Central Coast	1986	February	17	Santa Clara			Santa Clara, February 17, 1986: Flash Flooding, Early February 1986 – Storms, Rains, winds, flooding, and mud slides. **Source:** Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update.*	$5,000,000.00	Santa Clara	1986				Flash	Santa Clara County HMP

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Central Coast	1986	February		Monterey, San Benito, Santa Clara, Santa Cruz	St. Valentine's Day Storm	Pajaro River Watershed, Boulder Creek, Gilroy, Uvas Creek, Jones Creek, Llagas Creek, Tennant Creek, Corralitos Creek	**Regionwide:** Significant flooding on the Pajaro River in February 1986. **Santa Cruz:** A mudslide destroyed a home and killed a resident in Boulder Creek. Rains, winds, flooding, and mud slides. **Santa Clara:** Overbanking occurred from Jones Creek in Gilroy, but no damage was reported. Overbanking occurred from Llagas Creek and flooded roads and mostly farmland in Gilroy. Overbanking from Uvas Creek in the south caused significant damage to homes in the City of Gilroy. Most of the damage in the South County occurred when Uvas Creek overbanked upstream of Thomas Road. The volume of water that followed was a flash flood unprecedented in recent memory. Tennant Creek and Corralitos Creek flooded roads and homes. **Source:** Action Pajaro Valley, 2013, T*he Pajaro Watershed Information Center – Flood Protection;* Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; Santa Clara Valley Water District, June 1988, *Report on Flooding and Flood-Related Damages in Santa Clara County February 12 to 20, 1986.*	$ 407,538,904	Statewide	1986	1	Boulder Creek	X	Debris Flow, Coastal, Slow Rise, Flash, Alluvial Fan	www.pajarowatershed.org/Content/10017/flood_protection.html; LA Times Flood Deaths at 10; New Storm Strikes NorthFebruary 19, 1986; Report on Flooding and Flood Related Damages February 12th thru 20th, 1986. Source: http://www.valleywater.org/Services/FloodReports.aspx; Taming Natural Disasters Appendix D
Central Coast	1992	February	10-15	Santa Clara, Ventura			February 10-15, 1992: Flooding - Winter Weather, Winter Storm, Flash Flood. 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 cfs. 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. More than 100 people were rescued from the Resort, and motor homes were evacuated from the location. One person died as a result of flooding in this location. Arroyo Simi eroded badly in the Simi Valley/Moorpark area. Walls and bridges were damaged. Calleguas Creek overflowed due to debris buildup, and the Lewis Street Bridge abutments were undermined. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*; Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update.*						X	Flash	AFTF Study Area Flood History, Water Resources Institute at California State University
Central Coast	1992	December	10	Santa Clara			Flooding - Winter Weather, Winter Storm, Flash Flood. **Source:** Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update.*	$1,315.00	Santa Clara	1992				Slow Rise	Santa Clara County HMP
Central Coast	1992	December		Monterey, Santa Barbara			Snow, rain, and high winds. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D.*	$600 million	Statewide	1992			X	Slow Rise	Taming Natural Disasters Appendix D
Central Coast	1992-1993			Santa Barbara			The 1992 – 1993 rainy season was one of the wettest recorded in Santa Barbara County, areas of the County received 180% to 209% normal rainfall. One of the County's highest short-duration rainfall intensities was recorded during 1993; 1.25 inches fell in 15 minutes at the Buellton Fire Station. Following a 25-year storm event that occurred in late March, Santa Barbara was declared a Federal disaster area with 12 creeks substantially damaged along with several detention basins and residences. Santa Barbara County received approximately $1.4 million in disaster recovery funds from FEMA. **Source:** County of Santa Barbara Office of Emergency Management, September 13, 2011 (updated March 2012), *2011 Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan.*	$1.4 million in disaster recovery funds received from FEMA	Santa Barbara	1993			X	Flash	https://www.countyofsb.org/uploadedFiles/ceo/Section_5_Hazards_Assessment.pdf http://www.fema.gov/pdf/news/pda/1952.pdf
Central Coast	1993	January	13	Santa Clara			Flash Flooding **Source:** Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update.*	$111,111.12	Santa Clara	1993				Flash	Santa Clara County HMP
Central Coast	1993	January, February		Santa Barbara, Ventura		Lompoc, Buellton, Cachuma Dam, Gibraltar Dam, Juncal Dam, Coyote Creek - Live Oaks Acres	**Santa Barbara:** 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 were full, flooding was not severe. Three dams in the County spilled during this event—Cachuma Dam, Gibraltar Dam, and Juncal Dam. Twelve creeks received damages, with overall county damages estimated at $1.4 million. **Ventura:** 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 washouts were the extent of the problems in Ventura County from this event. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.	$1.4 million	Santa Barbara	1993			X	Slow Rise, Alluvial Fan	AFTF Study Area Flood History, Water Resources Institute at California State University
Central Coast	1993	February	22	San Luis Obispo		Cambria	2.5 inches of rain. This flash flood occurred in a 2-hour period, causing $500,000 damage to four businesses and several residences. **Source:** County of San Luis Obispo, July 2011, *County of San Luis Obispo Local Hazard Mitigation Plan.*	$ 500,000	San Luis Obispo County	1993				Flash	http://www.slocounty.ca.gov/Assets/OES/Plans/Hazard+Mitigation+Plan+2011.pdf
Central Coast	1993			Monterey			Monterey County -, woody debris clogged the invert to the storm drain under Stevenson Drive in 1993. This resulted in a diversion of flood water toward residences. **Source:** Monterey County Water Resources Agency, December 2002 (updated December 2003), *Monterey County Floodplain Management Plan.*							Stormwater	http://www.mpwmd.dst.ca.us/mbay_irwm/faast_submittal/att3_ig1_irwmplan_4of7.pdf
Central Coast	1995	January		San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz, Ventura	1995 Floods	Goleta, Santa Barbara, Montecito, and Carpinteria	Severe Winter Storms, Flooding, Landslides, Mud Flows. Over 100 stations recorded their greatest 1-day rainfall in history. **Santa Barbara:** The floods of 1995 brought widespread flooding to Santa Barbara County. The most severe flooding occurred on the south coast while the rest of the County was largely spared from serious damages. On the south coast, the 1995 flood was more severe and widespread than either the 1969 or 1967 floods. Flooding occurred on most major channels in Goleta, Santa Barbara, Montecito, and Carpinteria. Approximately 510 structures were reported flooded and/or damaged along the south coast, with a total cost resulting from public and private damages of approximately $50,000,000. All modes of transportation in and out of the South Coast were cut off for several hours; some modes of transportation were not restored for several days. March: 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 runoff, 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 million in damages. **Source:** County of Santa Barbara Office of Emergency Management, September 13, 2011 (updated March 2012), 2011 Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan; Water Resources Institute at California State University and AFTF, July 2010, AFTF Study Area Flood History. Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*.	$741.1 million, $100,000,000	Statewide, Santa Barbara	1995	1	Santa Barbara	X	Flash	Taming Natural Disasters Appendix D https://www.countyofsb.org/uploadedFiles/ceo/Section_5_Hazards_Assessment.pdf http://www.fema.gov/pdf/news/pda/1952.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Central Coast	1995	January, March		Monterey, San Luis Obispo, Santa Clara, Ventura		West Little Llagas Creek in Morgan Hill, City of San Luis, Castroville, Mission Fields, Carmel Valley, Cachagua, Carmel Highlands, Spreckels, Big Sur, Pajaro, Obispo, Cambria , Matilija Creek, La Conchita	**Santa Clara:** On January 9, West Little Llagas Creek flooded the Maple Leaf recreational-vehicle park in Morgan Hill. Three feet of water covered the park in some spots. In March, Rucker, Skillet, Burchell, Uvas Creek, Day, and West Little Llagas creeks overflowed and flooded adjacent properties and roads. West Branch Llagas and East Little Llagas creeks overflowed and flooded agricultural land. **San Luis Obispo:** Serious flooding occurred in all coastal and many inland streams. Extensive damages occurred in the city of San Luis Obispo and the San Luis Obispo Golf Course. Cambria had up to 6 feet of water in areas. 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 its banks and caused flooding up to 3 miles downstream. In the town of Avila during January and again in March, high flows of runoff were blocked by debris and flooded 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. **Monterey** : During the January flood event of 1995, sustained precipitation fell throughout the region, and more than 125 residential properties in the Carmel Valley were damaged. Two months later, Monterey County experienced a second significant winter storm, which resulted in further sustained precipitation falling on already saturated watersheds. Devastating flooding occurred throughout Monterey County, particularly in the unincorporated communities of Castroville, Mission Fields, Carmel Valley, Cachagua, Carmel Highlands, Spreckels, and Big Sur. Over 1,500 residences and 100 businesses were damaged. In March 1995, agricultural crop damages along the Pajaro River were estimated at $67 million for the 3,280 acres that were flooded, and urban damages in the unincorporated town of Pajaro were estimated at $28 million. **Regionwide** : 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. Flooding 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 were 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 evacuated 33 people stranded in this location. Many transportation routes were hindered by floodwaters and debris. La Conchita, a small seaside village, was hit hard by a landslide that crushed nine houses. Another 140 houses in this location were evacuated, but all 700 residents were given evacuation warnings. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*; Santa Clara Valley Water District, December 1995, *Report on Flooding and Flood-Related Damages Santa Clara County January 3 to March 11, 1995*; County of San Luis Obispo, July 2011, *County of San Luis Obispo Local Hazard Mitigation Plan*; Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Monterey County OES, September 2007, *Multi-Jurisdictional Hazard Mitigation Plan*; DWR, 2009, *California Water Plan Update 2009*.	Pajaro: $67 million + $28 million	Monterey	1995			X	Flash, Slow Rise, Stormwater	http://www.co.monterey.ca.us/oes/LHMP/Final-Draft-Plan-and-Figures/Final-Draft-MJHMP-Sept-2007.pdf AFTF Study Area Flood History, Water Resources Institute at California State University http://www.slocounty.ca.gov/Assets/OES/Plans/Hazard+Mitigation+Plan+2011.pdf Report on Flooding and Flood Related Damages Santa Clara County January 3 to March 11, 1995
Central Coast	1995	February		Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz, Ventura	Late Winter Storms	Statewide (except Del Norte County)	FEMA 1046-DR-CA 57 counties (all except Del Norte). Severe Winter Storms, Flooding, Landslides, Mud Flows. More than 100 stations recorded their greatest 1-day rainfall in history. Most of the storms hit the Sacramento River Basin, which resulted in small stream flooding due to drainage system failures. Total damages: $1.1 billion. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*.	$1.1 billion	Statewide	1995			X	Flash	Taming Natural Disasters Appendix D
Central Coast	1995	March		San Benito, San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz, Ventura	Severe Winter Storms	Regionwide, Pajaro River	In March 1995, agricultural crop damages along the Pajaro River were estimated at $67 million for the 3,280 acres that were flooded, and urban damages in the unincorporated town of Pajaro were estimated at $28 million. **Source:** DWR, 2009, *California Water Plan Update 2009*.	$95 million	Pajaro, Pajaro River	1995			X	Slow Rise, Debris Flow, Engineered Structure Failure, Stormwater	CWP 2009
Central Coast	1995	March	10	Santa Barbara		Goleta, Santa Barbara, Montecito	During the March 10, 1995, storm, major flooding occurred in the areas of Goleta, Santa Barbara, and Montecito. More than 300 structures were reported flooded and/or damaged; many of the same structures flooded or damaged during the January 1995 storm event. Approximately $30 million of public and private property were damaged during the storm. Once again, all modes of transportation in and out of the south coast were cut off for several hours. **Source:** County of Santa Barbara Office of Emergency Management, September 13, 2011 (updated March 2012), *2011 Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan*.	$30 million	Santa Barbara	1995			X	Flash	https://www.countyofsb.org/uploadedFiles/ceo/Section_5_Hazards_Assessment.pdf http://www.fema.gov/pdf/news/pda/1952.pdf
Central Coast	1995	March	1, 9	Santa Clara			Flooding - Severe Thunderstorm and wind. **Source:** Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update* .	$11,241,379.31	Santa Clara	1995				Flash	Santa Clara County HMP
Central Coast	1996	December	10	Santa Clara		Morgan Hill, Trailer Court, State Hwy 17	Urban/small Stream Flood, 5.67 inches of rain at Morgan Hill. Widespread street flooding and Trailer Court that had to evacuate. State Hwy 17 was closed by mudslides. Approximately 113,000 people were out of power at some time during the storm. **Source:** Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update*.							Slow Rise, Stormwater, Debris Flow	Santa Clara County HMP
Central Coast	1996-1997	December-January		Monterey, San Luis Obispo, Santa Barbara, San Benito, Santa Clara	January 1997 Floods		**Regionwide:** Precipitation in the Sierra Nevada mountain range produced an above-normal snowpack and saturated soils during November and December 1996. A series of storms from December 29, 1996, through January 4, 1997, brought heavy and relatively warm precipitation across much of California. Precipitation totals of up to 24 inches were recorded for the week. The central coast was affected by 300 square miles that were flooded, including the Yosemite Valley. Over 120,000 people had to be evacuated in northern California. Several levee breaks were reported across the Sacramento and San Joaquin Valleys. Over 23,000 homes and businesses, agricultural lands, bridges, and roads were damaged. **Santa Clara:** Flooding occurred on December 31, 1996 to January 1, 1997. Flood waters in West Little Llagas Creek caused extensive flooding on roadways and multiple residential properties. Flooding occurred on January 26 to 27, 1997. West Little Llagas Creek, East Little Llagas Creek, Corralitos Creek, San Martin Creek, Llagas Creek, Dexter Creek, Uvas-Carnadero Creek flooded roadways, residential properties, and bridge crossings. **Source:** USGS, April 1999, *Floods in Northern California, January 1997*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; Santa Clara Valley Water District, January 1998, *Report on Flooding and Flood-Related Damages in Santa Clara County December 31, 1996 to January 27, 1997*.	$1.8 billion	Statewide	1997	8	Statewide	X	Slow Rise	http://pubs.usgs.gov/fs/1999/0073/report.pdf; Taming Natural Disasters Appendix D; http://www.valleywater.org/Services/FloodReports.aspx.
Central Coast	1997	January	25	Santa Clara		Arroyo Hondo Creek near San Jose, Saratoga Creek at Saratoga, Guadalupe River at San Jose	Flash Flood, Arroyo Hondo Creek near San Jose, Saratoga Creek at Saratoga, Guadalupe River at San Jose, Matadero Creek at Palo Alto, and San Francisquito Creek at Stanford University showed moderate increases in streamflow during the warning period. A new round of rainstorms brought more flooding problems to the North Bay area. Sonoma County received 1 to 1.5 inches of rain in 3 hours, and rain rates continued at .3 to .5 per hour for at least 2 hours. **Source:** Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update*.							Flash	Santa Clara County HMP
Central Coast	1997	February	3, 7, 8	Santa Clara		Guadalupe River	**Feb 3**: Flash flood, Guadalupe River at Blossom Hill Boulevard, Levee breached along Arroyo Mocha (a dry creek) and caused damage to roads and property. **Feb 7:** Flash flood, Ross Creek at Cherry Street. Levee breached along Arroyo Mocha (a dry creek) and caused damage to roads and property. **Feb 8:** Flash flood, Coyote Creek at Edenvale Levee breached along Arroyo Mocha (a dry creek) and caused damage to roads and property. **Source:** Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update*.							Flash, Engineered Structure Failure	Santa Clara County HMP

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Central Coast	1998	February		Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz, Ventura	El Niño Floods	Coastal Communities, Pajaro	Santa Barbara: Levee break near Santa Maria on Santa Maria River. On February 25, 1998, flooding of the Cuyama River near Santa Maria destroyed Highway 66. Two California Highway Patrol officers traveling the route were washed away with the road and drowned. Damage to agricultural lands was high. Record peak flows on the Cuyama River were 26,200 cfs. San Luis Obispo Creek at Higuera and Marsh once again overtopped its banks and flooded downstream. Many people were evacuated from low-lying areas. Santa Clara: Flooding occurred on February 2 through 7, 1998. Roadways and homes were flooded from West Little Llegas Creek, Tennant Creek, Corralitos Creek, East Little Llagas Creek, West Branch Llagas Creek, and Uvas Creek. Monterey: In February 1998, a series of El Niño winter storms contributed to intense flooding during which more than 15 inches of rain fell. Several small streams flooded, and several coastal communities experienced flooding from wave run-up. In addition, Pajaro's entire population of 3,500 was ordered to evacuate after the levee along the Pajaro River was breached in several places. A Presidential disaster was declared. Approximately 21.36 inches of rain fell during February in Santa Barbara, many areas experienced 600% of normal February rainfall amounts. February 1998 brought several record-breaking rainfalls, with 50-year storm event intensities. Flood-related damages within Santa Barbara occurred during three major storm periods—February 1-4, February 6-9, and February 22-24. The cost to repair extensive flood damage to public and private property was estimated at $15 million. Similar to 1995, transportation throughout the County was disrupted through closures of roads, the Santa Barbara Airport, and train service. Flood damage was spread throughout the County, and the County was declared a Federal Disaster Area on February 9 (Presidential Disaster Declaration). Although the February storms had higher annual rainfalls, flooding in 1998 was considered less severe than other historical events due to flood control improvements, such as Cachuma Reservoir, and channel and debris dam maintenance performed by the County. Source: Water Resources Institute at California State University and AFTF, July 2010, AFTF Study Area Flood History; Santa Clara Valley Water District, updated October 2004, Report on Flooding and Flood-Related Damages in Santa Clara County February 2-9, 1998; Monterey County OES, September 2007, Multi-Jurisdictional Hazard Mitigation Plan; County of Santa Barbara Office of Emergency Management, September 13, 2011 (updated March 2012), 2011 Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan.	$ 15,000,000	Santa Barbara County	1998	2	Santa Maria	X	Flash, Stormwater, Engineered Structure Failure, Slow Rise	County of Santa Barbara Public Works Santa Maria River Levee; AFTF Study Area Flood History, Water Resources Institute at California State University; Report on Flooding and Flood Related Damages in Santa Clara County February 2-9,1998 http://www.co.monterey.ca.us/oes/LHMP/Final-Draft-Plan-and-Figures/Final-Draft-MJHMP-Sept-2007.pdf https://www.countyofsb.org/uploadedFiles/ceo/Section_5_Hazards_Assessment.pdf http://www.fema.gov/pdf/news/pda/1952.pdf
Central Coast	1998	May	5	San Luis Obispo		Southern San Luis Obispo	Heavy rain produced flash flooding and mudslides across Southern San Luis Obispo County and closed portions of Highway 166. **Source:** County of San Luis Obispo, July 2011, *County of San Luis Obispo Local Hazard Mitigation Plan.*							Flash, Debris Flow	http://www.slocounty.ca.gov/Assets/OES/Plans/Hazard+Mitigation+Plan+2011.pdf
Central Coast	2000	February	13	Santa Clara, Santa Cruz		Highway 1 and 116	Flash Flood, Widespread rain 24-hour accumulation of more than 5 inches. Urban and small stream flooding. Many roads, including Hwy 1 and Hwy 116, were closed. A number of trees were downed knocking out power. There were no deaths and only minor injuries. **Source:** Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update.*							Flash	Santa Clara County HMP
Central Coast	2001	January	11	San Luis Obispo			An extremely large swell, combined with high astronomical tides produced heavy surf and flooding of coastal areas along Central and Southern California. **Source:** County of San Luis Obispo, July 2011, *County of San Luis Obispo Local Hazard Mitigation Plan.*							Coastal	http://www.slocounty.ca.gov/Assets/OES/Plans/Hazard+Mitigation+Plan+2011.pdf
Central Coast	2001	March	5	San Luis Obispo		San Luis Obispo County including Nipomo, Arroyo Grande, Oceano and Pismo Beach	A powerful and slow-moving storm brought heavy rain (2 to 13 inches), strong winds, and snow to Central and Southern California and extensive flooding to San Luis Obispo County. In Oceano, the Arroyo Grande Creek overflowed, destroying numerous crops and damaging one home. The Pacific Dunes RV Park flooded. In Arroyo Grande, flooding along Corbett Creek damaged four homes and five classrooms at Arroyo Grande High School. In Pismo Beach, Pismo Creek flooding damaged homes in Pismo Court Village. In Nipomo, 20 to 30 homes were damaged. In Creston, there was widespread urban flooding. **Source:** County of San Luis Obispo, July 2011, *County of San Luis Obispo Local Hazard Mitigation Plan.*							Flash, Slow Rise, Stormwater	http://www.slocounty.ca.gov/Assets/OES/Plans/Hazard+Mitigation+Plan+2011.pdf
Central Coast	2001			San Luis Obispo		Regionwide	Arroyo Grande Creek breached in 2001, flooding many acres of high-value coastal farmland. **Source:** DWR, 2009, *California Water Plan Update 2009.*						X	Engineered Structure Failure	California Water Plan 2009
Central Coast	2002	December		Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz, Ventura	El Niño Floods	Regionwide	Heavy rainfall. **Source:** NOAA, 2013, *California Major Rain Files,* "December 2002 Event."							Flash	NOAA California Major Rain Files December 2002
Central Coast	2002	December	13-21	Santa Clara			December was the wettest on record, with heavy rain at many locations. There were three primary episodes of precipitation in December, culminating with December 13 through December 21. Flooding became a serious issue. Urban and small stream flooding with mudslides. **Source:** County of San Luis Obispo, July 2011, *County of San Luis Obispo Local Hazard Mitigation Plan.*						X	Flash, Debris Flow, Stormwater	Santa Clara County HMP
Central Coast	2004	December	27	San Luis Obispo		Gaviota, Paso Robles	A powerful Pacific storm brought heavy rain, snow, and flooding to Central and Southern California. Flash flooding closed Highway 101 at Gaviota and killed a Paso Robles man. **Source:** County of San Luis Obispo, July 2011, *County of San Luis Obispo Local Hazard Mitigation Plan.*				1	Paso Robles		Flash, Slow Rise	http://www.slocounty.ca.gov/Assets/OES/Plans/Hazard+Mitigation+Plan+2011.pdf
Central Coast	2005	January		Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz, Ventura		Regionwide	Five days of heavy rains caused widespread debris-flow and slow-rise flooding. **Regionwide:** Five days of heavy rains during January 7-11, 2005, caused widespread flooding throughout much of Southern California. On February 4, 2005, President Bush declared seven counties in Southern California disaster areas, including **Santa Barbara County.** Run-off was high from this event because 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 12, 320% of normal rainfall totals had been made. All three of the reservoirs on the Santa Ynez River were full and spilling. Widespread flooding was the result of the 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 million. **Ventura:** A landslide at the small town of Conchita was triggered, which 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 seven counties in Southern California disaster areas, including Ventura County. The Ventura River reached a maximum stage of 17.5 feet and maximum discharge of 152,560 cfs. High-water flows, scouring, and washouts in the Ventura River damaged several water wells and exposed water lines owned by the Ojai Valley Sanitary District. Severe erosion occurred along both embankments of the Ventura River. Damage from the January 2005 storms totaled more than $200 million. **Source:** Ventura County, December 2010, *2010 Ventura County Hazard Mitigation Plan;* "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History.*	$200 million	Regionwide	2005			X	Debris Flow, Slow Rise	http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf Ventura County HMP 2010

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Central Coast	2005	February		Santa Barbara		Santa Clara River, Santa Ynez River	In Santa Barbara County, flash flooding and mudslides closed down Highway 101 at Bates Road. A powerful Pacific storm tapped into a subtropical moisture source to produce heavy rain and flash flooding across Southwestern California. Overall, rainfall totals ranged from 4 to 8 inches over coastal areas to between 10 and 20 inches in the mountains. In **Ventura County** , State Route 150 was closed at the Dennison Grade due to flash flooding and mudslides. In **Los Angeles County** , numerous roadways were closed due to mudslide and flash flooding, including Interstates 5 and 10, Highway 101 in Hollywood, North Topanga Canyon Road in the San Fernando Valley, Malibu Canyon Road near Malibu, and East Colima Road in Walnut. In **Santa Barbara County** , flash flooding and mudslides closed down Highway 101 at Bates Road. With such heavy rainfall, both the Santa Clara River and the Santa Ynez River exceeded their respective flood stages. **Source:** County of Santa Barbara Office of Emergency Management, September 13, 2011 (updated March 2012), *2011 Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan* .	$ 2,000,000	Santa Barbara County	2005			X	Flash, Debris Flow	ftp://pwftp.countyofsb.org/Water/FTP/State%20request/Flood%20management/Multi_hazard%20Report/Cover%20Page%202011.pdf
Central Coast	2005	March		Santa Barbara, Ventura			Regionwide: Severe storms. Santa Barbara and Ventura. Source: "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013.							Flash	http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf
Central Coast	2005-2006	December-January		Monterey, San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz	New Year's Eve Flood of 2006	Pajaro and San Lorenzo River, Maria Ygnacio Creek, San Francisquito Creek, Carmel River, Salinas River, Arroyo Seco, Pesdero Creek, Saratoga Creek, Cambriano, Oceano	High flows were reported at Pajaro and San Lorenzo River, Maria Ygnacio Creek at University Drive near Goleta, San Francisquito Creek at Stanford University, Carmel River near Carmel, Salinas River at Paso Robles, Arroyo Seco near Soledad, Pesdero Creek near Pesdero, Saratoga Creek at Saratoga. **San Luis Obispo:** In late December of 2005 and early January 2006, a series of storms battered the County. Most of the damage occurred New Years Eve and day. High winds and saturated soils resulted in significant numbers of trees falling, particularly in the Cambria area where heavy damage was reported to a number of homes and businesses. There was one fatally as a result of a tree falling on a pickup truck while it was traveling on U.S. 101 in the Paso Robles area. Damage estimates for both private property loss, plus the loss and costs to local governments totaled approximately $3,000,000. **Source:** USGS, 2006--last modified January 2013, *Open File Report 2006-1182: Storms and Flooding in California in December 2005 and January 2006--a Preliminary Assessment;* County of San Luis Obispo, July 2011, *County of San Luis Obispo Local Hazard Mitigation Plan.*	$300 million-Statewide 3000000-San Luis Obispo	$300 million-Statewide 3000000-San Luis Obispo	$ 2,006	1	Paso Robles	X	Slow Rise, Debris Flow, Flash	http://pubs.usgs.gov/of/2006/1182/pdf/ofr2006-1182.pdf; http://www.slocounty.ca.gov/Assets/OES/Plans/Hazard+Mitigation+Plan+2011.pdf
Central Coast	2006	March-April	March 29-April 1	Santa Cruz	2006 Spring Storms		Flooding, landslides, mudslides, and road damage. State Declared Disaster for Severe rainstorms and flooding. **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D.*	X	Santa Cruz County					Flash, Debris Flow	http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf
Central Coast	2006	April		San Mateo, Santa Cruz			Severe rainstorms and flooding. **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013.							Flash	http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf
Central Coast	2006	May	10	Monterey, San Luis Obispo, Santa Cruz			Storms. Roadway damage. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D.*	X	Santa Cruz, Monterey, San Luis Obispo Counties					Flash, Debris Flow	http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf
Central Coast	2009	October	13	Monterey, Santa Clara			A strong low-pressure system made its way through Northern and Central California accompanied by deep tropical moisture and very strong winds. Heavy rain combined with the wind to cause numerous trees, tree limbs, and pole/telephone powers to fall. Pacific Gas and Electric reported over 277,000 customers had lost power in the San Francisco and Monterey Bay Areas with a cost of over $13 million in damages. The record-breaking heavy rain also led to flooding and debris flows. **Source:** Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update.*	$13 million	San Francisco and Monterey Bay Areas	2009			X	Flash	Santa Clara County HMP
Central Coast	2009	November	12-14	Santa Cruz			State declared flooding and mudslides disaster. **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013.							Flash, Debris Flow	http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf
Central Coast	2010	January		Ventura			**Ventura:** In January 2010, a series of powerful winter storms swept over Central and Southern California. Heavy rain, gusty winds, and heavy snow were witnessed in Ventura County. Rainfall totals ranged from 4 to 8 inches over coastal areas to 8 to 16 inches in the foothills and mountains. Flash flood watches were issued in areas of Ventura County that were damaged by wildfires in 2008. The January 2010 storm was initially anticipated to be similar in size to the January 2005 storm; however, actual rain totals showed that this storm was not as severe. According to the Ventura County Watershed Protection District (VCWPD), the watershed levels during the January 2010 storm were nowhere near the levels reached in 2005. **Source:** Ventura County, December 2010, *2010 Ventura County Hazard Mitigation Plan.*							Flash	Ventura County HMP 2010
Central Coast	2010	February		Monterey, Santa Cruz, Santa Barbara, Ventura	Tsunami	Pismo, Santa Barbara, Morro Bay, Coastline	Large tidal fluctuations in Pismo and Santa Barbara, with strong currents at harbor entrances, significant erosion along the coast, damage to docks, boats, harbor infrastructure, and minor flooding. Events caused approximately $3 million in damages statewide. Strong surges continued into the evening in Morro Bay. **Source:** USGS, California Geological Survey, NOAA National Weather Service, California Emergency Management Agency, California Coastal Commission, and Humboldt State University, 2013, *Effects of the February 27, 2010 Chilean Tsunami on the Harbors, Ports, and the Maritime Community in California with Comparison to Preliminary Evaluation of March 11, 2011 Tsunami.*	Approx $3 million	Statewide	2010				Tsunami	http://www.conservation.ca.gov/cgs/geologic_hazards/tsunami/documents/copri2011_chile.pdf
Central Coast	2010	December	19	San Luis Obispo		San Luis Obispo County, Oceano	A series of slow-moving storms brought 5 to 8 inches of rain, strong winds, and light snow to the area. The most severe damages began on December 19, with primarily affected areas in the South County, particularly in the Oceano area. Damages reported to Cal EMA were just over $2,000,000 in private property losses and an estimated cost and loss total to local governments of just over $1,100,000 for a total storm damage cost estimate of approximately $3,135,000. **Source:** County of San Luis Obispo, July 2011, *County of San Luis Obispo Local Hazard Mitigation Plan.*	$ 3,135,000	San Luis Obispo County	201				Slow Rise, Flash, Stormwater	http://www.slocounty.ca.gov/Assets/OES/Plans/Hazard+Mitigation+Plan+2011.pdf
Central Coast	2010-2011	December-January	Dec 17 - Jan 4	San Luis Obispo, Santa Barbara	Winter Storms		Severe winter storms, flooding, and debris and mudflows occurred from December 17, 2010, to January 4, 2011. The counties affected included San Luis Obispo and Santa Barbara. Severe winter storms, flooding, debris and mud flows. Approximately 163 residents were impacted, and roads and bridges were damaged. **Source:** County of Santa Barbara Office of Emergency Management, September 13, 2011 (updated March 2012), *2011 Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan* ; "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013.	$ 77,323,780	Santa Barbara, Inyo, Kern, Kings, Orange, Riverside, San Bernardino, San Diego, San Luis Obispo, Santa Barbara, and Tulare	2011			X	Flash, Debris Flow	ftp://pwftp.countyofsb.org/Water/FTP/State%20request/Flood%20management/Multi_hazard%20Report/Cover%20Page%202011.pdf, http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf, http://www.fema.gov/pdf/news/pda/1952.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Central Coast	2011	March		Monterey, San Luis Obispo, Santa Barbara, Santa Cruz, Ventura	Tsunami	Santa Cruz, Moss Landing, Morro Bay, Santa Barbara, Santa Barbara Harbor	**Santa Cruz:** Because of the tsunami, the area was declared a disaster area on March 11, 2011, by the governor; the majority of damage in the County occurred at Santa Cruz Harbor, which experienced high water and fast-moving currents starting the morning of March 11, 2011, and continuing through to the next afternoon, March 12. The tsunami destroyed "U" dock, and seriously damaged five other docks in the inner harbor. The harbor has slips for 827 boats and dry storage for an additional 225 boats; 70 of the slips were damaged. As a result of the tsunami, 13 boats were reportedly sunk and approximately 100 more were damaged. There were no fatalities in this area, but, at of the end of March, harbor and boat damage was well over $25 million. **Monterey:** Moss Landing. Maximum observed amplitude was 2 meters. Damages amounted to approximately $1,020,000. **San Luis Obispo:** San Luis Obispo County was declared a disaster area on March 16, 2011, by the Governor. Damages were limited to some broken pilings, several boat collisions, and one capsized boat. The maximum wave amplitude at Port San Luis was 8.6 feet (2.64 m). The highest surge, still at low tide, came within inches of overtopping the seawall and flooding the parking area. **Ventura County:** There was some damage to a dock in Ventura Harbor. **Santa Barbara:** On March 11, 2011, Japan had an earthquake that measured 9.0 on the Richter Scale. The effects of that earthquake generated a power tsunami that caused the issuance of a Tsunami Advisory for California. Maximum wave amplitude at Santa Barbara Harbor was 3.2 feet. The run up in Santa Barbara was 1.02 meters and the damage was estimated at $70,000. The damage recorded in the Santa Barbara City Harbor was to a crane, bait barge, and several boats. **Source:** California Coastal Commission, April 2011, *The Tohoku Tsunami of March 11, 2011: A Preliminary Report on Effects to the California Coast and Planning Implications*; City of Santa Barbara OES, June 12, 2012, *Tsunami Response Plan*.	$30 million, $70,000-Santa Barbara	Statewide	2011			X	Tsunami	http://www.cencoos.org/sections/news/Tsunami_2011.shtml http://www.santabarbaraca.gov/civicax/filebank/blobdload.aspx?BlobID=16558
Central Coast	2011	March		Monterey, San Luis Obispo, Santa Barbara			Rain storms. **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013.							Flash	http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf
Central Coast	2012	December		San Mateo			San Mateo: Rainstorm. **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013.							Flash	http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf
Colorado River	1861-1862	December-March	Winter	Mojave	The Great Flood	Mojave	The Mojave River rose 20 feet above average in present-day Oro Grande. Lakes formed in the Mojave Desert. **Source:** J.T. Austin, 2012, *Floods and Droughts in the Tulare Lake Basin*.							Slow Rise	
Colorado River	1905			Imperial		Salton Sea	The floods of 1905 came repeatedly in amounts exceeding all recent history. A break in an irrigation diversion structure caused the Colorado River to flow into the Salton Sea from 1905 to 1907. Imperial County is located in the southeastern corner of California and was organized in the wake of disastrous floods and water-control projects along the Colorado River in 1905 and 1907, which diverted waters into the then-dry Salton Sink and created the Salton Sea. **Source:** Imperial County, January 2007, I*mperial County Multi-Jurisdiction Hazard Mitigation Plan*; DWR, 2009, *California Water Plan Update 2009*.						X	Slow Rise, Engineered Structure Failure	Imperial County HMP
Colorado River	1907			Imperial		Salton Sea	The floods of 1905 came repeatedly in amounts exceeding all recent history. A break in an irrigation diversion structure caused the Colorado River to flow into the Salton Sea from 1905 to 1907. Imperial County is located in the southeastern corner of California and was organized in the wake of disastrous floods and water-control projects along the Colorado River in 1905 and 1907, which diverted waters into the then-dry Salton Sink and created the Salton Sea. **Source:** Imperial County, January 2007, I*mperial County Multi-Jurisdiction Hazard Mitigation Plan*; DWR, 2009, *California Water Plan Update 2009*.						X	Slow Rise, Engineered Structure Failure	Imperial County HMP
Colorado River	1910	January	1	San Bernardino		Santa Ana River, Mojave River, Mill Creek	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. Damages to tracks, bridges, and roundhouses were the heaviest ever seen. The 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 in diameter were washed out. All outside communication lines were disrupted. Agricultural lands washed away, as well as mature trees. Estimated discharge at the Santa Ana River was 45,000 cfs. Estimated discharge at the Mojave River was 62,000 cfs. Estimated discharge at Mill Creek was 11,000 cfs. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.		San Bernardino Valley				X	Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1916	January	22	Imperial, Riverside	Great Flood of 1916	Brawley, Santa Ana River, San Jacinto River	**Imperial:** Colorado River flood with a peak flow estimated at 250,000 cfs at Yuma caused flooding at Brawley. **Riverside:** Bridges were destroyed from Idyllwild to Corona. Both the Santa Ana River and San Jacinto River both flooded. Concrete channels of the Riverside Water Company and Gage Canal were washed out. Lake Elsinore levels rose very quickly, threatening the clubhouse on Lake Shore with flooding. All rail traffic was halted in Riverside County due to tracks washing out or landslides. One passenger train was marooned at Cabazon, and all service east and west was stopped. The domestic water supply reservoir holding Riverside's drinking water was undermined by floodwater and destroyed. Highway and road damage was heavy at San Timoteo 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. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.	$851, 450.00	Riverside County	1916			X	Flash, Alluvial Fan	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1921	June		Imperial		Brawley, Colorado River	Colorado River flooding caused by snowmelt in the Upper Colorado River basin also caused flooding in Lower Colorado River basin. Peak flow was estimated at 188,000 cfs at Yuma, which caused flooding at Brawley. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.							Slow Rise	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1921	December	19-26	San Diego			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 was much less than 1916. Far fewer people had built in floodways, making for far fewer dangerous situations. Trees and structures that were in the floodplains had washed away in 1916 and had not been replaced, causing this to be a much smaller event with far fewer damages. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.		San Diego County					Alluvial Fan	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1922	January	2	Riverside		Palo Valley, Colorado River	Colorado River flooding at Palo Valley washed out the levee and flooded the southern end of the Valley. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.		Palo Valley					Alluvial Fan, Flash, Engineered Structure Failure	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1926	April	5-8	Riverside		San Gorgonio, Whitewater Rivers	**Riverside:** A flood washed out railroad lines at El Casco, halting rail traffic. Check dams at San Jacinto River were 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 were marooned by flooding. The San Gorgonio River and White River were on a rampage. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.		San Jacinto River					Flash, Alluvial Fan	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Colorado River	1927	February	12-15	Riverside, San Bernardino		Loma Linda, City of Palm Springs, Mission Valley, Whitewater River, Mojavo River	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 floodwaters from Cucamonga Canyon. Rail lines suffered heavy damage in this area as well. Highway bridges and major roadways were destroyed by floodwaters. The flow in the Mojave was double that of normal years. There was flooding in the Wrightwood area. **Riverside:** The City of Palm Springs flooded, 3 miles of State Highway and the rail lines at Whitewater River were destroyed after a storm dropped heavy rain. All rail service in Riverside was suspended. The Whitewater River had high flood runoff levels. Whitewater River at Coachella breached the levee, and the rail bridge was destroyed. One man drowned clearing debris. Estimated damages from the flood to Riverside County were $1+ million. **San Diego** : A heavy rainstorm caused flooding in Mission Valley and led to an outbreak of typhoid fever when the sewer system was washed away. The floodwaters filled the reservoirs, supplying water for many years. Streets, homes, and businesses flooded. Old Towne Railroad Bridge was washed out. San Diego dams overtopped and caused widespread flooding downstream. Approximately 6.33 inches of rain fell in this time period. Estimated damages due to this flood were $117,000. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.	$ 1,117,000	1000000-Riverside County, 117,000- San Diego	1927	1	Riverside County	X	Alluvial Fan, Flash, Engineered Structure Failure	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1938	March	1-5	Riverside, San Bernardino	Great Flood	Santa Ana River, San Jacinto/Batiste Creek, Whitewater River, Timescal Creek, Lytle Creek, Mill Creek, Mojavo River	**Riverside:** Two people died as a result of flooding. The northern section of Riverside was inundated, and many people were forced from their homes. Men, women, and children had to be rescued from trees because 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 floodwaters. The roads, boathouse, lake, ornamental lights, and large trees were destroyed. Lake Evans drained to a thick layer of mud where there once had been a lake. 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 Temescal Creek to the County of Riverside amounted to nearly $2 million. **San Bernardino:** Major flooding for most of southern California was generated by a series of storms that dropped very heavy total rainfalls. 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. Large areas of the cities 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. More than 1,000 people were left homeless, over 150 homes were destroyed and many more flooded. Twenty-two people died as a direct result of the flood in San Bernardino County. Most USGS gauging 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 communication was 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 and 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 infrastructure was lost, including electric lines, natural gas lines, domestic water supply lines, telephone lines, and sewage lines and plants. Twenty-two homes in Victorville were swept away by flooding of the Mojave River, as were railroad lines, roads, and bridges. There were flooding and mud flows in Wrightwood close to the canyon mouth. There was in excess of $11 million in property loss damages in San Bernardino County alone. Peak discharge at the Santa Ana River was 100,000 cfs; 18,000 cfs on Mill Creek; 26,000 cfs on Lytle Creek, and 74,000 cfs 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. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*; DWR, 2009, *California Water Plan Update 2009*.	$ 13,000,000.00	2000000-Riverside, 11,000,000-San Bernardino	1938	24	2-Riverside, 22-San Bernardino	X	Flash, Slow Rise, Alluvial Fan	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1939	September	5-7	Imperial, Riverside	El Cordonazo	Brawley, El Centro, Riverside Desert Areas	**Imperial:** A series of tropical disturbances brought heavy rain. 5.02 inches fell in Brawley and 4.31 inches in El Centro, which exceeds the annual rainfall of 3 inches. Brawley's Main Street flooded curb to curb. Three bridges were destroyed north of Brawley, and five more had serious damages. The County Jail was flooded with 1.5 feet of water, and public schools were closed. One person died as a result of electrocution. A sharp increase in mosquitoes was seen. 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. Four storms affected southern California during the one month of September 1939, including the only storm on record as actually hitting California as a tropical storm. All these storms occurred during the El Niño of 1938-39. The remnants of a hurricane tracked northeastward across northern Baja California into southwest Arizona, generating rainfall of up to 7 inches in the southern mountains and southern and eastern deserts of southern California on September 4 through September 7, with the heaviest rain on September 5 and 6. Imperial received more rain than would normally fall in 2 years. **Riverside:** The tail end of a hurricane came inland, leaving behind tropical storms that brought very heavy rains to desert locations of Riverside County. Toward the end of the month, a tropical storm referred to as "El Coronado" moved to the areas and left behind extremely heavy rainfall over Southern California. The desert areas received twice as much rain as they generally see in 2 years. Eastern Coachella Valley was less than 2 feet of water. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*; Imperial County, January 2007, *Imperial County Multi-Jurisdiction Hazard Mitigation Plan*.	$ 110,000.00	Imperial County	1939	1	Imperial County	X	Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf http://www.co.imperial.ca.us/EmergencyPlans/MultiHazardMitigationPlan.pdf
Colorado River	1941	August	10	Riverside		Mecca	A thunderstorm in desert areas leaves behind massive rains. Many homes and structures were flooded. Mecca was flooded with over a foot of floodwaters. **Source:** Water Resources Institute at California State University and Alluvial Fan Task Force (AFTF), July 2010, *AFTF Study Area Flood History*.		Riverside County					Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1948	July	23	Riverside		Palm Desert, La Quinta	Thunderstorms in Palm Desert and La Quinta area triggered widespread flooding. Homes were flooded, with damage reported to roads with dip crossings. Agricultural lands suffered severe damage, with erosion and silting from flooding. Irrigation systems were destroyed. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.		Palm Desert, La Quinta					Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1951	August	27	Imperial	Tropical storm		This event resulted in rainfall of 2 to 5 inches in the mountains and deserts of southern California from August 27 through August 29. Many roads were washed out in the Imperial Valley; no other major damage occurred in southern California. This occurred during the El Niño of 1951-52. **Source:** Imperial County, January 2007, *Imperial County Multi-Jurisdiction Hazard Mitigation Plan*.		Imperial County					Flash, Stormwater	http://www.co.imperial.ca.us/EmergencyPlans/MultiHazardMitigationPlan.pdf
Colorado River	1956	July	25	Riverside			Thunderstorms in Riverside brought over an inch of rain in a very short timeframe, which led to flash floods. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.		Riverside County					Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1965	November-December		Riverside		Whitewater River, Santa Ana River, Acquits Creek	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 nine 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 and caused scour and damage to 13 miles of channel between Cathedral City and the Salton Sea. Approximately 2,000 acres of agricultural lands were flooded, with damages from erosion and silting. Citrus and date groves suffered heavy damages. Acquits Creek washed out many roads and damaged bridge abutments on State Highway 111. Floodwaters 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, along with several pieces of heavy construction equipment. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.	X	Riverside County		9	Riverside County	X	Alluvial Fan, Flash, Debris Flow	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Colorado River	1966	January	2-6	San Bernardino		Mojavo River, Victorville	There was flooding in high desert locations. The 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 line was washed out, disrupting service. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History;* USACE, June 1978, *Report for Flood Control and Allied Purposes, Whitewater River Basin, California*.		Lenwood, Hinkley, Victorville					Alluvial Fan	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1966	December	2-7	San Bernardino		Santa Ana River - Redlands, Mission-Anaja Creek, Day Creek, Lytle Creek, Cucamonga Creek, San Antonio Creek, Etiwanda Creek, Whitewater River	San Bernardino County was declared a disaster area by Governor Brown following damages that exceeded $3.5 million to County infrastructure, including roads, bridges, flood control works, and drainage facilities. Redlands sewer treatment lines were washed out. Alabama Street at the Santa Ana River was closed due to flooding and debris. The Edison Plant at East Highland was cut off when the footbridge was carried away in floodwaters. Roads were washed out, approaches to bridges were washed out at Waterman Avenue and Tippecanoe. Two homes in Mill Creek Canyon were destroyed, and the State Highway was washed out, along with Mountain Home Creek Bridge. The levee at the Lockheed Propulsion Company near Mentone was damaged, and some flooding of property occurred there. Highway 38 at the Fish Hatchery was washed out. Downtown Redlands was flooded, and the Kansas Street Bridge was undercut, losing its approaches. The Alabama Street Bridge approaches were dangerously eroded. Six homes near Day Creek were surrounded by floodwaters 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 was 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. At San Antonio Creek, one cabin was lost, and 12 others were badly damaged. Six families were evacuated from Mt. Baldy Village. Big Bear Lake was at its highest level since 1948. Estimated peak flow at Lytle Creek was 7,500 cfs. Estimated peak flow at Mill Creek for this event was 10,000 cfs. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*; USACE, June 1978, *Report for Flood Control and Allied Purposes, Whitewater River Basin, California.*	$ 3,500,000.00	San Bernardino County	1966	1	Montclair	X	Alluvial Fan	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1967	September	6	Riverside		Banning	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 runoff, resulting in flooding. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.		Banning					Alluvial Fan, Flash, Stormwater	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1969	January	18-28	San Bernardino	Winter '69 Storms	Regionwide	**San Bernardino:** This was an intense rain event, with 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 stream gauging stations on 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. This was a major flooding event for most of Southern California, and the President declared the State of California a disaster area. San Bernardino County sustained $23 million in damages 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. 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 more than 50 homes. Mill Creek changed its stream course in several locations, and levees and other flood protection devices 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. 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, with damages to transmission lines of Southern California Edison. Sewer and water supply pipelines were washed out by Sand Creek at Pacific and Lynwood, making emergency repairs necessary. Along Lytle Creek, 180 homes were destroyed, there were 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, I-15, and a freeway bridge that was under construction. Flood flows at Devil Creek and Cable Canyon damaged the highway, roads, bridges, and flood control facilities in the area. 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 Metropolitan Water District upper feeder line were a result of flooding in this area. Cucamonga Creek and its tributaries alone attributed over $10 million worth of damages. About 200 homes along Cucamonga Creek were destroyed or damaged heavily. Estimated peak discharge at the Santa Ana River was 40,000 cfs, at Mill Creek peak discharge was 35, 400 cfs, and peak discharge at Lytle Creek was 35,900 cfs. The 1969 flood was the worst on record for the counties of Ventura, Orange, San Bernardino, and Riverside.	$ 23,000,000.00	San Bernardino County	1969	1	San Bernardino County	X	Alluvial Fan, Slow Rise , Debris Flow, Engineered Structure Failure	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1969	February		San Bernardino	Winter '69 Storms	Regionwide	The rainfall totals for this flooding event were more moderate than the January event, but with the ground completely saturated, runoff 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, each had a different focus. January's storms came from the southwest, February's came from the northwest. Twelve people died in these events, with about $23 million in flood damages incurred. More than 2,500 were forced to evacuate areas along the rivers of Yucaipa, San Sevaine, 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. Roads 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 derailed at Barstow when rail lines were washed out. Three thousand people were evacuated from homes along the Mojave River. 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. Plunge Creek, City Creek and the Zanja all saw heavy loads of flood flows, and debris that 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 were destroyed. Four bridges were destroyed, two others were severely damaged, and a dip crossing was destroyed. There was heavy road damage to I-10, including four entrance/exit ramps. Rail lines were destroyed, sewer lines torn out, four different water lines 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. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; DWR, 2009, *California Water Plan Update 2009*; USACE, June 1978, *Report for Flood Control and Allied Purposes, Whitewater River Basin California*; USACE, December 1969, *Riverside County, Appendix G, Report on Floods of January and February 1969*.	$ 31,000,000.00	San Bernardino County	1969	12	San Bernardino County	X	Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Colorado River	1969	January-February		Imperial, Riverside, San Diego	Winter '69 Storms	Regionwide	**Imperial County:** 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 runoff. 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 toward the Naval Weapons Center. **San Diego County:** San Diego did not receive major damages from the 1969 floods, except for some cleanup of channels, minor road washouts, beach debris cleanup, and general cleanup 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 million. **Riverside County:** In January and then again in February of 1969, two floods struck Riverside County causing widespread damage. Four people lost their lives due to flooding in 1969, but many lives were saved on account of emergency evacuations. Flood damages in Riverside County amounted to $32 million. 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 and Norco, along San Saline Creek in Mira Loma, along the Whitewater River, along Noble Creek and Little San Gorgonio Creek in Cherry Valley, and along the San Gorgonio River at Cabazon. The greatest agricultural areas damaged by the floods were Prado Reservoir area, the areas near tributaries of the Temescal Wash, the San Jacinto River areas, and the Whitewater River locations. The greatest business losses were from the Temescal Wash in the Corona area, in Cabazon and areas emptying into Prado Reservoir, and the Whitewater River area. Transportation infrastructure saw the highest damages from the Whitewater River, the Santa Ana River, Temescal 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 were evacuated. Urban runoff in the western half of Riverside County was severe. Two areas were 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 SR 111 washed out at Thermal. Water, sewer, electrical, natural gas, and telephone lines were badly damaged or washed out along Whitewater River. Railroad lines and water lines that had been repaired after the January event were destroyed again in February. Sediment flows covered yards and agricultural lands, sometimes destroying crops and landscaping. Sediment flows filled debris basins and reservoirs, causing heavy erosion in some areas. Road repairs and emergency routes that had been constructed after the January event were washed out. This caused delays or detours of up to 54 miles. At Prado Basin, a maximum water surface elevation of 527.6 feet was reached 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.	$ 34,700,000	$ 32 Million - Riverside County, $ 2.7 Million - San Diego County	1969	4	Riverside County	X	Alluvial Fan, Slow Rise , Debris Flow, Engineered Structure Failure	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1974	October	22	Riverside		Eastern Coachella Valley, Palm Springs	A high intensity thunderstorm event struck the eastern area of Coachella Valley, including the Palm Springs area. About 3 inches of rain and hail fell within 2 hours. This was a relatively uninhabited area, so precise storm measurements were 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 flow. Two vacation cabins were destroyed in the Twentynine Palms region due to this event. Roads and highways were closed temporarily due to flooding issues, and nearly 1,000 power poles were struck by lighting during the event, causing brief power outages to a wide area. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History* .		Coachella Valley, Palm Springs, Little San Bernardino Mountains					Alluvial Fan, Flash, Debris Flow	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1975	September		San Bernardino	8-12	Twentynine Palms, Needles	Thunderstorms closed highways in San Bernardino County due to washouts, debris flow, and flooding. A 50-mile stretch of State Highway 62 east of Twentynine Palms was washed out by flash floods. U.S. Highway 95 was closed from Needles southward to the Nevada state line. The airport at Twentynine Palms was closed for about 3 hours due to several inches of floodwater on the runway. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History* .		Twentynine Palms					Flash, Debris Flow, Alluvial Fan	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1976	January	23-25	Imperial		San Felipe Creek, Mammoth Creek and Iris Creek	January 23-25, 1976: Topical storms revisited Bombay Beach area and left behind heavy rains. At San Felipe Creek, damages to agricultural lands sustained damage 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. **Source:** Imperial County, January 2007, *Imperial County Multi-Jurisdiction Hazard Mitigation Plan* ; Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.	$ 5,664,000.00	Imperial County	1976			X	Flash, Alluvial Fan	http://www.co.imperial.ca.us/EmergencyPlans/MultiHazardMitigationPlan.pdf AFTF Study Area Flood History
Colorado River	1976	September	7	Imperial, San Diego	Tropical Storm Kathleen	Ocotillo, San Diego County, Imperial County	California received record rainfall as a result of Tropical Storm Kathleen. Flooding caused catastrophic destruction to Ocotillo. Because Ocotillo is situated atop an alluvial fan, the path of the raging floodwaters was wide and changing, with over half of the town being totally destroyed. The waters piled a layer of sand that was over 3 meters high in some places. Six people drowned in the mud and waters in that city. Other parts of Imperial County experienced severe flash flooding. Flooding disrupted transportation routes in the city. Part of Interstate 8 along the San Diego County and Imperial County border was washed out. Agriculture was disrupted throughout the area. The area covered by the Salton Sea increased. Parts of California were declared a disaster area. Damage estimates ranged from $40 to $160 million. **Source:** Imperial County, January 2007, *Imperial County Multi-Jurisdiction Hazard Mitigation Plan* .	$40-160 Million	Throughout California		6	Imperial County	X	Flash, Debris Flow	http://www.co.imperial.ca.us/EmergencyPlans/MultiHazardMitigationPlan.pdf
Colorado River	1976	September	9-11	Riverside	Tropical Storm Kathleen	Palm Desert, Dead Indian Canyon	**Riverside** : 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. Nine hundred homes were damaged in this heavy rainstorm in the communities of Palm Desert, Rancho Mirage, Indian Wells, and Indio. The 1-day storm total was 7.38 inches. Total damages were estimated at $39 million. Governor Brown declared the area a disaster on September 13, and President Ford later declared 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 million 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 cfs. At Palm Canyon Creek, peak discharges were 4,050 cfs.**Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.	$39,000,000	Entire Event	1976			X	Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1976	September	10	San Diego	Tropical Storm Kathleen	Regionwide	Tropical Storm Kathleen brought 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 were washed out. This impacted transportation routes between San Diego County, 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 that had stood for at least 50 years washed out. One man was swept to his death there. 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 a flash flood. Many homes in this area saw considerable damages. $1.14 million in damages were estimated. Bolstered by an El Niño year, the peak of hurricane season, and a high storm velocity, Tropical Storm Kathleen reached Southern California on **September 10, 1976** , and caused widespread damage throughout the region. Levee failure in the Whitewater River resulted in inundation of a significant portion of Palm Desert. Flooding in the Coachella, Imperial, and Palo Verde valleys caused extensive damage to residential, commercial, and agricultural properties. Floodwater from McCoy Wash, a tributary of the Colorado River, caused an estimated $12 million crop loss in Palo Verde Valley. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*; DWR, 2009, *California Water Plan Update 2009*.	$1140000 - San Diego County $12 million - Palo Verde Valley	$1140000 - San Diego County $12 million - Palo Verde Valley	1976	1	1 -San Diego County	X	Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1976	September	23-24	Riverside	Tropical Storm Kathleen	Hayfield Pump Plant, Salton Sea, Rancho Mirage, La Quinta	Tropical storm brought 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 10. The Rancho Mirage and La Quinta areas also received flood damages to roads, mudslides, and bridge washouts. Damages were estimated at $3.9 million, with about $1.1 million in public property damages. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.	$3.9 million	Riverside County	1976			X	Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Colorado River	1977	August	15-17	Imperial, Riverside, San Diego	Tropical Storm Doreen		**Riverside:** Tropical Storm Doreen produced heavy rainfall in the Desert Hot Springs area, totaling 4.49 inches 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. **Imperial:** Tropical storm Doreen swept through Imperial Valley, the second "100-year storm" in 2 years. The storm ravaged 300 homes, wiped out portions of Interstate 8, and caused $15 million worth of damage to crops. Imperial 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 2 feet of water flooded City Council chambers. In El Centro, roads, sewer lines, and homes were flooded. In Calipatria, a ditch overflowed and the city was flooded with 2 feet of water. Sixteen housed were flooded there, with mud and water up to 5 inches. Interstate Highway 8 west of Ocotillo was damaged. **San Diego:** Tropical Storm Doreen was responsible for heavy rains that cost San Diego County in excess of $1.5 million 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. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*; DWR, 2009, *California Water Plan Update 2009*; Imperial County, January 2007, *Imperial County Multi-Jurisdiction Hazard Mitigation Plan*.	X	Riverside County				X	Flash, Alluvial Fan	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1977	September	10	Riverside		Thousand Palms, Bermuda Dunes, Cathedral City, Sky Valley	A late summer storm brought intense rain, hail, and lightning to the communities of Thousand Palms, Bermuda Dunes, Cathedral City, and Sky Valley. A dike in the Calle 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 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. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.	$ 708,000	Riverside County	1977				Alluvial Fan, Flash, Debris Flow, Engineered Structure Failure	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1978	January	15-17	Riverside		Coachella Valley	Flooding in Coachella Valley followed an 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. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.							Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1978	January	20	Riverside		Riverside Canal, Sunnymead, Woodcrest, Little Lake	The Riverside Canal broke in La Sierra, flooding some homes in the area. Other areas that had flooding problems on this date included Sunnymead, Woodcrest, and Little Lake. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.							Engineered Structure Failure	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1979	July	20	Riverside		Palm Desert, Rancho Mirage, La Quinta	A 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 areas were flooded. Some residents were swept out of their homes at night, most of whom survived the incident. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.	X	Palm Desert, Rancho Mirage, La Quinta		1	Riverside County		Alluvial Fan, Flash, Debris Flow	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1980	January-February	1/8-2/18	San Bernardino		Harrison Canyon, Mojave River	In 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. Twenty-five homes from this location were removed permanently, and the area was converted to flood channels. An elementary school was also flooded and removed. Other public property was damaged and flooded as well, including streets, 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 were impacted. Utilities, including electric power, cable, and water supply lines, were disrupted. The cost of this event was estimated at $2.5 million. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.	$ 2,500,000	San Bernardino County	1980			X	Alluvial Fan, Debris Flow	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1982	December	8-9	San Diego		Ocotillo	Heavy rains in eastern San Diego County resulted in massive flooding in Ocotillo. Roads, homes, and businesses were damaged by floodwaters. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.							Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1983	March-May	Spring	Imperial, San Bernardino		Lower Colorado River	**Imperial:** 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. **San Bernardino:** Colorado River flooding was a result of rapidly melting record snowfalls in the upper watershed. High volumes of water were released from the Glen Canyon, Hoover, Davis, and Parker dams, which caused flooding to low-lying areas in the Lower Colorado River watershed. Damage occurred to recreational facilities, such as campgrounds, boat docks, and launch sites, as well as the businesses servicing these facilities. Sewage treatment plants were also flooded. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*							Slow Rise	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1983	August	13-17	Riverside	Tropical Storm Ishmael	Cathedral City, Rancho Mirage	Tropical Storm Ishmael brought periods of high-intensity 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 (Tropical Storm Kathleen), 1977 (Tropical Storm Doreen)shows Tropical Storm Ishmael amounts to be the highest. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.	$ 19,000,000	Riverside County	1983			X	Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1988	August	24	Riverside		Cathedral City, Palm Springs	This storm event took place in the Cathedral City and Palm Springs areas. Homes, utilities, roads, and businesses experienced mild to severe flooding as a result. A trailer park at Highway 111 was flooded with a foot of water. Debris flows on roads was high. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History.*							Alluvial Fan, Debris Flow	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1990	September	5	Riverside		Beaumont-Banning	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, highways, and the yards of homes. Floodwaters surrounded some residential property, and flooded one business in this location.. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History.*							Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1993	January	5-20	Riverside		Whitewater River, San Gorgonio River, Murrieta Creek	During this 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 19, Riverside County was declared in a state of emergency by the Governor, and on February 3, 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 three cars that were swept away by the river. All seven 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. Federally Declared. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History; County of Riverside, March 2005, Riverside County Operational Area Multi-Jurisdictional Hazard Mitigation Plan.*	$ 12,629,191	Riverside County	1993	7	Riverside County	X	Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf http://hazardmitigation.calema.ca.gov/docs/lhmp/Riverside_County_LHMP.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Colorado River	1993	January-March	January 8-March 3, 9	Imperial			Severe winter storms brought widespread flooding to most of Southern California. In Imperial County, approximately 650 miles of County-maintained gravel roads suffered flood damages. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History.*							Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1995	January	4-24	Imperial, San Diego, Riverside	Severe Winter Storms	Salton Sea, Desert Shores, La Jolla, San Diego	**Imperial County:** A series of storms struck Southern California beginning January 4. On January 10, President Clinton declared Imperial County a disaster area. The Salton Sea continued to rise due to the heavy rainfall. A trailer park at Desert Shores had 134 lots flooded. Water in this area seeped into the underground electrical system, causing power outages and problems with the sewage treatment operations. Seawalls crumbled and fell. The Salton Sea Beach was submerged. Existing 16 miles of dikes, owned by Imperial Irrigation District, were raised 2 feet or more to prevent further flooding. **Imperial:** The communities of Desert Shores, Bombay Beach, and Salton Sea Beach were affected by the high winds and water. Wind-swept waves overtopped dikes along the southern portions of the Salton Sea, causing several county roads to be flooded. **San Diego** : On January 10, President Clinton declared San Diego County a disaster area. A San Diego woman drowned when her basement flooded. The floods resulted in many millions of dollars in losses. The Santee area was flooded when the San Diego River overflowed its banks. On January 22, rain soaked cliffs collapsed in La Jolla and killed two people on the beach below. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History;* Imperial County, January 2007, *Imperial County Multi-Jurisdiction Hazard Mitigation Plan* .		San Diego County	1995	3	San Diego County	X	Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1995	March	12	Imperial		Desert Shores, Bombay Beach, and Salton Sea Beach	During the storms of 1995, the communities of Desert Shores, Bombay Beach, and Salton Sea Beach were affected by the high winds and water. Wind swept waves overtopped dikes along the southern portions of the Salton Sea causing several county roads to be flooded. **Source:** Imperial County, January 2007, *Imperial County Multi-Jurisdiction Hazard Mitigation Plan* .							Flash	http://www.co.imperial.ca.us/EmergencyPlans/MultiHazardMitigationPlan.pdf
Colorado River	1998	February	6	Riverside	El Nino storm	Riverside County	Federally declared disaster. El Nino storms caused flooding, debris flows, road damage, and water damage to homes. **Source:** County of Riverside, March 2005, *Riverside County Operational Area Multi-Jurisdictional Hazard Mitigation Plan* .	$ 12,629,191	Riverside County	1998			X	Flash, Debris Flow	http://hazardmitigation.calema.ca.gov/docs/lhmp/Riverside_County_LHMP.pdf
Colorado River	1998	February	14-23	San Bernardino		City of San Bernardino	**San Bernardino:** Over 14.5 inches of rain fell during February of 1998. On February 23 alone, over 3 inches were recorded near the center of the City of San Bernardino, and the previous day previous, February 22, had 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 basins was an enormous undertaking, costing close to $1 million in public property works. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History;* Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D.*	$ 1,000,000	San Bernardino County	1998			X	Alluvial Fan	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	1998	September	9	Imperial		Cities of Imperial, Niland	Power lines and power poles downed across parts of Imperial and Niland. Numerous roofs were damaged. At least one billboard was toppled along Highway 86 south of town, and The Movies marquee was shattered. California Highway Patrol investigated a storm-related seven-car pileup, which occurred around 3:45 p.m. on Highway 111 just south of Aten Road. Some streets were flooded. Dense blowing dust reduced visibility to less than 1/8 mile before the heavy rain began. **Source:** Imperial County, January 2007, *Imperial County Multi-Jurisdiction Hazard Mitigation Plan* .							Flash	http://www.co.imperial.ca.us/EmergencyPlans/MultiHazardMitigationPlan.pdf
Colorado River	1999	July	11-12	Riverside		Yucaipa-Oak Glen Conservation Camp, Banning	Federally Declared. Flash flood. Camp and property damaged. Damage in county was $750,000. Three people were injured. Thunderstorms developed along the mountains to the south of Forest Falls/Mill Canyon and moved down the south slopes across Oak Glen, Cherry Valley, Beaumont, and Banning. As the floodwaters moved south down the Little San Gorgonio Creek and the San Gorgonio River, the thunderstorms also moved south dropping additional heavy rain. Several accidents along I-10 in the Banning Pass were attributed to poor visibility and cars hydroplaning in the heavy rain. Minor flooding was reported in southeast Yucaipa and Calimesa along Wildwood Creek. **Source:** County of Riverside, March 2005, *Riverside County Operational Area Multi-Jurisdictional Local Hazard Mitigation Plan;* City of Yucaipa, March 2005, *Yucaipa Hazard Mitigation Plan* .	$ 750,000	Riverside County				X	Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Riverside_County_LHMP.pdf
Colorado River	1999	September	10	Imperial			Urban/Small Stream Flooding. Considerable street flooding in and around Imperial; radar estimated amounts over 1.50 inches per hour. **Source:** Imperial County, January 2007, *Imperial County Multi-Jurisdiction Hazard Mitigation Plan* .							Stormwater, Flash	http://www.co.imperial.ca.us/EmergencyPlans/MultiHazardMitigationPlan.pdf
Colorado River	2000	March	5	Riverside		Desert Hot Springs	Flooding caused by rain and snowmelt; damage estimated at $300,000 and one person injured. **Source:** County of Riverside, March 2005, *Riverside County Operational Area Multi-Jurisdictional Local Hazard Mitigation Plan.*	$ 300,000	Riverside County					Flash, Slow Rise	http://hazardmitigation.calema.ca.gov/docs/lhmp/Riverside_County_LHMP.pdf
Colorado River	2000	August	29	Imperial, Riverside, San Diego		Eastern Riverside County, El Centro, Borrego Springs	**Riverside:** Flash flood due to severe thunderstorm, hail, heavy rain. **Imperial, San Diego:** Heavy rain resulted in some road closures with flooded streets in town. Heavy runoff from rainfall in the Borrego Springs area included 5-foot boulders that destroyed sections of County 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. **Source:** County of Riverside, March 2005, *Riverside County Operational Area Multi-Jurisdictional Local Hazard Mitigation Plan* ; Imperial County, January 2007, *Imperial County Multi-Jurisdiction Hazard Mitigation Plan* ; Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History* .							Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Riverside_County_LHMP.pdf http://www.co.imperial.ca.us/EmergencyPlans/MultiHazardMitigationPlan.pdf AFTF Study Area Flood History
Colorado River	2001	August	11	Imperial		Glamis	Flash Floods. Strong thunderstorms with very heavy rainfall caused washes and secondary roads to be flooded quickly. A campground near Senator Wash Reservoir flooded, and campers moved to higher ground to escape the floodwaters. State Highway 78, between Glamis and S34 Ogilby Road was closed due to floodwaters. **Source:** Imperial County, January 2007, *Imperial County Multi-Jurisdiction Hazard Mitigation Plan* .		Glamis					Flash	http://www.co.imperial.ca.us/EmergencyPlans/MultiHazardMitigationPlan.pdf
Colorado River	2001	November	24	Riverside		County Areas	Flood channel blocked. Homes flooded. **Source:** County of Riverside, March 2005, *Riverside County Operational Area Multi-Jurisdictional Local Hazard Mitigation Plan* .		Riverside County					Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Riverside_County_LHMP.pdf
Colorado River	2001	July	6	Riverside		Eastern Riverside County	Flash flood. Road damage, farmland damage, crop damage. **Source:** County of Riverside, March 2005, *Riverside County Operational Area Multi-Jurisdictional Local Hazard Mitigation Plan.*	$ 3,383,000	Riverside County				X	Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Riverside_County_LHMP.pdf
Colorado River	2003	August	18	Riverside		Moreno Valley, Cathedral City	Flash flood. Government buildings flooded. Damage estimated countywide at $500,000. **Source:** County of Riverside, March 2005, *Riverside County Operational Area Multi-Jurisdictional Local Hazard Mitigation Plan* .	$ 500,000	Riverside County	2003				Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Riverside_County_LHMP.pdf
Colorado River	2003	September	4	Riverside		Banning, Anza	Flash flood. Damage estimated countywide at $150,000. **Source:** County of Riverside, March 2005, *Riverside County Operational Area Multi-Jurisdictional Local Hazard Mitigation Plan* .	$ 150,000	Riverside County	2003				Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Riverside_County_LHMP.pdf
Colorado River	2003	November	12	Riverside		Palm Springs	Palm Springs - Flash flood- Riverside countywide damage estimated at $10,000. **Source:** County of Riverside, March 2005, *Riverside County Operational Area Multi-Jurisdictional Local Hazard Mitigation Plan* .	$ 10,000	Riverside County	2003				Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Riverside_County_LHMP.pdf
Colorado River	2004	August	13-14	Riverside		La Quinta	Monsoonal thunderstorms produced heavy rains in the La Quinta area. Highway 78 was closed due to flooding and debris cleanup. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History.*		La Quinta					Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Colorado River	2004	September	10	San Diego		Borrego Springs, Sun Gold	In the Borrego Springs area, a wall of water some 8 to 10 feet high and 150 yards wide came down Borrego Palm Canyon, inundating homes in the Sun Gold community. Approximately 70 to 90 homes were damaged with up to 2 feet of debris, water and mud that 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. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History;* County of San Diego, August 2007, *Floodplain Management Plan.*		Borrego Springs					Alluvial Fan, Debris Flow, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf
Colorado River	2004	December	28	Imperial		Bombay Beach, Niland	Flash floods. Heavy rains resulted in flooded roads and running washes and creeks. Near Bombay Beach, on the north shore of Salton Sea, homes were flooded, and at least three vehicles became stranded in the water. **Source:** Imperial County, January 2007, *Imperial County Multi-Jurisdiction Hazard Mitigation Plan.*		Bombay Beach, Salton Sea					Flash	http://www.co.imperial.ca.us/EmergencyPlans/MultiHazardMitigationPlan.pdf
Colorado River	2005	January	7-11	Riverside		Riverside County	Five days of heavy rains caused widespread rain throughout Southern California. On February 4, 2005, President Bush declared seven counties in Southern California disaster areas, including Riverside County. Runoff 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. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*		Riverside County				X	Alluvial Fan, Flash, Debris Flow	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Colorado River	2005	August	9	Imperial		Central Imperial County	Flash floods. Widespread strong thunderstorms with heavy rainfall caused rapid flooding of low-lying areas and roadways throughout central Imperial County. A measured rainfall of 3.36 inches fell between 4 and 6 p.m., as reported by the Cahuilla Remote Automatic Weather Station. California State Route 78 at Mile Post 66 was washed out by the flash floodwaters. **Source:** Imperial County, January 2007, *Imperial County Multi-Jurisdiction Hazard Mitigation Plan* .		State Route 78					Flash	http://www.co.imperial.ca.us/EmergencyPlans/MultiHazardMitigationPlan.pdf
Colorado River	2010	October	12	Imperial		Imperial County	Storm Damage. **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013.		Imperial County					Stormwater	http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf
Colorado River	2010-2011	December-January	Dec 17 - Jan 4	Riverside, San Bernardino, San Diego		Southern California - Regionwide	On December 29, 2010, Lieutenant Governor Abel Maldonado requested a major disaster declaration due to severe winter storms, flooding, and debris and mud flows during the period of December 17, 2010, to January 4, 2011. The Lieutenant Governor requested a declaration for Individual Assistance and Public Assistance for 11 counties and Hazard Mitigation statewide. He further requested direct Federal assistance. On January 11, 2011, Governor Edmund G. Brown Jr. amended the December 29, 2010, request and provided the estimate of amount and severity of damages found during the joint FEMA, State, Tribal, and local government Preliminary Damage Assessments conducted during the period of January 4-7, 2011. Preliminary Damage Assessments estimate damages immediately after an event and are considered, along with several other factors, in determining whether a disaster is of such severity and magnitude that effective response is beyond the capabilities of the State and the affected local governments, and that Federal assistance is necessary. On January 26, 2011, President Obama declared that a major disaster existed in the State of California. This declaration made Public Assistance requested by the Governor available to State, eligible local governments, and certain private nonprofit organizations on a cost-sharing basis for emergency work and the repair or replacement of facilities damaged by the severe winter storms, flooding, and debris and mud flows in Inyo, Kern, Kings, Orange, Riverside, San Bernardino, San Diego, San Luis Obispo, Santa Barbara, and Tulare Counties. This declaration also made Hazard Mitigation Grant Program assistance requested by the Governor available for hazard mitigation measures statewide. **Source:** FEMA, January 26, 2011, *FEMA-1952-DR: California – Severe Winter Storms, Flooding, and Debris and Mud Flows.*	$ 75,414,223	Inyo, Kern, Kings, Los Angeles, Orange, Riverside, San Bernardino, San Diego, San Luis Obispo, Santa Barbara, and Tulare	2011			X	Flash, Debris Flow	http://www.fema.gov/pdf/news/pda/1952.pdf
Colorado River	2012	July	30	Imperial		Calipatria, Ocotillo, Holtville	Rain drenched the Imperial Valley on Monday, shutting down major roads and leaving areas throughout the Valley underwater. **Source:** *Imperial Valley Press* , July 31, 2012, "Storm Floods Roads, Neighborhoods across Imperial County."							Flash	http://articles.ivpressonline.com/2012-07-31/storm-floods-roads_32966936
Colorado River	2013	August	25	Riverside, San Bernardino, San Diego	Tropical Storm Ivo		Several inches of rain fell on Sunday, flooding streets and businesses and causing mudslides that stranded vehicles on roadways. A woman was caught in a flash flood Sunday west of Needles, and she was found deceased in her vehicle, San Bernardino County coroner's personnel reported. **Source:** *KTLA5, Online News*, August 29, 2013, "Heavy Rain Pounds Inland Empire Amid Flood Warning"; *Redlands-Loma Linda Patch*, August 26, 2013, "Flash Flood Death: Woman Dies in Wash West of Needles"; *U-T San Diego*, August 25, 2013, "Flash Floods Strand Cars in Southern Calif. Desert."				1	San Bernardino		Flash, Debris Flow	http://ktla.com/2013/08/29/flood-warning-as-thunderstorms-expected-in-ie/#axzz2dSb3kpZZ http://redlands.patch.com/groups/police-and-fire/p/flash-flood-death-woman-dies-in-wash-west-of-needles http://www.utsandiego.com/news/2013/aug/25/flash-floods-strand-cars-in-southern-calif-desert/
North Coast	1852			Siskiyou		Shasta and Scott River	Flooding recorded on Shasta and Scott River. **Source:** FEMA, January 2011, *Flood Insurance Study Siskiyou County, California and Incorporated Areas.*							Flash	Flood Insurance Study, Siskiyou County CA. January 2011. FEMA.
North Coast	1853			Siskiyou			The first large floods in the Klamath River Basin after the settlement of the country are mentioned in a history of Siskiyou County. During the season of 1852-55 there were four floods, which washed out the few bridges that had been built and caused damage in the settlements of Scotts Bar, on the Scott River, and in Yreka, on Yreka Creek. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Flash, Slow Rise	
North Coast	1855	March	19	Humboldt		Humboldt Bay	Water in the bay agitated for 1 hour. **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan* .							Tsunami	Del Norte County HMP
North Coast	1861-1862	December-January		Del Norte, Humboldt, Glenn, Lake, Marin, Mendocino, Modoc, Siskiyou, Sonoma, Trinity	The Great Flood	Regionwide	Winter of 1861-62: The first floods of record occurred in December 1861 and January 1862, and came to be known to historians as the "Great Flood." A flood of great magnitude occurred about **December** 8, 1861. Rainfall had been heavy throughout November, and the rains at the end of that month were extremely heavy. On November 30, the Shasta and Scott Rivers flooded large tracts of land. On December 7 and 8, these rivers and their tributaries were at flood stages that evidently were higher than previous rises. Buildings were washed away or damaged at Yreka, Etna, and Fort Jones. Along the Salmon and Trinity rivers, the water washed out bridges, mills, and mining equipment. The main Klamath River from Happy Camp downstream to the Trinity River reached stages that have not been equaled since. A suspension bridge across the river near Martins Ferry, downstream from the mouth of the Trinity River, described as 98 feet above the river, was washed out. The peak of 1861 at Martins Ferry was recently determined to have been about 102 feet above the low water of 1937-38. A third flood on December 22, which according to a history of Siskiyou County, was the final one of the season of 1861-62. This third flood was apparently of lesser magnitude at least in the upper part of the basin. However, based upon the history of this flood season in other basins, it is possible that there were floods again in January 1862 on the Lower Klamath River. Torrential rains hammered the Humboldt Coast in late December, and devastating floods ensued. At high tide, the breakers forced themselves over "drift-wood, bulk heads, and break water, into the streets of Crescent City." Huge logs were carried onto the sidewalks, crashing into Front Street buildings, breaking windows and doors, and wreaking havoc. On the beach, debris piled to great heights. Forest giants were swept in by the floodtide. From one end of the beach to the other, huge redwood, spruce, and fir were piled one upon another. However, the losses at Crescent City were slight when compared with the loss suffered on the Klamath. Fort Turwar and the Wau-Kell were engulfed by swirling floodwaters, and most of the buildings were swept away or wrecked. Damage was so great that the post and agency were abandoned. William H. Brewer, a professor of Agriculture in the Sheffield Scientific School, visited the area in the autumn of 1863, almost 2 years after the floods. He found that the swirling waters had brought down a tremendous quantity of wood, much of which was cast onto the beaches between Crescent City and the Klamath River. He reported that it looked to him as if there were enough timber along the 10 miles of the shore "to make a million cords of wood. It is," he wrote, "thrown up in great piles, often a mile long, and the size of some of these logs is tremendous." He had measured at least 20. Although they were worn by water and their bark was gone, it was common to find logs 150 feet long and 4 feet in diameter at the small end, without the bark. According to other contemporary accounts, the beach at Crescent City for 8 miles was covered to a width of 200 yards and a depth of from 3 to 8 feet with debris. Goods of all sorts, but badly damaged, were often seen. There was enough timber on the beach to supply the California market for years. **Source:** DWR, 2009, *California Water Plan Update 2009*; National Park Service (NPS), 2013, *Redwood, History Basic Data* , "Chapter XII: Death and Destruction along the Humboldt Coast"; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California* .	X	Regionwide				X	Slow Rise, Debris Flow, Coastal	http://www.nps.gov/history/history/online_books/redw/history12a.htm http://www.waterplan.water.ca.gov/docs/cwpu2009/1009prf/3-rr_nc_pre-final_app.a-c.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
North Coast	1864			Siskiyou			Flooding recorded on Shasta and Scott rivers. A flood described as "nearly as great as that of 1861" occurred in the Scott River Basin on December 26, 1864. Precipitation in the Scott River Valley for the month of December exceeded the large amount measured during December 1861. The flood was probably of little importance on the main Klamath River. **Source:** FEMA, January 2011, *Flood Insurance Study Siskiyou County, California and Incorporated Areas*; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	Flood Insurance Study, Siskiyou County CA. January 2011. FEMA.
North Coast	1867			Siskiyou			Flooding recorded on Shasta and Scott rivers. Floods occurred in the basins of the Shasta and Scott rivers in December 1867. The Klamath River near the junctions with these tributaries was described as approaching the record flood of 1861. The flood of 1867 on other tributaries and on the Lower Klamath River evidently was of much less magnitude. **Source:** FEMA, January 2011, *Flood Insurance Study Siskiyou County, California and Incorporated Areas;* USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	Flood Insurance Study, Siskiyou County CA. January 2011. FEMA.
North Coast	1871	December		Del Norte, Humboldt, Lake, Mendocino, Sonoma		Klamath River at Somesbar; Shasta River near Yreka; Salmon River at Somesbar; Trinity River at Lewiston; Trinity River near Burnt Ranch; Trinity River near Hoopa. Smith River Basin.--Smith River near Crescent City. Eel River Basin. Eel River at Hullville.	The Russian River made practically a clean sweep of the resort areas and flooded part of Healdsburg and fertile farmlands in the vicinity. The damage in Mendocino County was chiefly to roads and bridges, and in Lake and Humboldt Counties to agricultural developments. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*	X	Mendocino, Lake, and Humboldt Counties					Slow Rise	USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California
North Coast	1875			Siskiyou			Flooding events. **Source:** FEMA, January 2011, *Flood Insurance Study Siskiyou County, California and Incorporated Areas.*							Slow Rise	http://klamathrestoration.gov/sites/klamathrestoration.gov/files/fema.siskiyou.flood.study.pdf
North Coast	1881			Del Norte, Humboldt, Mendocino, Sonoma Siskiyou		Coastal and Klamath River	There were notable floods on coastal streams from San Francisco Bay north to the Smith River. The peak stage of 1881 on the Klamath River at Weitchpec, although considerably below that of 1861, was one of the highest known. Flooding recorded on Shasta and Scott rivers. Morgan G. Tucker reported that in January heavy rains caused the Klamath River to rise to an unprecedented height, "sweeping everything within its reach." Enormous trees, which had been uprooted from the banks "came crashing down the river, some of which were deposited on the farms, while others found their way to the ocean." Houses were swept away, and livestock drowned. Morgan, who had beer living on the Klamath River during the last flood, assured the editor of the *Del Norte Record* that the river was "higher than in '61 and '62." **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; FEMA, January 2011, *Flood Insurance Study Siskiyou County, California and Incorporated Areas*; NPS, 2013, *Redwood, History Basic Data*, "Chapter XII: Death and Destruction along the Humboldt Coast."	X	Klamath River					Slow Rise	http://www.nps.gov/history/history/online_books/redw/history12a.htm USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California;
North Coast	1889			Lake, Modoc, Siskiyou			"A "New Chinatown" was constructed across Yreka Creek to the east, but again during the winter of 1889-90, floodwater destroyed the Chinese business district. A historical marker is located at the Yreka Chinese Cemetery along Montague Road (Hwy 3) in Yreka, California. **Source:** City of Yreka, 2013, "The Chinese Legacy."	X	Yreka					Slow Rise	http://www.waymarking.com/waymarks/WMH7WD_The_Chinese_Legacy_Yreka_CA
North Coast	1889-1890			Del Norte, Humboldt, Mendocino, Siskiyou, Sonoma, Trinity			The season of 1889-90 was notable for the quantities of snow deposited in the mountains of northern California, and for the exceptionally heavy rainfall at lower altitudes. **Siskiyou and Del Norte Counties** : A flood on the Smith River below the mouth of the Middle Fork on February 3, 1890, almost equaled the flood of 1861, as determined by the depth of water in a ranch house. An account of this flood period in Crescent City mentioned the occurrence of rain throughout January and of heavy snows in the mountains, followed by general rains from January 29 to February 3. It was believed that the snowfall in this basin during the winter of 1889-90 was the heaviest since settlement of the county. As in the Klamath River Basin, the flood runoff in 1890 probably came chiefly from the lower altitudes. **Humboldt County** : On February 3-4, 1890, the Klamath River from Happy Camp to below Weitchpec reached stages nearly as high as those in 1861, and the river from Blue Creek to its mouth reached record-breaking, stages, which were somewhat above those in the flood of 1861. On the upper Trinity River at Lewiston the flood did not attract attention. There was a flood on the Eel River on February 3, 1890, and another about the first of March 1890. A major flood occurred on January 24-25, 1890, which evidently was nearly the highest known at many points along the river. The crest at Ukiah was said to have been the highest for 20 years, and that at Cloversdale, the highest for 40 years. The river changed its course upstream from Geyserville, destroying a portion of the railroad. In Alexander Valley, upstream from Healdsburg, the water was reported to have overtopped the highway bridge by 5 feet, and apparently it was about 6 feet above the floodmark of 1878 at that place. The river at Healdsburg in the period January 24-25 was described in the *Healdsburg Enterprise* as the highest for 25 years. It was stated that a resident who had kept a record of the height of the river for that period had found the 1890 peak to be 2 feet higher than any other. Another account stated that the river at Healdsburg was higher than ever before known, even surpassing the peak of 1862. Downstream at Guerneville the crest on February 25 was reported to have been within 9 inches of the flood of 1879, and higher than any between 1880 and 1889. Heavy rains in late January 1890 caused the Klamath River to spill over its banks. Water from the river inundated the Hunter Creek bottom to a depth of 10 feet in places. South of the Klamath River, Jim Regan's and W. Norris' ranches, located on the flats, had suffered heavy damage. At Martins Ferry, the Klamath River rose 100 feet, the highest that the oldest resident could recall, and it carried away the suspension bridge. The river at Orleans Bar was higher than it had been in January 1862, while at Turwar it crested 3 feet higher than 28 years before. Source: NPS, 2013,*Redwood, History Basic Data*, "Chapter XII: Death and Destruction along the Humboldt Coast."	X	Klamath River				X	Slow Rise	http://www.nps.gov/history/history/online_books/redw/history12a.htm USGS, 1939, Water Supply Paper 843
North Coast	1890			Del Norte, Lake, Modoc, Siskiyou, Trinity			Flooding along Hamburg Gulch caused property damages along Gold Street, Pine Street, Lane Street, West Miner Street, North Street, Yama Street, and West Lenox Street. On February 3-4, 1890, the Klamath River from Happy Camp to below Weitchpec reached stages nearly as high as those in 1861, and the river from Blue Creek to its mouth reached record-breaking, stages, which were somewhat above those in the flood of 1861. On the upper Trinity River at Lewiston, the flood did not attract attention. The season of 1889-90 was notable for the quantities of snow deposited in the mountains of northern California, and for the exceptionally heavy rainfall at lower altitudes. A flood on the Smith River below the mouth of the Middle Fork on February 3, 1890, almost equaled the flood of 1861, as determined by the depth of water in a ranch house. An account of this flood period in Crescent City mentioned the occurrence of rain throughout January and of heavy snows in the mountains, followed by general rains from January 29 to February 3. It was believed that the snowfall in this basin during the winter of 1889-90 was the heaviest since settlement of the county. As in the Klamath River Basin, the flood runoff in 1890 probably came chiefly from the lowe altitudes. **Source:** FEMA, January 2011, *Flood Insurance Study Siskiyou County, California and Incorporated Areas;* USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*	X	Yreka					Slow Rise	Flood Insurance Study, Siskiyou County CA. January 2011. FEMA
North Coast	1891			Lake, Modoc, Siskiyou			**Source:** DWR, 2009, *California Water Updated Plan 2009*.							Slow Rise	Cannot Verify
North Coast	1904			Lake, Modoc, Siskiyou, Trinity			Flooding recorded on Shasta and Scott rivers. Floods in the Shasta and Scott River Basins on February 22, 1904, were described as the greatest since 1861. The Scott River washed out a bridge at Scotts Bar and flooded Fort Jones. As in the Sacramento River Basin, these floods evidently were relatively high on the smaller streams of the basin. The Klamath River at Happy Camp reached only a moderately high stage, as compared with those of 1890 and 1861. Its peak of February 22 was slightly exceeded again on March 8, 1904. **Source:** FEMA, January 2011, *Flood Insurance Study Siskiyou County, California and Incorporated Areas*; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	Flood Insurance Study, Siskiyou County CA. January 2011. FEMA

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
North Coast	1907			Lake, Modoc, Siskiyou			It was reported that on March 18, 1907, the Eel River at places downstream from Scotia was the highest known for 30 years. The peak stage at Scotia was roughly established by comparisons with the flood of 1914 at Scotia, Rio Dell, and Rohnerville, where the two floods were reported to have reached about the same stage. **Source:** DWR, 1966, *Bulletin No. 105-1 : Developing the North Coast An Action Program*; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	http://www.water.ca.gov/waterdatalibrary/docs/historic/Bulletins/Bulletin_105/Bulletin_105__1966.pdf
North Coast	1909			Sonoma			In 1909 a storm extended from Fort Ross on the coast to the Feather River Basin. **Source:** DWR, 2009, *California Water Plan Update 2009* .							Slow Rise	http://www.waterplan.water.ca.gov/docs/cwpu2009/1009prf/3-rr_mc_pre-final_app.a-c_pdf_13oct09.pdf
North Coast	1911			Humboldt, Lake, Mendocino, Trinity			Floods occurred on the Eel River in 1911. **Source:** Humboldt County Department of Public Works, Natural Resources Planning Division, July 1992, *Final Program EIR on Gravel Removal from the Lower Eel River.*							Slow Rise	http://co.humboldt.ca.us/planning/smara/docs/erg-05%20environmental%20_setting_67.pdf
North Coast	1912	November		Mendocino		Russian River	Historical records from 1911 through 2006 indicate that flooding, and additionally landsliding, embankment failures, and high winds, were experienced in portions of Mendocino County during the following periods of November 1912. **Source:** FEMA, January 2011, *Flood Insurance Study Siskiyou County, California and Incorporated Areas;* Mendocino County, 2008, *Mendocino County Multi-Hazard Mitigation Plan* .							Slow Rise, Debris Flow	Mendocino County MHMP
North Coast	1913-1914			Humboldt			A flood that reached its highest stages on December 31, 1913, and January 1, 1914, followed a period of several days of warm rainfall. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Flash	
North Coast	1915			Humboldt			On February 2, 1915, the Eel River from Scotia to Loleta rose to its highest recorded stage, possibly exceeded only in 1862. At Shively, 10 miles upstream from Scotia, the peak of 1915 was described as 14 inches above that of 1907. It was 3 feet higher than the peak of 1914 at Scotia, and was reported as 18 inches higher at Fortuna, 12 miles downstream. Homes and ranch buildings along the lower river were flooded. The peak of 1915 at Scotia has not been exceeded since, but was nearly equaled in December 1937. The latter flood was variously described as from 8 inches lower to 5 feet higher than that of 1915 at other points along the river. The two floods may be classified as approximately of the same magnitude. The Klamath River near Requa reached an exceptionally high stage on February 19-20, 1927. The flood was fairly high at Weitchpec and higher at Somes Bar than at any time since. It was apparently of much less magnitude in the upper part of the Klamath Basin. On the upper Trinity River at Lewiston it was lower than a previous rise in the same season. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	
North Coast	1926			Siskiyou			Slow rise flooding. **Source:** FEMA, January 2011, *Flood Insurance Study Siskiyou County, California and Incorporated Areas* .							Slow Rise	Flood Insurance Study, Siskiyou County CA. January 2011. FEMA
North Coast	1927			Del Norte, Humboldt, Modoc, Siskiyou, Trinity			Flooding from Yreka Creek damaged water mains, barns, garages, outbuildings, and a newly constructed sewer line. A flood of great magnitude occurred on the lower Smith River in the period February 19-20, 1927, and resulted in considerable overflow of the lowlands. This flood was of about the same magnitude as those in 1890 and 1861. **Source:** FEMA, January 2011, *Flood Insurance Study Siskiyou County, California and Incorporated Areas*; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*	X	Yreka					Slow Rise	Flood Insurance Study, Siskiyou County CA. January 2011. FEMA
North Coast	1928			Humboldt, Lake, Trinity			**Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf
North Coast	1937	December		Del Norte, Glenn, Humboldt, Lake, Marin, Mendocino, Modoc, Siskiyou, Sonoma, Trinity		North Coast region	Torrential flooding occurred throughout the region, inflicting heavy losses to roads and bridges in Mendocino County and agricultural development in Humboldt and Lake counties. The Russian River flooded a resort area in Sonoma County and farmland near Healdsburg. **Source:** DWR, 2009, *California Water Plan Update 2009,*	X	Mendocino, Humboldt, and Lake Counties				X	Slow Rise	http://www.waterplan.water.ca.gov/docs/cwpu2009/1009prf/3-rr_nc_pre-final_app.a-c.pdf
North Coast	1938	February		Lake			Slow rise flooding. **Source:** FEMA, January 2011, *Flood Insurance Study Lake County, California and Incorporated Areas* (Preliminary).							Slow Rise	http://www.r9map.org/Docs/FIS_LakeCoCA_Preliminary.pdf
North Coast	1943	April	6	Del Norte		Coastal, Crescent City	A tsunami hit Crescent City, California on April 6, 1943. Its origin was North Central Chile. **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan.*							Tsunami	Del Norte County HMP.
North Coast	1946	April	1	Del Norte, Mendocino		Crescent City , Arena Cove, Noyo Harbor	Tsunami flooding along the coast. A wave that struck at Crescent City with 3-foot amplitude and a 12-minute period were recorded for this event. **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan* .							Tsunami	http://www.calema.ca.gov/planningandpreparedness/documents/tsunamlocalguide3.doc
North Coast	1946	December	20	Del Norte		Crescent City	Tsunami with an origin of Nankaido, Japan. **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan.*							Tsunami	Del Norte County HMP.
North Coast	1952	March	4	Del Norte		Crescent City	Tsunami with an origin of SE Hokkaido Japan. **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan* .							Tsunami	Del Norte County HMP.
North Coast	1952	November	4	Del Norte		Crescent City	Tsunami with an origin of Kamchatka Peninsula, Russia. In Crescent City, four boats were overturned and concrete buoys were moved. **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan* .							Tsunami	Del Norte County HMP.
North Coast	1953	January		Del Norte, Humboldt		Redwood Creek, Smith River	The Smith River flooded 7,600 acres of farmland. Redwood Creek flooded Orick and severely eroded its banks, undercutting the U.S. Highway 101 bridge. Highway 101 washed out at the Humboldt-Del Norte county line, undercutting a bridge crossing U.S. Highway 101 in Orick. Two deaths were attributed to the flood. **Source:** USACE, June 1953, *Floods of 18 January 1953 in Northern California Coastal Streams* .	$6 million	Humboldt and Del Norte Counties		2	Humboldt and Del Norte Counties		Slow Rise	http://www.waterboards.ca.gov/water_issues/programs/tmdl/records/region_1/2003/ref1972.pdf
North Coast	1953	January		Modoc, Siskiyou		Klamath Basin	Historical flooding. **Source:** USACE, June 1953, *Floods of 18 January 1953 in Northern California Coastal Streams.*							Slow Rise	http://www.waterboards.ca.gov/water_issues/programs/tmdl/records/region_1/2003/ref1972.pdf
North Coast	1953			Siskiyou		Fort Jones	Substantial flooding occurred along Moffett Creek. **Source:** FEMA, January 2011, *Flood Insurance Study Siskiyou County, California and Incorporated Areas*.							Slow Rise	Siskiyou County CA. January 2011. FEMA
North Coast	1955			Siskiyou		City of Etna, Fort Jones	Substantial flooding occurred along Moffett Creek. In the City of Etna, substantial flooding occurred along Etna Creek. **Source:** FEMA, January 2011, *Flood Insurance Study Siskiyou County, California and Incorporated Areas.*							Slow Rise	Siskiyou County CA. January 2011. FEMA

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
North Coast	1955-1956	December-January		Del Norte, Humboldt, Lake, Mendocino, Modoc, Sonoma, Siskiyou, Trinity	1955 Christmas Flood	Smith, Klamath, Mad, Eel, Van Duzen, Trinity River, Redwood Creek, Van Duzen, Russian, Eureka, Santa Rosa, Guerneville Rivers, Noyo Creek, Mattole Creek	A warm Pacific storm caused widespread flooding in communities along the Van Duzen, Eel, Mad, and Klamath rivers. Flooding was characterized by extremely large flows, including record flows at some locations. Klamath, Eureka, Santa Rosa and Guerneville in particular sustained damages. The USACE estimated total flood damage for this event to be $36 million. The Sacramento River Flood Control Project and other flood management programs had been implemented. Project levees, dams, reservoirs, and waterways were employed to control much of the flood flows through the Sacramento system; however, local flooding, mostly on agricultural lands, still occurred. The December 1955 flood occurred following weeks of above-normal precipitation in the county, with rainfall measurements reaching as high as 24 inches over 3 days in Klamath. Damage occurred countywide, with the majority along the Smith River. These storms produced a peak discharge of 165,000 cfs with a stage of 41.2 feet at the Smith River gauging station. It is estimated that 7,600 acres of pasture and other agricultural lands in the Delta area were inundated to an average depth of about 3 feet by the Smith River and its tributaries. Floodwaters from the Smith River overflowed into Talawa Slough and raised the surface of Lake Earl. Due to the flat slope of the land adjacent to the lake, 3,200 acres of land bordering the lake were flooded. Agricultural damage consisted of silt, gravel, and debris from timbering operations being deposited on pastureland. There was high water on the Klamath River several times during the previous 65 years, but not until December 1955 did the Humboldt Coast again feel the full fury of the elements. Rains that pounded the area relentlessly during the third week of December sent the Klamath River surging upward. The low ground at the mouth of the river was flooded, and more than 1,000 persons were driven from their homes. Traffic over U.S. 101 south to Eureka was stopped by the high water because the south approach to the Douglas Bridge was washed away, and earth slides loosened by the rain blocked the Redwood Highway. Damage ran into the millions of dollars in Del Norte County. The communities of Klamath, Klamath Glen, and Orick were evacuated and suffered fearful damage. Klamath was inundated. On the morning of December 22, only the second stories and roofs protruded above the churning, muddy water. A reporter from the *Triplicate*, who flew over the area, observed that it was a horrible, sickening sight, as the highest floodwaters in the history of the great Klamath River smashed and swept all before its wild, muddy flow. Debris was in sight everywhere. Logs, trees, sides of houses, propane tanks, in fact almost everything, was observed being carried down the river. South of Crescent City, more than 300 refugees from the flood, most of whom had fled the Klamath Glen area on December 21, were huddled at the Arrow Mill. Another 300 had been evacuated south of the Klamath River and taken to the old radar site, when high water blocked their movement up U.S. 101 to Crescent City. An equal number had fled to the safety afforded by the mill of Simpson Redwood Co., at the Glen. About 100 were quartered at MacMillen's Ranch, just north of Klamath, while scores of tourists had remained in their cars, which had been stalled by mud slides. The rains providentially ceased on December 21, and the Klamath River crested the next afternoon. President Dwight D. Eisenhower on Christmas Eve proclaimed the flood-ravaged region in the Pacific northwest a "major disaster area." He called on all Federal agencies "to grant every aid as rapidly as possible." The local people, assisted by the Red Cross and Federal and State authorities, were able to cope with the situation. Within a short period, the physical damage to roads and buildings wrought by this calamity, the worse that had ever visited Del Norte County, had been repaired. The thousands of redwood and other trees uprooted and swept downstream by the flood could not be replaced, neither could the top soil that had been washed away. **Source**: Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; DWR, 2009, *California Water Plan Update 2009*; Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan*; NPS, 2013, *Redwood, History Basic Data*, "Chapter XII: Death and Destruction along the Humboldt Coast,"	$36 million	Klamath, Eureka, Santa Rosa, Guerneville	1955			X	Slow Rise, Debris Flow	http://www.nps.gov/history/history/online_books/redw/history12a.htm
North Coast	1957	March	9	Del Norte		Crescent City	Tsunami with an origin of Central Aleutian Islands. **Source:** *Crescent City/Del Norte County, August 2010, (Draft) Hazard Mitigation Plan* .							Tsunami	Del Norte County HMP
North Coast	1958	February-April		Del Norte, Glenn, Humboldt, Lake, Marin, Mendocino, Modoc, Siskiyou, Sonoma, Trinity		North Coast region streams	Many northern California coastal streams flooded, damaging agricultural lands, roads, and railroads. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D.*							Slow Rise	Taming Natural Disasters Appendix D
North Coast	1958			Siskiyou		Fort Jones	Substantial flooding occurred along Moffett Creek. **Source:** FEMA, January 2011, *Flood Insurance Study Siskiyou County, California and Incorporated Areas.*							Slow Rise	Flood Insurance Study, Siskiyou County CA. January 2011. FEMA
North Coast	1960	February		Del Norte, Glenn, Humboldt, Lake, Marin, Mendocino, Modoc, Siskiyou, Sonoma, Trinity		North Coast, coastal areas, Eel River	Many acres of agricultural land and many tourist cabins were flooded. Highways sustained $500,000 in damage. The Eel River rose and flooded the town of Weott. High tides and high winds caused flooding along the Pacific coast. **Source:** DWR, 1966, *Bulletin 69-65: California High Water, 1964-1965.*	$500,000-$1,000,000	North Coast	1960	2			Slow Rise, Coastal	http://www.water.ca.gov/waterdatalibrary/docs/historic/Bulletins/Bulletin_69/Bulletin_69__1965.pdf
North Coast	1960	May	22	Del Norte		Crescent City	A tsunami was recorded the full length of the California coast, including five North Coast Stations. At Crescent City Harbor, three persons were injured, boats and a dock were damaged, and city streets were flooded. Docks at Noyo Harbor were severely damaged. Regional damage was estimated at $30,000. The largest wave height in California was measured at the Crescent City tide gauge at 1.7 meters. Two vessels valued at $30,000 were lost at Crescent City. **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan;* USGS, May 1960, *Historic Earthquakes Chile 1960 May 22, "The Largest Earthquake in the World"* ; California Governor's OES California, 2013, *Local Planning Guidance on Tsunami Response, Second Edition, A Supplement to the Emergency Planning Guidance for Local Governments.*	$ 30,000	Crescent City	1960				Tsunami	USGS "Historic Earthquakes Chile 1960 May 22" http://earthquake.usgs.gov/earthquakes/world/events/1960_05_22_articles.php https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=4&cad=rja&ved=0CEgQFjAD&url=http%3A%2F%2Fwww.calema.ca.gov%2Fplanningandpreparedness%2Fdocuments%2Ftsunamlocalguide3.doc&ei=hrQTUp_1IorlyAHMt4H4Aw&usg=AFQjCNH67VanLg6SYwQrZHZlrO-7xkcbNg&sig2=tLu1QMSosHt7UE-3z5dlag&bvm=bv.50952593,d.aWc
North Coast	1962	October		Del Norte, Glenn, Humboldt, Lake, Marin, Mendocino, Modoc, Siskiyou, Sonoma, Trinity		Regionwide, Coffee Creek, Swift Creek, Mad River	Local flooding and landslides. Coffee Creek and Swift Creek rose and damaged their levees. High outflow damaged the Ruth Dam spillway on the Mad River. The Van Duzen River changed course near the Humboldt/Trinity county line and permanently inundated 25 acres. Disaster: 10/24/62, Flood and rainstorms (138), amended to include Placer, Trinity, and Lassen counties. Peak discharges were high in the Sacramento River tributaries that drain the Sierra Nevada, but few Coast Range tributaries north of San Francisco Bay had excessively high rates of flow. Notable exceptions were extremely high peak discharges in the Coast Range area south of Clear Lake. Adobe Creek near Kelseyville (Station 30) reached a record-breaking discharge of 1,440 cfs. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; USGS, 1968, *Water Supply Paper 1820: Summary of Floods in the United States during 1962.*	$4+ million	Coast Range				X	Debris Flow, Stormwater, Slow Rise, Engineered Structure Failure	Taming Natural Disasters Appendix D USGS Paper 1820 - "Summary of Floods in the US During 1962"
North Coast	1963	January-February		Humboldt, Lake, Siskiyou, Sonoma, Trinity		Ruth Dam, Loleta, Geyserville, Guerneville, Healdsburg, Eel River	The Scott River damaged infrastructure. High outflow from the Mad River damaged the spillway at Ruth Dam. The Eel River inundated its delta at Loleta and closed State Highway 211. The Russian River flooded causing damage to public works in Geyserville and Guerneville. Stormwater closed many roads in Mendocino and Sonoma counties. Dry Creek flooded Healdsburg and lowlands around Santa Rosa. 145 Declared Federal 2/25/63, amended 1/30/63 to include Orange County and Redondo Beach. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D* .	X	Ruth Dam, Geyserville, Guerneville				X	Slow Rise, Engineered Structure Failure	Taming Natural Disasters Appendix D
North Coast	1963	October	13	Del Norte		Crescent City	Tsunami. **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan* .							Tsunami	Del Norte HMP
North Coast	1964	March		Del Norte, Humboldt, Mendocino, Sonoma		Regional coast	The region was struck by a tsunami generated by the largest earthquake in North American history, an 8.4 on the Richter scale, which occurred in Prince William Sound along the south coast of Alaska. The tsunami towered more than 20 feet when it made landfall in the North Coast region. Two hundred eighty-nine homes and businesses were damaged by the big wave; 11 people were killed, and 3 individuals were never found. Damage came to an estimatec $11 million. Tsunami, FEMA Disaster DR-169. **Crescent City** : Ten people were killed, 35 injured, 52 homes, and 172 businesses damaged or destroyed. $10 million in damage. **Klamath River** : One person was killed, $4,000 damage to dock and boats at Requa. Damage was reported least 2.6 kilometers from the mouth of Klamath River. **Trinidad** : Observed run-up was 5.4 meters above mean lower-low water. **Hamburg Gulch:** Several houses were flooded in the vicinity of Yama and North Streets at the intersection with Gold Street. The storm produced sustained winds up to 61 mph. **Source** : DWR, 2009, *California Water Plan Update 2009*; Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan* ; FEMA, January 2011, *Flood Insurance Study Siskiyou County, California and Incorporated Areas* .	$11 million	North Coast	1964	11; 3 never found		X	Tsunami	Siskiyou HMP

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
North Coast	1964-1965	December-January		Del Norte, Glenn, Humboldt, Lake, Marin, Mendocino, Modoc, Siskiyou, Sonoma, Trinity	Northern California Christmas 1964 Disaster	Regionwide, Eel, Russian River, Mark West Creek, Cottonwood Creek - Hornbrook, East Fork Scott River - Callahan, Etna Creek - City of Etna, Indian Creek - Happy Camp, Klamath River - Seiad Valley, Sacramento River - City of Dunsmuir, Salmon River - Somes Bar, Scott River - Town of Fort Jones, Shasta River - Edgewood, Smith River, Klamath River, Redwood Creek, Trinity River, Freshwater Creek, Jacoby Creek, Mad River, Van Duzen River, Russian River, Eel River, Mattole Creek	A major flood resulted from high rainfall that was estimated to be comparable in this region to rainfall causing the Great Flood of 1861-1862. Twenty-seven State highway bridges and 132 County bridges were destroyed, resulting in the North Coast region being isolated from Scotia to Crescent City. Access to ground transportation was cut off due to highway, railroad, and bridge damages. The Northwestern Pacific Railroad track was twisted and uprooted for 30 miles in the Eel River canyon, and three major bridges were destroyed. Preliminary estimates for the six North Coast counties in early January 1964 included 24 deaths, as well as 1,653 injuries and destruction or damage to 4,784 houses, 374 small businesses, and 800 farm buildings. Twenty-six USGS stream gauges were destroyed. Total damage for the event was estimated to be $175 million. Abnormally heavy and continuous rainfall and windstorms caused the area to be declared Federal Disaster 12/29/1964. Redwood Creek overflowed and flooded Orick. The Eel River inundated its delta, damaging the channel and depositing debris. **Humboldt:** Hoopa valley was covered with silt. Heavy, warm rains started on December 21, 1964, and continued for days. Several rivers in Northern California peaked by the next day. Many bridges were destroyed, power lines went down and most towns were cut off. The town of Klamath at the mouth of the river was submerged in 15 feet of water.Heavy rains accompanied by runoff from an unusually large snowpack led to flooding of all river systems within the county in December 1964. The 1964 flood events are considered to be the floods of record for the Del Norte County planning area. The flood swept away the entire town of Klamath along the Klamath River, with the nearby towns of Camp Klamath, Requa, and Klamath Glen also sustaining heavy damage and one fatality reported. Millions of board-feet of lumber, thousands of acres of prime farmland, and 400 head of livestock were lost, causing a tremendous economic impact to the county. **Source**: Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; DWR, 2009, *California Water Plan Update 2009*; DWR, January 1965, *Bulletin 161: FLOOD! December 1964 – January 1965*; Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan*; *Two Rivers Tribune,* January 2013, "More Flood Tales"; County of Mendocino, July 2013, *Mendocino County Multi-Hazard Mitigation Plan.*	$213 million in property damage. Source Del Norte HMP	Regionwide	1964	24	Regionwide	X	Slow Rise	http://www.tworiverstribune.com/2013/01/more-flood-tales/
North Coast	1965	February	4	Del Norte		Crescent City	Tsunami with an origin of W. Aleutian Islands. **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan.*							Tsunami	Del Norte HMP
North Coast	1966	January		Del Norte, Glenn, Humboldt, Lake, Marin, Mendocino, Modoc, Siskiyou, Sonoma, Trinity		Regionwide	Smith River overflow inundated pastures and other areas and closed U.S. Highway 199 and local roads. The Klamath River destroyed a temporary bridge on State Highway 96. The Van Duzen River flooded Starvation Flats. Floodwaters isolated McCann, Shively, Holmes, Ferndale, Hoopa, Weitchpec, Orleans, and Willow Creek. Flooding closed U.S. Highway 199 and State Highways 1, 96, and 299. The Eel River deposited debris over 20,000 acres of farmland. **Source:** County of Mendocino, California, July 2013, *Mendocino County Multi-Hazard Mitigation Plan.*	X	Regionwide					Flash, Debris Flow	Mendocino HMP
North Coast	1966	October	17	Del Norte		Crescent City	Tsunami with an origin of Peru hit Crescent City. **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan.*							Tsunami	Del Norte HMP
North Coast	1966	December		Del Norte, Humboldt, Mendocino, Siskiyou, Sonoma, Trinity		Eel River	The Eel River produced inundation of lowlands around Ferndale. The rainfall during the December 1966 storm was statewide. In the north, the period extended from December 1 through December 14. **Source:** DWR, June 1968, *Bulletin 69-67: California High Water, 1966 – 1967.*							Slow Rise	http://www.water.ca.gov/waterdatalibrary/docs/historic/Bulletins/Bulletin_69/Bulletin_69__1967.pdf
North Coast	1967	January		Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity		Eel River, Russian River	The Eel River again produced some inundation of the lowlands at Ferndale. The Russian River flooded lowlands, including summer cabins at Guerneville. The first significant front reached the California North Coast on January 19. This front stalled in a semi- stationary position across Mendocino County and produced a number of waves which prolonged the period of moderate precipitation through December 21. **Source:** DWR, June 1968, *Bulletin 69-67: California High Water, 1966 – 1967.*							Slow Rise	http://www.water.ca.gov/waterdatalibrary/docs/historic/Bulletins/Bulletin_69/Bulletin_69__1967.pdf
North Coast	1968	January		Humboldt, Mendocino, Trinity		Eel River, Van Duzen River, Starvation Flat	The Eel and Van Duzen rivers flooded lowlands in the Eel River delta. A local levee failed inundating part of Starvation Flat. The Van Duzen River near Bridgeville reached the season's peak stage of 19.3 feet. The flood stage ir the Bridgeville area is 17 feet. Residents of the Starvation Flat area were evacuated by county officials on January 12 and again on January 20, when a second series of storms caused the Van Duzen River to crest at 17.9 feet. **Source:** DWR, June 1970, *Bulletin 69-69: California High Water, 1968 – 1969*.							Slow Rise, Engineered Structure Failure	http://www.water.ca.gov/waterdatalibrary/docs/historic/Bulletins/Bulletin_69/Bulletin_69__1969.pdf
North Coast	1968	May	16	Del Norte		Crescent City	Tsunami with a origin of Honshu, Japan. **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan*.							Tsunami	Del Norte County HMP
North Coast	1968-1969	December-January		Del Norte, Humboldt, Lake, Mendocino, Modoc, Sonoma, Trinity	Winter '68-69 Storms	Elk River, Gualala River, Northern CA Coastal, Russian River	The Eel and Van Duzen rivers overflowed, flooding farmland, roads, and isolated residences in the Eel River delta. On the Russian River, Guerneville flooded twice, with low damages incurred. Roads were flooded at Guerneville, Geyserville, and Hopland. Declared Federal 1/26/69. During January 1969, precipitation amounts ranged from 195 percent of normal in the north. In January the precipitation spread southward with the front depositing up to 18 inches in the North Coast basins. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; DWR, June 1970, *Bulletin 69-69: California High Water, 1968 – 1969*.	X	Eel and Van Duzen Rivers				X	Slow Rise	http://www.water.ca.gov/waterdatalibrary/docs/historic/Bulletins/Bulletin_69/Bulletin_69__1969.pdf
North Coast	1969-1970	December-March	Winter	Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity	Northern California Flooding	Eel River, Russian River, Scott River, Smith River	The Scott River eroded its banks and deposited up to a foot of fine sediment in many buildings at Fort Jones. Smith River flooding damaged low-lying farmland and trailer parks. Mudslides closed State Highways 96 and 199 and other local roads. Eel River flooding washed out a levee near Starvation Flat and inundated Pepperwood, Port Kenyon, and local roads. Flood damage occurred all along the Russian River, particularly from Healdsburg to the Pacific coast. A mudslide blocked U.S. Highway 101 north of Cloverdale and north of Ukiah. The flood brought inundation to approximately 550,000 acres, including portions of several small towns. Declared Federal 2/16/1970. This storm series continued until the end of the month and dropped a large amount of rain on the already wet North Coast area. The high precipitation in the area caused some of the rivers to rise above flood stages, with flooding reported on the Smith, Klamath, Eel, and Russian Rivers. When the rain stopped at the end of the month, precipitation totals had climbed to 130 percent of normal in the north and 160 percent of normal in the southern portion of the North Coast area. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; DWR, 2009, *California Water Plan Update 2009*; Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan*; DWR, August 1971, *Bulletin 69-70: California High Water, 1969 – 1970.*	public-$19,659,078; private-$7,998,400; TOTAL-$27,657,478. Source: Taming natural disasters Appendix D	Regionwide	1970			X	Slow Rise, Flash, Debris Flow, Engineered Structure Failure	http://www.waterplan.water.ca.gov/docs/cwpu2009/1009prf/3-rr_nc_pre-final_app.a-c.pdf
North Coast	1970	November-December		Del Norte, Glenn, Humboldt, Lake, Marin, Mendocino, Modoc, Siskiyou, Sonoma, Trinity		Regionwide	The Van Duzen River inundated lowlands at Bridgeville and the Eel River overflowed in its delta, depositing silt and debris. Mudslides closed several roads, and the railroad was closed for several hours at Pepperwood. Local runoff flooded parts of Ferndale and Eureka. The Russian River overflowed at Guerneville, flooding lowlands and some homes. A series of storms hit the North Coast Hydrographic Area from October through December, causing flood stages on some rivers. A new series of storms in mid-November continued into December, causing rivers to rise rapidly. The Smith and Eel rivers reached flood stages for a short time. Rivers rose again in January and flood stages were reached again on the Smith and Eel rivers. Numerous mudslides closed several roads, but little damage was reported. The railroad was closed for several hours near the town of Pepperwood. The continuing downpour in early December also caused flooding from local runoff in Ferndale and Eureka. Rain showers continued through the rest of December, but no flooding occurred. **Source:** DWR, September 1972, *Bulletin 69-71: California High Water, 1970 – 1971.*							Slow Rise, Stormwater, Debris Flow	http://www.water.ca.gov/waterdatalibrary/docs/historic/Bulletins/Bulletin_69/Bulletin_69-70__1971.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
North Coast	1971	January		Del Norte, Glenn, Humboldt, Lake, Marin, Mendocino, Modoc, Siskiyou, Sonoma, Trinity		Regionwide	The Smith River flooded into lowland areas near the Pacific coast. Lowlands along the Klamath River were flooded and damaged by debris and silt deposits. The Eel River flooded its delta. Mudslides closed several roads, including Highway 101. Heavy rain lasting several days began again on January 8, 1971, and caused the Smith River to go slightly over flood stage. Mud and rock slides closed several highways and caused minor damage. During this storm a double peak occurred. The river exceeded flood stage on January 17, then receded. During this rise Lakes Earl and Talawa were low and very minor lowland flooding occurred. The river peaked again 24 hours later at an identical stage but with very different results. Because the lakes were full, the second peak caused extensive lowland flooding, closing highway 199 for several hours. Storms with heavy rain and gale winds entered again in January, and this time mudslides closed several roads. One county employee was killed by a slide while working to clear a previous slide. Some lowlands along the river were flooded, but the only damage was deposition of debris and silt. The highest peak of the entire season, which occurred on January 17, was well below warning stage. **Source:** DWR, September 1972, *Bulletin 69-71: California High Water, 1970 – 1971*.				1			Slow Rise, Debris Flow	DWR Bulletin 69-71 http://www.water.ca.gov/waterdatalibrary/docs/historic/Bulletins/Bulletin_69/Bulletin_69__1971.pdf
North Coast	1971	July	26	Del Norte, Humboldt		Coastal, Crescent City	Tsunami with an origin of New Ireland, Papua New Guinea. **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan*.							Tsunami	Del Norte County HMP
North Coast	1972	January		Del Norte		Smith River	The highest flooding since December 1964 occurred along the Smith River. The crest near Crescent City was 8.4 feet above flood stage. FEMA Disaster DR-329. **Source:** U.S. Department of Commerce, et al., January 1972, *Climatological Data: National Summary, Volume 23*.							Slow Rise	http://books.google.com/books?id=IFRRAAAAMAAJ&pg=RA1-PA115&lpg=RA1-PA115&dq=1972+del+norte+county+smith+river+flooding+california&source=bl&ots=zfCiXqupVw&sig=h7YO8TZnnVRqLbSXcKKKXrCL7Mc&hl=en&sa=X&ei=A2TpUefIDsKbygHao4DABw&ved=0CEQQ6AEwAw#v=onepage&q=del
North Coast	1972	March		Humboldt		Freshwater, Redwood Creek	Slow rise flooding. **Source:** County of Humboldt, February 1998, *Humboldt County General Plan Volume I, Framework Plan, Section 3300: Water Resources*.							Slow Rise	Humboldt County General Plan http://co.humboldt.ca.us/planning/genplan/framewk/
North Coast	1972	April	5	Del Norte			Severe Storms, Flooding. FEMA Disaster DR-329. **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan* .							Stormwater	Del Norte HMP
North Coast	1973	January	19	Siskiyou			Flooding was recorded. **Source:** County of Siskiyou, December 2011, *Siskiyou County Hazard Mitigation, Volume 2: Planning Partner Annexes*.	$ 86,206	Siskiyou County					Slow Rise	http://www.co.siskiyou.ca.us/phs/emerg/docs/SiskiyouCoHMP_Vol%202_PublicReviewDraft_REDUCED.pdf
North Coast	1973	February	8	Del Norte, Humboldt			FEMA Disaster DR-364. $100,000 estimated damages. **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan*.	$ 100,000	Del Norte County					Coastal	http://www.fema.gov/disaster/364
North Coast	1973	November	3-17	Del Norte, Humboldt, Lake, Marin, Mendocino, Modoc, Siskiyou, Sonoma, Trinity		Regionwide	November 1973 was very wet in the Klamath River Basin, with some stations reporting almost three times the normal rainfall. However, the timing and distribution was such that the river remained well within its banks. Storm damage was mainly caused by slides on State highways and county roads. December precipitation was slightly above normal, but no serious problems developed. Although the November1973 rainfall was well above normal, no major flooding occurred on the Eel River. Some delta livestock had to be moved to higher ground on November 10 and again on November 30 when the Eel River rose above warning stage at Fernbridge. Above-normal rainfall caused some fluctuations in river stage in December, but the Eel remained below warning stage. The persistent November rains brought nearly 46 inches of rain to Gasquet Ranger Station in the Smith River Basin, with 1-day amounts of 7.7 inches on November 6 and 6.5 inches on November 11. This drenching caused numerous earthslides, with most of the damage occurring to the state and local road systems. The Smith River reached flood stage at Dr. Fine Bridge (Highway 101), but no major damage was reported. **Source:** DWR, November 1974, *Bulletin 69-74: California High Water, 1973 – 1974*.							Coastal, Debris Flow, Flash	http://www.water.ca.gov/waterdatalibrary/docs/historic/Bulletins/Bulletin_69/Bulletin_69__1974.pdf
North Coast	1974	January		Del Norte, Glenn, Humboldt, Lake, Marin, Mendocino, Modoc, Siskiyou, Sonoma, Trinity		Regionwide	Major flooding and heavy damage occurred, particularly on the upper Klamath and upper Trinity rivers and at Klamath Glen. On the upper Klamath River, numerous highways, roads, and bridges were inundated and damaged by landslides. The Eel River inflicted major damage on U.S. Highway 101 from Garberville to Cummings and badly damaged county roads. The Northern Pacific Railroad was out of service due to landslides that blocked and damaged the track. **Source:** DWR, 2009, *California Water Plan Update 2009*; County of Siskiyou, December 2011, *Siskiyou County Hazard Mitigation, Volume 2: Planning Partner Annexes*.						X	Slow Rise, Debris Flow	Siskiyou County HMP
North Coast	1974	March-April		Del Norte, Glenn, Humboldt, Lake, Marin, Mendocino, Modoc, Siskiyou, Sonoma, Trinity		Regionwide	Mud flows closed some roads along the Klamath and Trinity rivers. The Eel River inundated its delta again, nullifying post-January cleanup efforts, although there was less damage than that in January. Fields and orchards near Geyserville and Healdsburg were flooded, as was Guerneville. **Source:** USGS, 2013, Water *Supply Paper 2502: Summary of Significant Floods in the United States, Puerto Rico, and the Virgin Islands, 1970 through 1989*.							Slow Rise, Debris Flow	http://ks.water.usgs.gov/pubs/reports/wsp.2502.sum74.html
North Coast	1974	October	3	Del Norte		Coastal	Tsunami. **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan* .							Tsunami	Del Norte HMP
North Coast	1974			Siskiyou		City of Etna, Fort Jones	Yreka, **t**he flood of January 1974 reached the levee of the old sewage treatment plant. In the City of Etna, substantial flooding occurred along Etna Creek. Substantial flooding occurred along Moffett Creek. **Source:** FEMA, January 2011, *Flood Insurance Study Siskiyou County, California and Incorporated Areas*.							Slow Rise	Flood Insurance Study, Siskiyou County CA. January 2011. FEMA.
North Coast	1975	March		Humboldt		Redwood Creek	The Eel River flooded its delta. Mudslides closed highways and roads. **Source:** County of Humboldt, February 1998, *Humboldt County General Plan Volume I, Framework Plan, Section 3300: Water Resources*.							Slow Rise, Debris Flow, Flash	http://co.humboldt.ca.us/gpu/docs/meetings/natl_res/04chapte.pdf
North Coast	1978	January		Del Norte, Mendocino		Coastal	A combination of high astronomical tides, strong onshore winds, high storm waves, and excessive rainfall produced an aggravated erosional condition in January 1978. A series of storms emanated from a more southern direction than normal, carrying larger amounts of precipitation and wind. These storms, in conjunction with seasonal high tides, generated large destructive storm surges that battered the northern California coastline, damaging many of the better-protected beaches. Jetties and breakwater barriers were overtopped and in some cases undermined. **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan*; County of Mendocino, California, July 2013, *Mendocino County Multi-Hazard Mitigation Plan*.							Coastal	Del Norte and Mendocino County HMPs
North Coast	1980	February		Lake			Coastal flooding. **Source:** County of Lake, February 2005, *Lake County, California, Natural Hazard Mitigation Plan*.							Coastal	Lake County Natural Hazard Mitigation Plan
North Coast	1981	January	18	Humboldt		Francis Creek	Coastal flooding. **Source:** County of Humboldt, February 1998, *Humboldt County General Plan Volume I, Framework Plan, Section 3300: Water Resources*.							Coastal	Humboldt County HMP
North Coast	1981	December	19	Humboldt, Mendocino		Countywide	The Mad River washed out a bridge at Blue Lake. The Eel River rose, damaged parks and recreational areas near Benbow and Dyerville and eroded a quarter mile of levee at Fortuna. State Highway 1 was damaged between Rockport and Manchester by overflow of small coastal streams. Culvert blockage caused washouts along U.S. Highway 101 north of Leggett. The Russian River flooded Guerneville. **Source:** County of Humboldt, February 1998, *Humboldt County General Plan Volume I, Framework Plan, Section 3300: Water Resources*.	X	Mad, Eel, and Russian Rivers					Flash, Coastal, Stormwater, Engineered Structure Failure	Humboldt County HMP

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
North Coast	1982-1983	December-April		Del Norte, Glenn, Humboldt, Lake, Marin, Mendocino, Modoc, Siskiyou, Sonoma, Trinity		Regionwide, Russian River	Tropical Storm Marge caused many small streams to clog with silt and debris and to overflow. Heavy seas damaged coastal structures in the Eureka area, breached the inner jetty at Crescent City and destroyed structures at Point Arena. Mudslides damaged property in Humboldt County, isolated Petrolia, destroyed water supply facilities, clogged streets, and undermined Interstate Highway 5 in Dunsmuir, and washed out State Highway 1 near Jenner and Bodega Bay. A slide dammed the Mattole River and destroyed several homes. Road closures, washouts, and inundation were common in the region, including State Highways 36 and 299 in Trinity County, and a mudslide killed one person. Brought on by El Niño weather conditions, extremely wet conditions coupled with voluminous Sierra runoff led to very high river stages throughout the system and caused extensive damage to the flood management system of the Sacramento Valley. The winter of 1983 brought an extremely unusual series of high tides, storm surges, and storm waves. Record high tides were recorded in Del Norte County, with the worst coastal flooding recorded since the 1964 Alaska tsunami. Russian River flooding continued in Guerneville. The Russian River again flooded in Guerneville. Damage also occurred in Cotati and Santa Rosa. Bodega Bay and Jenner were damaged by flash floods on small coastal streams. Declared Federal 1/7/82. **Source:** DWR, 2009, *California Water Plan Update 2009*; Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan*; National Weather Service, 1982, *Report on the San Francisco Bay Area Storm, January 3 – 5, 1982*,; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D;* Gualala River Watershed Council, April 9, 2012, *Watershed Thoughts.*	public-$151,185,870; private-$158,641,170; agricultural-$213,789,992; TOTAL-$523,617,032 Source: Taming Natural Disasters Appendix D	Regionwide	1982-1983	1		X	Flash, Debris Flow, Coastal, Stormwater, Slow Rise, Engineered Structure Failure	http://www.gpo.gov/fdsys/pkg/CZIC-qc925-1-u8c3-r37-1982/html/CZIC-qc925-1-u8c3-r37-1982.htm This source discusses Russian River Flooding http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf http://gualalawatershed.wordpress.com/2012/04/09/gualala-storms-and-river-flow/
North Coast	1986	February		Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity	St. Valentine's Day Storm	Regionwide, Klamath, Mad, Eel, Russian Rivers	The "St. Valentine's Day Storm," fueled floodwaters from the Klamath, Mad, Eel, and Russian rivers, which washed out highways in many places and isolated residences throughout the region. Also, there was coastal flood damage at Crescent City. The flooding caused major damages to campgrounds and damaged more than 100 redwood trees in Humboldt Redwoods State Park at Weott. A landslide blocked the Eel River at Richardson Grove, flooding campgrounds, and a wave washed away park facilities. Damages were estimated at more than $28 million for the region, with 737 homes and 80 businesses damaged. Rains, winds, flooding and mudslides, FEMA Disaster DR-758. State records of February 1986 floods indicate that Lake County suffered damage to an estimated 500 residences and 50 commercial facilities over a 10-day period from an estimated 20 inches of rainfall. Clear Lake was above flood stage for 65 days. USACE estimates the flood damage at $5 to $10 million. The largest flood in recent history occurred between February 14 and 18, 1986, when a peak discharge of 102,000 cfs was recorded, and the flood reached a gauge height of 48.6 feet at Guerneville. This event was mapped by FEMA as the 100-year flood. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D;* DWR, 2009, *California Water Plan Update 2009*; Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan*; County of Lake, February 2005, *Lake County, California, Natural Hazard Mitigation Plan*; USACE, June 1994, *Reconnaissance Report Westside Tributaries to Yolo Bypass, California*; Sonoma County Permit and Resource Management Department, 2011 update,*Sonoma County Hazard Mitigation Plan*.	$ 28,000,000	Regionwide	1986			X	Slow Rise, Debris Flow, Coastal	http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf
North Coast	1986	May	7	Del Norte		Coastal	Tsunami. **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan.*							Tsunami	Del Norte County HMP
North Coast	1990	September	23	Siskiyou			Storm produced sustained winds up to 61 mph. **Source:** County of Siskiyou, December 2011, *Siskiyou County Hazard Mitigation, Volume 2: Planning Partner Annexes*.	$ 82,000	Siskiyou County	1990				Stormwater	Siskiyou HMP
North Coast	1992	February		Del Norte, Siskiyou			Snow storm, heavy rain, high winds, flooding, mudslide. FEMA Disaster DR-935. **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan;* County of Humboldt, February 1998, *Humboldt County General Plan Volume I, Framework Plan, Section 3300: Water Resources.*	$ 10,000	Del Norte County	1992				Flash, Debris Flow	http://archive.dnco.org/attachments/article/560/Hazard%20Mitigation%20Vol1(web).pdf
North Coast	1992	April	25	Del Norte, Humboldt		Cape Mendocino	Tsunami. Humboldt Bay Waves arrived at Humboldt Bay about 20 minutes after ground shaking. Clam Beach water level changed several feet. Crescent City oscillations in harbor, the fourth wave was the highest recorded. Trinidad cars were struck on the beach. **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan*; Governor's OES California, 2013, *Local Planning Guidance on Tsunami Response, Second Edition, A Supplement to the Emergency Planning Guidance for Local Governments.*							Tsunami	http://archive.dnco.org/attachments/article/560/Hazard%20Mitigation%20Vol1(web).pdf
North Coast	1992	December		Humboldt, Siskiyou, Trinity			Snow, rain, and high winds, FEMA 979-DR-CA. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D.*	public property-$32,215, $600 million	Statewide		20		X	Slow Rise	http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf
North Coast	1993	January	20	Humboldt, Mendocino, Modoc, Siskiyou, Trinity	Late Winter Storms		**Humboldt County** - Heavy rains over a 30-hour period caused mudslides and debris flows, which closed some roads in the southwest portion of Humboldt County. Rainfall totals for the period ranged up to 15.57 inches at a site 9 miles south of Honeydew, 20.37 inches 4 miles. Storm, rain, and high winds. Severe winter weather impacted most o California. Damages within the county were sufficient to trigger a presidential disaster declaration. **Source:** Humboldt County Department of Public Works, Natural Resources Planning Division, 2013, *Humboldt Operational Area - Hazard Mitigation Plan;* County of Siskiyou, December 2011, *Siskiyou County Hazard Mitigation, Volume 2: Planning Partner Annexes*.	$50,000 - Humboldt $350,000 - Siskiyou	Humboldt, Siskiyou County	1993			X	Flash, Debris Flow	https://co.humboldt.ca.us/natural-resources/hazardmitigation/docs/finaldraftplan/voli/9finalhumboldthmpvol1riskassessweather.pdf
North Coast	1993	January-March	1/5 - 3/20	Siskiyou	Late Winter Storms		**Regionwide:** Snow, rain, and high winds. **Siskiyou:** California Severe Storm, Winter Storm, Mud and Landslides, Flooding, Incident Period: January 5, 1993 to March 20, 1993, Major Disaster (Presidential) Declared (DR-979): February 3, 1993, FEMA Id: FEMA-DR-979, Natural disaster type: Winter Storm, Storm, Landslide, Flood. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*	($600,000,000)	(Statewide)	(1993)	(20)	(Statewide)	X	Slow Rise, Debris Flow	Taming natural disasters
North Coast	1993	February	3	Del Norte, Lake	Late Winter Storms		FEMA Disaster DR-979. Severe storm, winter storm, mud and landslides, flooding **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan*.	$ 583,530					X	Coastal	Del Norte County HMP
North Coast	1994	September	1	Del Norte, Humboldt		Coastal	Tsunami. **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan*.							Tsunami	Del Norte County HMP
North Coast	1995	January	8-31	Del Norte, Sonoma			Over 50 roads closed. 15,000 residents without power. Total displaced persons exceeded 2,000, of which 456 flood victims were evacuated by air. 13 medical cases were treated, and 2 flood-related fatalities occurred. Severe winter storms, FEMA Disaster DR-1044. **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan*.	$21 million	Del Norte, Sonoma Counties		2	Del Norte, Sonoma Counties	X	Slow Rise, Debris Flow	http://www.sonoma-county.org/prmd/docs/hmp_2011/chapters/full_chapters.pdf
North Coast	1995	January-March		Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity	Severe Winter Storms	Clear Lake, Sacramento River Basin, Eel, Van Duzen, Russian Rivers	Severe winter storms, flooding, landslides, mud flows. Over 100 stations recorded their greatest 1-day rainfall in history. Brought on by El Niño weather conditions, extremely wet conditions coupled with voluminous Sierra runoff led to very high river stages throughout the system and caused extensive damage to the flood management system of the Sacramento Valley. The Eel River delta flooded, including parts of Fernbridge, Ferndale, Loleta, Cannibal Island, and State Highway 211. Approximately 700 head of livestock were drowned. The Van Duzen River inundated State Highway 36 and a county park. The South Fork Eel River flooded Little Lake Valley and State Highway 254 near Weott. The Russian River damaged about 1,500 properties in Guerneville, Monte Rio, Sebastopol, and Healdsburg. Parts of Sebastopol were under 9 feet of water originating in the Laguna de Santa Rosa. FEMA Disaster DR-1044 and 1046. Significant and extended heavy rain and wind caused severe flooding along the California coastline. Flood damage was reported throughout much of the county, totaling an estimated $11.2 million. The county received both State and Federal disaster declarations. Winter storms and flooding caused $1 million in damage throughout the county. The county received a second presidential disaster declaration. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; DWR, 2009, *California Water Plan Update 2009*; Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan*.	$100 million					X	Slow Rise	http://www.water.ca.gov/floodmgmt/docs/Bul69-95/00-bull69-95front.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
North Coast	1995	March	12	Siskiyou			Severe Winter Storms, Flooding, Mudslides and Landslides. **Source:** County of Siskiyou, December 2011, *Siskiyou County Hazard Mitigation, Volume 2: Planning Partner Annexes*.							Flash, Debris Flow	Siskiyou HMP
North Coast	1995	May	24	Humboldt		Humboldt	A microburst from a thunderstorm downed several trees at the northeast end of Orleans. Two of the trees fell on fences. A Forest Service ranger reported that the storm was rotating. **Source:** Humboldt County Department of Public Works, *Natural Resources Planning Division. 2013. Humboldt Operational Area - Hazard Mitigation Plan*.							Flash	https://co.humboldt.ca.us/natural-resources/hazardmitigation/docs/finaldraftplan/voli/9finalhumboldthmpvol1riskassessweather.pdf
North Coast	1995	December		Del Norte	Severe Winter Storms		$6.0 million in estimated damages. **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan*.	$ 6,000,000					X	Slow Rise	Del Norte County HMP
North Coast	1995	December	14	Humboldt		Arcata, Blue Lake, McKinleyville	A stationary line of thunderstorms produced heavy rains causing creeks north and northeast of Humboldt Bay to flood. Spotters and radar indicated widespread 3 to 4 inches of rain in about 2 hours with local amounts of 5 to 7 inches. **Source:** Humboldt County Department of Public Works, Natural Resources Planning Division, 2013, *Humboldt Operational Area - Hazard Mitigation Plan*.							Flash	Humboldt County Operational Area Hazard Mitigation Plan; Volume 1—Planning Area-Wide Elem
North Coast	1995	December	21	Humboldt		Van Duzen River, Eel River	The Van Duzen River crested at 17.8 feet (flood stage is 17 feet) between 10:00 and 11:00 PST. The Eel River at Fernbridge crested below flood stage on the morning of December 13, but the crest coincided with an 8+ foot high tide and heavy surf, which impeded flow. **Source:** Humboldt County Department of Public Works, Natural Resources Planning Division, 2013, *Humboldt Operational Area - Hazard Mitigation Plan*.							Slow Rise, Coastal	Humboldt County Operational Area Hazard Mitigation Plan; Volume 1—Planning Area-Wide Elem
North Coast	1995	December	29	Humboldt		Salmon Creek, Jacoby Creek, Freshwater Creek, Yager Creek, and Power's Creek	Persistent heavy rain caused streams in central Humboldt County to overflow. Many mud and debris slides blocked roads. Flooding occurred on Salmon Creek, Jacoby Creek, Freshwater Creek, Yager Creek, and Power's Creek plus many smaller streams. **Source:** Humboldt County Department of Public Works, Natural Resources Planning Division, 2013, *Humboldt Operational Area - Hazard Mitigation Plan*.	$ 7,000,000					X	Slow Rise, Debris Flow	https://co.humboldt.ca.us/natural-resources/hazardmitigation/docs/finaldraftplan/voli/9finalhumboldthmpvol1riskassessweather.pdf
North Coast	1996	February		Sonoma	February Winter Storms		Slow rise flooding. **Source:** Sonoma County Permit and Resource Management Department, 2011 update, *Sonoma County Hazard Mitigation Plan*.							Slow Rise	Sonoma County HMP
North Coast	1996	June	10	Del Norte		Crescent City	Tsunami with an origin of the Gulf of Alaska. **Source:** County of Mendocino, California, July 2013, *Mendocino County Multi-Hazard Mitigation Plan*.							Tsunami	Mendocino HMP
North Coast	1996	December	4	Humboldt		Arcata, Blue Lake, Rio Dell	Urban and small stream flooding in Arcata and Blue Lake. **Source:** Humboldt County Department of Public Works, Natural Resources Planning Division, 2013, *Humboldt Operational Area - Hazard Mitigation Plan*.							Stormwater, slow Rise	https://co.humboldt.ca.us/natural-resources/hazardmitigation/docs/finaldraftplan/voli/9finalhumboldthmpvol1riskassessweather.pdf
North Coast	1996-1997	December-January		Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Trinity	January 1997 Floods	Regionwide	Three hundred square miles were flooded, including the Yosemite Valley. A massive tropical storm ravaged the region, damaging residences, the Golden Bears Casino, and in-stream restoration projects. Klamath and Stafford were particularly hard hit. All roads into the region were closed. There was extensive damage to homes, businesses, agriculture, and infrastructure along the Russian River. Over 120,000 people had to be evacuated in northern California. Several levee breaches were reported across the Sacramento and San Joaquin valleys. The U.S. Forest Service reported that the storms of December 1996 and January 1997 produced precipitation on the Klamath National Forest that was two to three times the monthly average. The 4-day storm at the end of December produced rain above 7,000 feet. The flood of 1997 involved the movement of soil, rock, and organic debris from hill slopes to stream channels on the Klamath National Forest at a scale not experienced since about 1974. The majority of the reported damage associated with this event was from landslides and road failures. The estimated damage to road facilities exceeded $35 million within the Klamath National Forest. Up to 200 roads were closed and/or damaged, some due to major slides. Twelve thousand residents were without power. Over 1,200 victims evacuated their residences, and two storm-related deaths occurred. Sewage and treatment plants overflowed. **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan*; DWR, 2009, *California Water Plan Update 2009*; Sonoma County Permit and Resource Management Department, 2011 update, *Sonoma County Hazard Mitigation Plan*.	$1.5 billion	Statewide	1997			X	Slow Rise, Debris Flow	http://www.sonoma-county.org/prmd/docs/hmp_2011/chapters/full_chapters.pdf
North Coast	1998	February	2	Sonoma	El Niño Floods	Sonoma County	200 roads were listed as flooded or closed. 6,400 residents without power. 250+ homes were inundated. 1,200 residents voluntarily evacuated. 4 storm-related deaths. **Source:** Sonoma County Permit and Resource Management Department, 2011 update, *Sonoma County Hazard Mitigation Plan*.	$ 28,000,000	Sonoma County	1998			X	Slow Rise	http://www.sonoma-county.org/prmd/docs/hmp_2011/chapters/full_chapters.pdf
North Coast	1998	February	9	Del Norte, Humboldt, Lake, Mendocino	El Niño Floods	Clear Lake, Clearlake Oaks, Lakeport	Presidential Declared Disaster M#1203. El Niño Floods, FEMA Disaster # DR-1203. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan.*							Slow Rise	Del Norte County HMP
North Coast	1998	February	21	Humboldt		Urban/small Stream Flood	Widespread small stream flooding in Del Norte, Humboldt and Mendocino counties. Numerous road closures due to flooding. Del Norte County Sheriff's Dispatch described the county as "swampy." Highways 175 and 128 were closed in Mendocino County. **Source:** County of Mendocino, California, July 2013, *Mendocino County Multi-Hazard Mitigation Plan*.							Slow Rise	Mendocino HMP
North Coast	1998	March	22	Humboldt, Trinity		Eureka, Hayfork, Elk River	Small stream flooding on Coffee Creek at Trinity Center and around Hayfork in Trinity County. In Humboldt County, the Elk River flooded on the lower reaches. **Source:** County of Humboldt, February 1998, *Humboldt County General Plan Volume I, Framework Plan, Section 3300: Water Resources.*							Slow Rise	https://co.humboldt.ca.us/natural-resources/hazardmitigation/docs/finaldraftplan/voli/9finalhumboldthmpvol1riskassessweather.pdf
North Coast	1998	November	20	Humboldt		Urban/small Stream Flood	Widespread urban and small stream flooding due to very heavy rain. Flooding was reported in Fieldbrook, McKinleyville, Bayside (Jacoby Creek), Highway 197 near Crescent City, Arcata, Humboldt State University campus, and Blue Lake. **Source:** Humboldt County Department of Public Works, Natural Resources Planning Division, 2013, *Humboldt Operational Area - Hazard Mitigation Plan*.							Slow Rise, Stormwater	Humboldt County Operational Area Hazard Mitigation Plan; Volume 1—Planning Area-Wide Elements
North Coast	1999	January	12	Lake			Slow rise flooding. **Source:** County of Lake, February 2005, *Lake County, California, Natural Hazard Mitigation Plan*.							Slow Rise	Lake County HMP
North Coast	1999	February	8-10	Sonoma		February Winter Storms	Gubernatorial Declaration. **Source:** Sonoma County Permit and Resource Management Department, 2011 update, *Sonoma County Hazard Mitigation Plan*.							Slow Rise	Sonoma County HMP
North Coast	1999	March	24	Humboldt		Urban/small Stream Flood	Many roads were closed as streams and small rivers spilled their banks. **Source:** Humboldt County Department of Public Works, Natural Resources Planning Division, 2013, *Humboldt Operational Area - Hazard Mitigation Plan*.							Slow Rise	https://co.humboldt.ca.us/natural-resources/hazardmitigation/docs/finaldraftplan/voli/9finalhumboldthmpvol1riskassessweather.pdf
North Coast	1999	December	21	Humboldt		Urban/small Stream Flood	Heavy rain caused flooding along many small streams in Northern/Central Humboldt County and Central Del Norte County. Some streams involved include Noisy Creek, Jacoby Creek, and Elk River. Highway 101 near Sand Mine Road and Highway 197. **Source:** Humboldt County Department of Public Works, Natural Resources Planning Division, 2013, *Humboldt Operational Area - Hazard Mitigation Plan*.							Slow Rise	Humboldt County Operational Area Hazard Mitigation Plan; Volume 1—Planning Area-Wide Elements
North Coast	2001	June	23	Mendocino		Arena Cove	Tsunami with an origin of the South Coast of Peru. **Source:** County of Mendocino, California, July 2013, *Mendocino County Multi-Hazard Mitigation Plan*.							Tsunami	Mendocino HMP

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
North Coast	2002	December		Del Norte, Glenn, Humboldt, Lake, Marin, Mendocino, Modoc, Siskiyou, Sonoma, Trinity	El Niño Floods	Regionwide	A powerful Pacific storm swept across Northwest California with strong winds and heavy rain. Widespread urban and small stream flooding in Eureka and around Humboldt Bay. Eureka set an all-time daily rainfall record of 6.79 inches. Nearby Honeydew reported 11.24 inches. Small stream flooding occurred in a wide swath across central Humboldt County. Source: Humboldt County Department of Public Works, Natural Resources Planning Division, 2013, *Humboldt Operational Area - Hazard Mitigation Plan* .							Flash	http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=10617
North Coast	2003			Humboldt			Severe Weather (Funnel Cloud, Orick)-Levee Breach. **Source:** Humboldt County Department of Public Works, Natural Resources Planning Division, 2013, *Humboldt Operational Area - Hazard Mitigation Plan* .	$ 250,000	Humboldt County	2003				Flash, Engineered Structure Failure	Humboldt HMP
North Coast	2005-2006	December-January		Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Trinity	New Year's Eve Flood of 2006	Klamath River, Trinidad, Blue Lake, Russian River West Fork - Calpella, Hopland, Pudding Creek - Fort Bragg, Noyo River, Navarro, Klamath, Eel, Pit, Susan	Flooding closed Interstate 5 near the Oregon border, damaged outdoor recreational facilities in Klamath National Forest, and cut off power to many towns, including Trinidad and Blue Lake. The Laguna de Santa Rosa (Laguna), the largest tributary to the Russian River, experienced heavy flooding, with peak flows on New Year's Day. **Source:** DWR, 2009, *California Water Plan Update 2009*; USGS, 2006, *Storms and Flooding in California in December 2005 and January 2006—A Preliminary Assessment;* L.E. Flint, et al., December 2006, Abstract: "Characterizing the Impacts of the 2006 New Year's Flood in the Laguna de Santa Rosa Floodplain, Sonoma County, CA"; Sonoma County Permit and Resource Management Department, 2011 update, *Sonoma County Hazard Mitigation Plan.*	$300 million statewide. Source: Storms and Flooding in California in December 2005 and January 2006—A Preliminary Assessment $104 million in Sonoma. Source. Sonoma County HMP $24 million Humboldt County. Source: Humboldt County Operational Area Hazard Mitigation Plan; Volume 1—Planning Area-Wide Elements	Regionwide	2006			X	Slow Rise, Debris Flow, Flash	http://pubs.usgs.gov/of/2006/1182/pdf/ofr2006-1182.pdf http://adsabs.harvard.edu/abs/2006AGUFM.H21G1454F http://www.sonoma-county.org/prmd/docs/hmp_2011/chapters/full_chapters.pdf http://www.waterplan.water.ca.gov/docs/cwpu2009/1009prf/3-rr_nc_pre-final_app.a-c.pdf
North Coast	2006	January-February		Del Norte			The year began with a New Years' weekend storm pummeling Del Norte County, damaging Crescent City Harbor, flooding Klamath, and closing Highways 101 and 169. Damage exceeded $5 million. California OES officials identified 64 sites as sustaining significant damage. On February 3, President Bush declared Del Norte County and nine other California counties disaster areas. A section of west Klamath Beach Road, wiped out during the storms, finally reopened on April 5 thanks to a temporary bridge that allowed one-way traffic. Disaster Declaration 1628. Flooding, severe winter storms, and landslides. **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan* .	$5,000,000	Del Norte County	2006			X	Slow Rise, Debris Flow	Del Norte County HMP
North Coast	2006	February	3	Siskiyou			Severe Storms, Flooding, Debris- and Mudflows. Declaration 1628. **Source:** County of Siskiyou, December 2011, *Siskiyou County Hazard Mitigation, Volume 2: Planning Partner Annexes.*	$7,000,000	Siskiyou County	2012			X	Slow Rise, Debris Flow	Siskiyou County HMP.
North Coast	2006	March-May	March 29-April 1	Del Norte, Humboldt, Lake, Mendocino, Siskiyou, Trinity	2006 Spring Storms		Flooding, landslides, mudslides, and roadway damage. State Declared Disaster for severe rainstorms and flooding. For the California Data Exchange Center's precipitation gauges for April 2010, the largest amount of precipitation recorded was the Gasquet Ranger Station in the Smith River Basin on the North Coast with 14.23 inches. This is 220% of the average precipitation for this station for April. Severe storms, flooding, and landslides: FEMA disaster DR-1628. **Source** : Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan* ; "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; "California Monthly Climate Summary," April 2010, Web site.	X	?					Slow Rise, Debris Flow	http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf http://www.water.ca.gov/floodmgmt/hafoo/csc/docs/California_Climate_Summary_042010.pdf
North Coast	2006	November	11	Del Norte		Coastal	Tsunami. **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan.*							Tsunami	Del Norte County HMP
North Coast	2007	January	13	Del Norte		Coastal	Tsunami. **Source:** Crescent City/Del Norte County, August 2010, *(Draft) Hazard Mitigation Plan.*							Tsunami	Del Norte County HMP
North Coast	2008	January	5-14	Del Norte, Mendocino	2008 Winter Storms		Extreme winds and heavy rains flooded the region. **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013.							Flash	http://www.cbsnews.com/stories/2008/01/06/national/main3679613.shtml http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf
North Coast	2010	March	8	Siskiyou			Severe Winter Storms, Flooding, Debris- and Mudflows, Declaration 1884. **Source:** County of Siskiyou, December 2011, *Siskiyou County Hazard Mitigation, Volume 2: Planning Partner Annexes.*	$ 3,471,019	Siskiyou	2012				Stormwater, Debris Flow, Slow Rise	Siskiyou County Hazard Mitigation Plan; Volume 1
North Coast	2010	December	29-31	Sonoma	2010 Winter Storms	Santa Rosa	Local flooding from heavy rain was reported in southwest Oregon and southern California. A 70-year old woman was killed at the Safari West Preserve near Santa Rosa, CA, when an oak tree fell on the frame tent where she was staying **Source:** Western Regional Climate Center, *December in the West.*				1	Santa Rosa	X	Flash, Slow Rise	http://www.wrcc.dri.edu/articles/5/
North Coast	2011	March	9	Del Norte, Humboldt, Mendocino	Tsunami	Crescent City, Noyo Harbor	A tsunami recorded throughout the California coast hit Crescent City Harbor with 8.1-foot amplitude, destroying much of the Harbor and resulting in one death near Klamath. There was also major damage to docks and boats at Noyo Harbor. Estimated damage in the region was $36 million. **Source:** California Coastal Commission, April 2011, *The Tohoku Tsunami of March 11, 2011: A Preliminary Report on Effects to the California Coast and Planning Implications* .	$36 million	Crescent City Harbor	2011	1	Klamath	X	Tsunami	http://www.coastal.ca.gov/energy/tsunami/CCC_Tohoku_Tsunami_Report.pdf
North Coast	2011	March		Del Norte, Humboldt, Marin, Mendocino, Modoc, Trinity	Rainstorms	Eureka, Eel River	As of March 28 in Eureka: Month-to-date precipitation is 11.61 inches (normal 4.96 inches). On March 5, Eureka broke a 1912 daily record for precipitation with 1.39 inches. The old record was 1.32. The El Niño/Southern Oscillation is being classified as a fading La Niña pattern. Between March 15 and 27, a series of storms swept across Northern California, causing significant damage in 17 counties statewide, including Del Norte, Humboldt and Mendocino counties on the North Coast. **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; *Lake County News*, May 5, 2011, "California Congressional Delegation Asks Obama for Disaster Assistance"; "California Monthly Climate Summary," April 2010, Web site.	$44.5 million statewide (http://www.lakeconews.com/index.php?option=com_content&view=article&id=19589:regional-california-congressional-delegation-asks-obama-for-disaster-assistance-&catid=1:latest&Itemid=197)	Statewide	2011			X	Slow Rise	http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf http://capitalpress.blogspot.com/2011/03/california-rainfall-reservoirs-by.html http://www.water.ca.gov/floodmgmt/hafoo/csc/docs/California_Climate_Summary_032011.pdf
North Lahontan	1852	December	12	Alpine, Placer		Carson River, Western Placer	**Alpine:** The earliest flood of record following permanent habitation of the region occurred in December 1852 and was a precursor to the type of flooding characteristic to the Carson River watershed. Source: Alpine County, 2013, *Natural Hazard Mitigation Plan.* **Placer:** This was the first big flood to be noted in western Placer. Mining camps were just beginning to spring up in the Lincoln area, so hardly any structures were built which could be affected. **Source:** Placer County, April 2010, *Local Hazard Mitigation Plan.*							Slow Rise	Alpine County NHMP, Placer LHMP 2010
North Lahontan	1852	December	24-30	Alpine		Carson River	The earliest flood of record following permanent habitation of the region occurred in December 1852 and was a precursor to the type of flooding characteristic to the Carson River watershed. **Source:** Alpine County, 2013, *Natural Hazard Mitigation Plan.*							Slow Rise	Alpine County NHMP

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
North Lahontan	1852			Placer		Western Placer	This was the first big flood to be noted in western Placer. Mining camps were just beginning to spring up in the Lincoln area, so hardly any structures were built which could be affected. **Source:** Placer County, April 2010, *Local Hazard Mitigation Plan.*							Flash, Slow Rise	Placer LHMP 2010
North Lahontan	1861-1862	December-March	Winter	Alpine, El Dorado, Lassen, Modoc, Mono, Nevada, Sierra	Great Flood	Regionwide	Most notable in the nineteenth century was the "Great Flood" of 1861-62, which inundated large areas the West Coast states from Canada to Mexico. These floods were remarkable for the exceptionally high stages reached on most streams, repeated large floods, and prolonged and widespread inundation in the Sacramento River basin. Lower elevations experienced heavy rain, while upper elevations saw continuous snowfall. There were reports published during this flooding period describing the lower Sacramento River basin as one vast sea of water. Overflow from the American River led to the flooding of the City of Sacramento, causing loss of life and property, and flooding from the Sacramento River enveloped large sections of the lowlands around Colusa, severely damaging ranches and drowning or starving cattle. It was this flood that provided the impetus for raising the levees around the City of Sacramento. **Source:** DWR, 2009, *California Water Plan Update 2009*.	X	Regionwide				X	Slow Rise	California Water Plan 2009
North Lahontan	1867-1868	December-March		Alpine, El Dorado, Lassen, Modoc, Nevada		Regionwide, Carson River	**Regionwide** : Floods of 1867-68. Floods similar to those of 1861-62 occurred in December 1867. At Independence, in the Owens River Basin, precipitation during this month was greater than the total for any of the 50 seasons after 1867 68 for which complete records have been obtained. In the Walker Lake Basin, there were storms on December 8 and 9, and almost continuously from December 16 to 31. The East Walker River was said to have been higher than ever before known, and it washed out or destroyed farm buildings along its channel. There were also damaging floods on the West Walker River and in the upper Carson River Basin. The Carson River flooded the towns of Empire and Dayton on December 24. 1867, and was at flood stage for several days, reaching a height at Empire on December 26 reported to have been within 2 feet of the maximum stage of 1861-62. Floods on local tributaries occurred on December 23, 25, and 31. The Truckee River was reported to have overflowed beyond its channel for miles on December 26, 1867, flooding many ranches. This account presumably refers to places near present-day Reno, Nevada, in Truckee Meadows, which were described on January 1, 1868, as having been flooded for the 10 days preceding. Bridges on the main river and on its tributaries were washed out. **Carson River:** Two extensive rainstorms caused flooding in December 1867 and January 1868. The first unseasonably warm rainstorm began on December 20 and fell on existing snowpack, and ended December 25. The second intense rainstorm occurred from December 30 through January 2. The Carson Valley became a vast lake, and the flooding exceeded the 1861 flood crest. All bridges in the Carson Valley crossing the East and West Forks of the Carson River, and the main stem, were swept away. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; USGS Nevada Water Science Center, 2013, *Nevada Flood Chronology. Carson River Basin, Flood Events.* "Flood Events (1852-Present)."	$ 10,000	Carson River	1868			X	Flash	Flood Chronology of the Carson River Basin, California and Nevada December-January 1868; USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California
North Lahontan	1874	January	20-29	Alpine		Carson River, Ash Canyon Creek, King's Canyon Creek	A heavy, wet snowstorm started on January 20 - 22, 1874, left large amounts of snow in the mountains and valleys. On January 27, a warm south wind started, followed by heavy warm rain on January 28 and 29. The warm winds and heavy rains melted the snowpack and ice from the earlier storm. No specific records described the flooding in Carson Valley; however, extensive flooding occurred in Eagle Valley and Carson City. Torrents of muddy water flowed down King's and Ash Canyon creeks, and in Carson City, floodwaters flowed through Carson Street. Flooding caused damages at Empire and at the ore reduction mills in Carson River Canyon between Empire and Dayton. **Source:** USGS Nevada Water Science Center, 2013, *Nevada Flood Chronology. Carson River Basin, Flood Events.* "Flood Events (1852-Present)."	X	Eagle Valley, Carson City, Carson River Canyon					Flash, Debris Flow	Flood Chronology of the Carson River Basin, California and Nevada January 1874 (http://nevada.usgs.gov/crfld/data_byflood_25_county3.cfm)
North Lahontan	1874		1	Alpine		Carson River, Ash Canyon Creek, King's Canyon Creek	A heavy, wet snowstorm started on January 20 - 22, 1874, left large amounts of snow in the mountains and valleys. On January 27, a warm south wind started, followed by heavy warm rain on January 28 and 29. The warm winds and heavy rains melted the snowpack and ice from the earlier storm. No specific records described the flooding in Carson Valley; however, extensive flooding occurred in Eagle Valley and Carson City. Torrents of muddy water flowed down King's and Ash Canyon creeks, and in Carson City, floodwaters flowed through Carson Street. Flooding caused damages at Empire and at the ore reduction mills in Carson River Canyon between Empire and Dayton. **Source:** USGS Nevada Water Science Center, 2013, *Nevada Flood Chronology. Carson River Basin, Flood Events.* "Flood Events (1852-Present)."	X	Eagle Valley, Carson City, Carson River Canyon					Slow Rise	Flood Chronology of the Carson River Basin, California and Nevada January 1874 (http://nevada.usgs.gov/crfld/data_byflood_25_county3.cfm)
North Lahontan	1875	January	16-20	Alpine, Placer		Bear River, Carson River	**Alpine:** Flooding resulted from a storm that started out as snow and then turned into rain. Snow started on January 16, 1875, accumulating 2 feet in Carson and Eagle Valleys. On January 18, the snow turned to warm rain and 24 hours later the rain had melted the snow. Carson Valley was inundated through January 21, which resulted in unspecified damage to roads, bridges, and farm improvements, fields, and pastures. Even though air temperatures lowered rapidly on January 19, the river through Carson and Eagle Valleys rose approximately 6 feet from noon on January 19 to 7:00 a.m. on January 20. Several streets in Carson City became flowing rivers of water from overflow of King's Canyon Creek, and businesses in Empire were flooded. **Placer:** 1875- Floods occurred along Bear River and destroyed the bridge to Grass Valley from Sheridan. **Source:** USGS Nevada Water Science Center, 2013, *Nevada Flood Chronology. Carson River Basin, Flood Events,* "Flood Events (1852-Present)"; Placer County, December 2009, *Multi-Hazard Mitigation Plan* .	X	Carson Valley, Eagle Valley, Grass Valley, Sheridan					Slow Rise	Flood Chronology of the Carson River Basin, California and Nevada January 1875 (http://nevada.usgs.gov/crfld/data_byflood_24_reach2.cfm), Placer County MHMP 2005
North Lahontan	1886	January	20-26	Alpine		Carson River	A winter storm that started with high winds and a light rain on January 20 changed to a terrific downpour of rain on Saturday, January 23. The rains continued until late afternoon the following day, gradually tapering off until the storm stopped on January 26. This flood did significant damage, especially to roads, along the west side of the valley where most of the settlements and stations were located. The Carson river presented the appearance of a sea of water, extending from about 0.5 mile from town to a distance of 2 miles. The streets of Genoa, particularly in the vicinity of the Courthouse, were obstructed alternately with deep channels and heaps of stones and debris. Fields were considerably damaged by wash from the mountains, and nearly every piece of land near the base of the mountains suffered in like manner. The road to Carson was left in almost an impassable condition. One bridge in Jacks Valley and one near Clear Creek were taken away, and the new bridge over Clear Creek was considerably damaged. Two bridges in the Boyd lane were washed out, but the main bridge over the river withstood the current, and is still intact. **Source** : Alpine County Museum, February 1997, *The History of Flooding in Eastern Alpine County and Carson Valley.*	X	Genoa, Clear Creek, Jack's Valley					Slow Rise	The History of Flooding in Eastern Alpine County and Carson Valley, 1997
North Lahontan	1889	January-June	January 15-June 1	Alpine		Carson River, Carson Valley	Unlike the other winter floods in Carson Valley and the upper Carson River watershed, which were either wet-mantle, rain-on-snow or frozen ground, or both, the floods of the winter and spring of 1890 resulted from the break-up of the terrible winter of 1889-1890, often referred to by old Nevadans as The White Winter. The winter started with incessant heavy snows and bitter-cold weather in mid-November 1889. The bad weather continued with little respite in Carson Valley and along the Sierra Nevada east slope until the latter part of January. A sudden Chinook period set in on January 25, which in a few days reduced the snow piled deep all over the valley and the lower foothills to angry, ice-choked floodwaters on the East Fork and West Fork. On the East Fork above Markleeville, a new bridge across the East Fork on the toll road between Markleeville and Silver Mountain, sustained a loss of over $500 when the bridge was swept away. **Source:** Alpine County Museum, February 1997, *The History of Flooding in Eastern Alpine County and Carson Valley.*	$ 500	Markleeville	1889				Slow Rise	The History of Flooding in Eastern Alpine County and Carson Valley, 1997

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
North Lahontan	1890	January-March		Alpine, El Dorado, Lassen, Modoc, Nevada, Placer	White Winter	Walker, Carson, Truckee River Basin, Carson River	**Regionwide:** The season of 1889-90 was featured by the great amount of snow deposited in the Sierra Nevada and throughout the basins of Walker, Carson, and Truckee rivers. At many points in this region the precipitation was probably the greatest since 1867-68. The rainstorm of January 25, which caused floods in central California, extended into the Great Basin, and although the runoff evidently was not extremely heavy, there were exceptionally high stages as a result of ice gorges at several points. Damaging floods were noted especially on the Owens River at Lone Pine and near Independence, on the East Fork of the Carson River, and on the Carson River near Genoa, Nevada. The floods in the Carson River Basin at this time resulted chiefly from ice gorges, and were followed during the first part of February 1890 by floods on the lower Carson River after a period of warm weather that caused release of the ice dams and melting of snow. After the January thaw, icy weather returned to the Sierra and new snow accumulations formed huge drifts. It was around this time that most of the town of Monitor (renamed Loope), located above Markleeville, California, was destroyed by an avalanche. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California;* State of Nevada Division of Water Resources, 2013, *Carson River Chronology.*	X	Regionwide				X	Slow Rise	USGS, 1939, Water Supply Paper 843, Carson River Chronology
North Lahontan	1890	May, June		Alpine, El Dorado, Lassen, Modoc, Nevada, Placer		Walker, Carson, Truckee River Basin, Truckee River	There were floods again during the first part of May 1890, caused by heavy snows in the Walker, Carson, and Truckee river basins. The Truckee River near Reno was reported to have been higher on May 8 than for many years, and its overflow covered a number of ranches. Streamflow records for the Truckee River near Boca, California, show that the mean discharge for May 1890, which was 5,275 second-feet, was greater than the maximum daily discharge for most of the seasons during the period of record, 1899-1937, at comparable stations downstream. The maximum daily discharge during May 1890 was 7,172 second-feet. Corresponding records for May 1890 show somewhat greater mean and maximum discharges at Vista, Nevada, below Truckee Meadows. **Alpine:** June 9, 1890. Flood of the West Fork of the Carson River at Woodfords. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California* ; Alpine County Museum, February 1997, *The History of Flooding in Eastern Alpine County and Carson Valley.*	X		Carson River Basin, Truckee River Basin					Slow Rise	USGS, 1939, Water Supply Paper 843, The History of Flooding in Eastern Alpine County and Carson Valley, 1997
North Lahontan	1906			Mono		Mono County	Particularly large snowmelt floods in the Sierra Nevada were documented in 1906. Their total volume was two to four times larger than average. Snow deposition was more than twice average amounts and persisted into April or May. Midwinter rainfall on snow cover produced all the highest flows in major Sierra Nevada rivers during this century. All lands adjacent to streams that were inundated before were at risk in the future. **Source:** Mono County and Town of Mammoth Lakes, October 2006, *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan.*	X	Mono County					Slow Rise	Mono County HMP
North Lahontan	1907	March	16-20	Alpine		Carson River, Monitor Creek	The West Fork of the Carson River washed out the West Carson Canyon Road and the Woodfords Bridge on the road to Markleeville. On March 17-18, Monitor Creek washed away the power dams at Loope (Monitor) south of Markleeville. The mines and mill at Monitor were lost. **Source:** Alpine County Museum, February 1997, *The History of Flooding in Eastern Alpine County and Carson Valley.*	X	Monitor, Markleeville					Flash	The History of Flooding in Eastern Alpine County and Carson Valley, 1997
North Lahontan	1928	March	24-30	Alpine		Carson River	Both forks of the Carson River reached their peaks from the runoff from the melted snow. **Source:** Alpine County Museum, February 1997, *The History of Flooding in Eastern Alpine County and Carson Valley.*	X	Carson River Basin					Slow Rise	The History of Flooding in Eastern Alpine County and Carson Valley, 1997
North Lahontan	1937	December	9-13	Alpine	Great Flood of Donneville	Carson River, Markleeville Creek	The Woodfords-Markleeville highway bridge over that stream was washed away on December 11, 1937. All bridges on the West Fork above Woodfords were either damaged or swept away from Hope Valley. Both banks of Markleeville Creek were flooded. Buildings were flooded, and small buildings were swept away. The total damage was estimated at $150,000 for the entire valley. **Source:** Alpine County Museum, February 1997, *The History of Flooding in Eastern Alpine County and Carson Valley.*	$ 150,000	Eagle Valley, Carson Valley				X	Slow Rise	The History of Flooding in Eastern Alpine County and Carson Valley, 1997;
North Lahontan	1938			Mono		Mono County	Particularly large snowmelt floods in the Sierra Nevada were documented in 1938. Their total volume was two to four times larger than average. Snow deposition was more than twice average amounts and persisted into April or May. Midwinter rainfall on snow cover produced all the highest flows in major Sierra Nevada rivers during this century. All lands adjacent to streams that had been inundated before were at risk. **Source:** Mono County and Town of Mammoth Lakes, October 2006, *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan.*		Mono County				X	Flash	Mono County HMP
North Lahontan	1943	January	20-23	Alpine		Carson River	This flood period, which inflicted loss of life, heavy livestock losses and great damage on both sides of the Sierra Nevada, as well as in the Humboldt Basin, began in Carson Valley on January 20. It was preceded by a heavy wind, which began whipping the valley on January 19 . On the morning of January 20, a heavy rainfall began, at times approximating a deluge. The rain was accompanied by a continuation of the heavy winds that had started the day before. The storm continued unabated on January 21, and both forks of the Carson River reached flood stage that day . The storm abated on January 23, and by January 24, moderate weather had returned to the valley. **Source:** Alpine County Museum, February 1997, *The History of Flooding in Eastern Alpine County and Carson Valley.*				X	Carson Valley	X	Flash	The History of Flooding in Eastern Alpine County and Carson Valley, 1997;
North Lahontan	1950	January	13-21	Alpine			Minimal damage at Woodfords from heavy rainfall. **Source:** Alpine County Museum, February 1997, *The History of Flooding in Eastern Alpine County and Carson Valley*.							Flash	The History of Flooding in Eastern Alpine County and Carson Valley, 1997;
North Lahontan	1950	November	21	Alpine, Placer			Declared Flood Disaster # CDO 50-01. State Declaration 11/21/50. Location: Placer County (statewide). Nine deaths were reported. **Alpine:** Power poles went down. A bridge between Woodfords and Markleeville was carried away. The Woodfords-Markleeville area was flooded. **Regionwide Damage:** Sacramento River Basin above Delta $4,983,000; Sacramento-San Joaquin Delta $4,550,000; San Joaquin River Basin-Consumes River to Upper San Joaquin River $11,460,000; Upper San Joaquin River Basin-Kings River to Kern River $11,190,000; TOTAL-$32,183,000. **Source:** Placer County, April 2010, *Local Hazard Mitigation Plan* ; Alpine County Museum, February 1997, *The History of Flooding in Eastern Alpine County and Carson Valley;* Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D.*	$ 32,183,000	Statewide	1950	9	Statewide	X	Flash	Placer County LHMP 2010; The History of Flooding in Eastern Alpine County and Carson Valley, 1997; Taming Natural Disasters Appendix D
North Lahontan	1950	December	3-4, 6-10	Alpine		Carson River	**Alpine:** Roads were flooded. Heavy Rains and Flooding in Carson Valley. **Source:** Alpine County Museum, February 1997, *The History of Flooding in Eastern Alpine County and Carson Valley.*	$300-500,000 (for Nov and Dec Events)	State Route 88, Carson Valley					Flash	The History of Flooding in Eastern Alpine County and Carson Valley
North Lahontan	1950			Alpine			Minimal damage at Woodfords from heavy rainfall. **Source:** Alpine County Museum, February 1997, *The History of Flooding in Eastern Alpine County and Carson Valley*.							Flash	The History of Flooding in Eastern Alpine County and Carson Valley, 1997;

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
North Lahontan	1955	December	21-24	Alpine, El Dorado, Modoc, Nevada, Placer, Sierra	1955 Christmas Flood	Countywide, Susan River, Yuba, Feather River	**Regionwide:** Floods. DR-47. State Declared 12/22/55. Federal Declared 12/23/55. Location: Placer County (statewide). Damages: 74 deaths and $200,000,000. **Placer:** Listed on NOAA's website as one of the top 15 weather/water/climate events; significant and extended heavy rain and wind resulted in flooding throughout coastal and inland regions of northern California. Extensive flooding from overflowing small streams occurred in Placer County suburbs. Calculated damages for all areas affected within the State were 28 fatalities and $1.8 billion in losses. **Lassen:** Major flooding in Susanville, Johnstonville, Leavitt Lake, Standish, and Litchfield areas in Honey Lake Valley. Susanville flooded from Lassen Street downstream along Riverside Drive and from Main Street (Highway 36) on north to railroad tracks on south. Serious flood impacts to homes, businesses, schools, roads, and bridges throughout Honey Lake Valley. US Highway 395 flooded. Serious transportation impacts, moderate impacts to power, phone, and rural water systems. Similar to 12/23/1955 flood. **Nevada:** Flood in 1955. State and Federal Declared (DR-28). **Alpine:** Historic Peak Flows of West Fork at Woodfords and East Fork at Gardnerville. High water in Markleeville. Both forks of the Carson River were flooded. Floods in the Truckee, Carson, and Walker River basins during December 1955 resulted from an intense storm of unseasonably high temperatures that melted part of the snowpack in the northern Sierra Nevada. During December 21 to 24, precipitation at the headwaters of the principal river basins averaged from 10 to 13 inches. **Source:** Placer County, April 2010, *Local Hazard Mitigation Plan*; Lassen County et al., 2013, *Hazard Mitigation Plan*; Nevada County OES, June 2006, *DMA 2000 Multi-Jurisdiction, Multi-Hazard Mitigation Plan*; Alpine County, 2013, *Natural Hazard Mitigation Plan*; Alpine County Museum, February 1997, *The History of Flooding in Eastern Alpine County and Carson Valley*	$ 2,000,000,000	Statewide	1956	74	Statewide	X	Slow Rise	Placer County LHMP 2010; Lassen County HMP n.a.; Nevada County MJMHMP 2006; Alpine County LHMP n.a.; The History of Flooding in Eastern Alpine County and Carson Valley, 1997
North Lahontan	1958	February		Lassen		Susan River	**Lassen:** At stage 14 at Susan River - Major flooding in Susanville, Johnstonville, Leavitt Lake, Standish, and Litchfield. Susanville floods from Lassen Street downstream along Riverside Drive and from Main Street, Highway 36, on north to railroad tracks on south. Top of K-rail flood wall on Carroll Street. Homes, businesses, schools, roads, and bridges in the Honey Lake Valley were flooded, and the area suffered serious transportation impacts, along with impacts to power, phone, and rural water systems. **Source:** National Weather Service, 2013, *Advanced Hydrologic Prediction Service*, "Flood Impacts & Photos."	X	Susan River					Slow Rise, Stormwater	National Weather Service Advanced Hydrologic Prediction Service (http://water.weather.gov/ahps2/hydrograph.php?wfo=rev&gage=susc1)
North Lahontan	1958	April	2	Placer		Countywide	Storm and Flood Damage. State Declaration: 4/02/58. Federal Declaration: 4/4/58. Location: Placer County (statewide). Damages: 13 deaths and $24,000,000. **Source:** Placer County, April 2010, *Local Hazard Mitigation Plan.*	$ 24,000,000	Statewide		13	Statewide	X	Flash, Stormwater	Placer County LHMP 2010
North Lahontan	1962	October		Lassen, Modoc, Placer, Sierra		Regionwide	Declared: Alameda, Butte, Contra Costa, Modoc, Napa, San Mateo, Sierra, Sutter, Yuba (10/17/62), Placer (10/25/62), Trinity (10/30/62), Lassen (11/4/62) Federal: 138 (10/24/62) amended to include Placer, Trinity, and Lassen Counties. Damage: $4 million+. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D.*	$4+ million	Statewide				X	Slow Rise	Taming Natural Disasters Appendix D
North Lahontan	1962-1963	December-February		Alpine, El Dorado, Lassen, Mono, Nevada, Placer, Sierra		Carson River, Bridgeport, Donner Lake, Susan River, Truckee, Woodfords, Paynesville, Topaz, Walker	**Regionwide:** February 1963 – Flood and Rainstorms. Declared: Alpine, Nevada, Placer, Sierra (2/7/63), El Dorado, Lassen (2/26/63), Mono, (2/29/63), and others. Federal: (2/25/63); February 1963 – Abnormally Heavy and Continuous Rainfall. Declared: Northern California (boundaries of San Luis Obispo, Ventura, Los Angeles, and San Bernardino counties to the Oregon State line) (2/14/64). **Alpine:** The floods of 1962-63 caused extensive damage in the Carson River Basin. Heavy rain at Woodfords. Floodwaters crested on the East Fork of the Carson River at Markleeville. **Nevada:** Little Truckee River flooded in 1963. In the Donner Lake area, there was considerable flooding at the northwest comer of Donner Lake caused by water originating in Negro Canyon. Sheet flooding deposited considerable silt and debris. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; DWR, 2009, *California Water Plan Update 2009*; Alpine County Museum, February 1997, *The History of Flooding in Eastern Alpine County and Carson Valley*; Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains*, Chapter 7 "Historical Background of Long-term Diversion of the Little Truckee River"; DWR, 1964, *Bulletin 69-63: California High Water, 1962-1963.*	$ 1,000,000	Carson River Basin	1963			X	Slow Rise, Stormwater	Taming Natural Disasters Appendix D; California Water Plan 2009; The History of Flooding in Eastern Alpine County and Carson Valley, 1997; California High Water 1962-1963 DWR Bulletin 69-63
North Lahontan	1963	January	30	Lassen		Susan River	1/30/1963. Property damage $35,714.29. Severe Storm/Thunderstorm - Wind. **Source:** Lassen County et al., 2013, *Hazard Mitigation Plan.*	$ 35,714	Lassen		X	Lassen County		Stormwater	Lassen County City of Susanville Susanville Indian Rancheria HMP
North Lahontan	1963	February	7-26	Alpine, El Dorado, Lassen, Mono, Nevada, Placer, Sierra		Regionwide	**Regionwide:** Flooding, Flood and Rainstorms, Declared: Alpine, Nevada, Placer, Plumas, Sierra (2/7/63), Amador, Colusa, El Dorado, Glenn, Lake, Lassen, Tehama, Santa Clara, Santa Cruz, Siskiyou, Yolo, Tulare (2/26/63), Mono, Trinity (2/29/63), Yuba (4/22/63) Federal: 145 (2/25/63), amended 1/30/63 to include Orange County and Redondo Beach. Regionwide and Placer: Flood and Rainstorms. Disaster #145. State declaration: 2/07/63. Federal declaration: 2/25/63. Location: Placer County (and 20 other counties) **Source:** Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update*; Placer County, April 2010, *Local Hazard Mitigation Plan.*		Regionwide				X	Flash, Stormwater	Santa Clara HMP; Placer County LHMP 2010
North Lahontan	1963		8	Lassen		Susan River	1/30/1963. Property damage $35,714.29. Severe Storm/Thunderstorm - Wind. **Source:** Lassen County et al., 2013, *Hazard Mitigation Plan.*	$ 35,714	Lassen		X	Lassen County		Stormwater	Lassen County City of Susanville Susanville Indian Rancheria HMP
North Lahontan	1964	December	18	Lassen		Susan River	12/18/1964. 1,785,714.29. Crop damage 178.57. Flooding. **Source:** Lassen County et al., 2013, *Hazard Mitigation Plan.*	$1,785,714.29 in property damages; $178.57 in crop damages	Susan River	1964	X	Lassen County	X	Flash	Lassen County City of Susanville Susanville Indian Rancheria HMP
North Lahontan	1964	December	28	Alpine, El Dorado, Modoc, Sierra, Nevada, Placer, Lassen	Northern California Christmas 1964 Disaster	Regionwide, Carson River, Susan River,	**Regionwide** : Winter 1964-65 – Late winter storms, abnormally heavy and continuous rainfall and windstorms. Declared: OEP 183-DR-CA Lassen, Sierra, El Dorado, Modoc, Nevada, Placer, Alpine, and others. Damage: public = $85.327 million; private = $127.822 million; Statewide total = $213.149 million. The Northern Lahontan area consists of the closed drainage basins for Alkali Lakes, Eagle Lake, Honey Lake, Truckee River, Carson River, Walker River, Mono Lake, and Owens River. These basins drain contiguous areas with headwaters on the eastern slopes of the Sierra Nevada Mountains. They have no outlets to the sea, and their drainages terminate in lakes or "sinks," which are remnants of ancient Lake Lahontan. Only relatively minor flooding and related damages occurred in the Northern Lahontan area, principally in the Alkali Lakes, Honey Lake, and Truckee and Walker river basins. Flooded areas totaled about 18,000 acres, with damages amounting to $601,000. **Alpine** : Peak floods on the West Fork Carson River at Woodfords in 1964. **Lassen** : Near record flooding in Susan River from Susanville to Honey Lake. Extensive damage occurred to homes, businesses, schools, roadways, bridges, and water systems in the floodplains throughout Honey Lake Valley. Transportation in the valley was very difficult because U.S. Highway 395 and Highway 36 were flooded or washed out, along with extensive impacts on power, telephone, and rural water systems. **Nevada** : Flood. State declared. Federal declared: 12/29/1964. **Placer** : Hell Hole Dam failed in December 1964. The dam was not complete and construction had stopped for the winter. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; DWR, 1966, *Bulletin 69-65: California High Water, 1964-1965*; Alpine County, 2013, *Natural Hazard Mitigation Plan*; Lassen County et al., 2013, *Hazard Mitigation Plan*; Nevada County OES, June 2006, *DMA 2000 Multi-Jurisdiction, Multi-Hazard Mitigation Plan*; Placer County, April 2010, *Local Hazard Mitigation Plan*.	$ 213,149,000	Placer County and 25 other Counties	1964	64		X	Flash	Taming Natural Disasters Appendix D; California High Water 1964-1965 DWR Bulletin 69-65; Alpine County NHMP; Lassen County HMP; Nevada MJMHMP 2006; Placer County LHMP 2010
North Lahontan	1968	February		Lassen		Susan River, Susanville, Honey Lake Valley	Continuous rain for nearly a week caused extensive flooding in the Honey Lake watershed. The Susan River and storm drains overflowed, inundating roads and stranding travelers in Susanville. Flooding in Honey Lake Valley isolated many ranchers from emergency services. **Source:** DWR, 2009, *California Water Plan Update 2009*.							Slow Rise, Stormwater	California Water Plan 2009, North Lahontan

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
North Lahontan	1968-1969	December-January		Alpine, El Dorado, Lassen, Mono, Nevada, Placer, Sierra	Winter '69 Storms	Regionwide	**Regionwide:** Winter 1969 – Storms, flooding declared: OEP 253-DR-CA El Dorado, Modoc, Mono, Placer (1/28/69), Sierra (2/8/69), and others. Federal: 1/26/69 Casualties: 47 dead, 161 injured. Damages: public = $185 million; private = $115 million; total = $300 million. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D;* Placer County, April 2010, *Local Hazard Mitigation Plan.*	$ 300,000,000	Statewide	1969	47	Statewide	X	Flash	Taming Natural Disasters Appendix D
North Lahontan	1969	June		Alpine, El Dorado, Nevada		Truckee River	**Placer:** Necessary high releases from Lake Tahoe destroyed several footbridges across the Truckee River. The Granlibakken Bridge was swept downstream, and the River Ranch bridge required emergency cables to prevent its loss. **Source:** DWR, June 1970, *Bulletin No. 69-69, California High Water 1968-1969.*	X	Lake Tahoe				X	Flash	California High Water 1968-1969 DWR Bulletin69-69
North Lahontan	1969			Mono		Mono County	Particularly large snowmelt floods in the Sierra Nevada were documented in 1969. Their total volume was two to four times larger than average. Snow deposition was more than twice average amounts and persisted into April or May. Midwinter rainfall on snow cover produced the highest flows in major Sierra Nevada rivers during this century. All lands adjacent to streams that had been inundated before were at risk. **Source:** Mono County and Town of Mammoth Lakes, October 2006, *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan.*		Mono County					Flash	Mono County HMP
North Lahontan	1970	January-March	Winter-1/24/70	El Dorado, Modoc, Nevada, Lassen	Northern California Flooding	Regionwide	**Regionwide:** Winter 1970 – Northern California Flooding Heavy Winds, Storms, Flooding Declared: OEP 283-DR-CA Butte, Colusa, Glenn, Lake, Lassen, Marin, Modoc, Plumas, Shasta, Siskiyou, Tehama, Trinity (1/27/70), Sutter, Yuba (2/3/70), Del Norte (2/10/70), Alameda, El Dorado, Mendocino (3/2/70) Federal: 2/16/70 Damage: public-$19,659,078; private-$7,998,400; TOTAL-$27,657,478. **Lassen:** Significant flood event. At stage 18.5 in Susan River - Record flooding from Susanville to Honey Lake, including Susanville, Johnstonville, Leavitt Lake, Standish, and Litchfield areas. Extensive damage to homes, businesses, schools, roads, bridges, and water systems throughout Honey Lake Valley. Transportation in and out of valley was cut off because US Highway 395 and Highway 36 were flooded or washed out. Extensive power, phone, and rural water system impacts occurred. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; Lassen County et al., 2013, *Hazard Mitigation Plan* ; National Weather Service, 2013, *Advanced Hydrologic Prediction Service*, "Flood Impacts & Photos."	$ 27,657,478	Statewide	1970			X	Slow Rise, Alluvial Fan	National Weather Service Advanced Hydrologic Prediction Service (http://water.weather.gov/ahps2/hydrograph.php?wfo=rev&gage=susc1)
North Lahontan	1973	January	16	Lassen		Susan River	Flooding- Severe Storm/Thunder Storm. 1/16/1973, Property Damage $86,206. Flooding - Severe Storm/Thunderstorm. **Source:** Lassen County et al., 2013, *Hazard Mitigation Plan.*	$ 86,207	Lassen County					Stormwater	Lassen County City of Susanville Susanville Indian Rancheria HMP
North Lahontan	1973	February	8-28	Placer		Regionwide	Storms and Floods. State declaration: 2/08/73. Location: Placer County (and five other counties) $1,864,000. February 1973 – Storms And Floods Declared: Colusa, Glenn, Napa, Placer, Sutter, Yuba (2/28/73) Federal: not declared Damage: public-$1.357 million; private-$507,000; TOTAL-$1.864 million. **Source:** Placer County, April 2010, *Local Hazard Mitigation Plan* ; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*.	$ 1,864,000	Regionwide				X	Flash	Placer County LHMP 2010 Taming Natural Disasters Appendix D
North Lahontan	1981	November		Lassen		Susan River, Susanville, Honey Lake Valley	**Lassen:** At stage 16 to 16.5 in Susan River - Major flood damage from Susanville to Honey Lake, including Susanville, Johnstonville, Leavitt Lake, Standish, and Litchfield areas. Homes, businesses, schools, roadways, bridges, and water systems were flooded throughout Honey Lake Valley. Extensive transportation, power, phone, and rural water system impacts occurred. US Highway 395 and Highway 36 were flooded. **Source:** National Weather Service, 2013, *Advanced Hydrologic Prediction Service*, "Flood Impacts & Photos."	X	Susanville to Honey lake					Slow Rise	National Weather Service Advanced Hydrologic Prediction Service (http://water.weather.gov/ahps2/hydrograph.php?wfo=rev&gage=susc1)
North Lahontan	1983	January-March		Placer, Nevada		Regionwide	Winter 1982-83 – Winter storms heavy rains, high winds, flooding, levee breaks Declared: FEMA 682-DR--CA Placer (3/15/83) Federal: 2/9/83 Damage: public-$151,185,870; private-$158,641,170; agricultural-$213,789,992; TOTAL-$523,617,032. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D.*	$ 523,617,032	Statewide	1983			X	Slow Rise, Engineered Structure Failure	Taming Natural Disasters Appendix D
North Lahontan	1986	February		Alpine, El Dorado, Modoc, Mono, Nevada, Placer, Sierra, Lassen	St. Valentine's Day Storm	Susanville, Honey Lake, Regionwide	**Regionwide** : Early February 1986 – Storms rains, winds, flooding, and mud slides Declared: FEMA 758-DR-CA Modoc, (2/19/86), Alpine, El Dorado, Lassen, Nevada, Placer, Sierra,(2/20/86), Mono (3/12/86) and others. Federal: 2/18/86 Statewide Casualties: 13 deaths, 67 injuries Statewide Damage: public-$157,987,493; private-$249,551,411; Statewide TOTAL-$407,538,904; Approximately 12,447 homes damaged; 1,382 homes destroyed; 967 businesses damaged; 185 businesses destroyed. **Alpine** : Historic peak flows of East Fork at Gardnerville in 1986. Damage from mudslides on Carson River Road, Diamond Valley and Airport Road. **Placer** : This flood was classified as an approximate 70-year event. Placer County was designated a Federal Disaster Area. The flooding caused widespread damage in most of the Dry Creek watershed. Flooding was significant in the Roseville, Rocklin, and Loomis areas. Nearly all bridges and culverts were overtopped, with 30 sustaining embankment damage; the crossing at Rocky Ridge Drive was washed out. Two bridges over Dry Creek were damaged, and street cave-ins occurred at a number of locations. Total damages in Placer County were estimated at $7.5 million; damage estimates specific to the Dry Creek Watershed are not available. One person was killed, and 62 homes were damaged or destroyed within the watershed based upon applications for disaster assistance. Other sources report around 100 homes flooded with water levels up to 5 feet above flood levels. Dozens of businesses in downtown Roseville were damaged or destroyed. According to information on file with Placer County, as part of the disaster declaration, FEMA reimbursed the County $376,611. **Lassen** : At stage 17.5 to 17 in Susan River - Major flood damage from Susanville to Honey Lake, including Susanville, Johnstonville, Leavitt Lake, Standish, and Litchfield areas. Homes, businesses, schools, roadways, bridges, and water systems were flooded throughout Honey Lake Valley. Transportation was difficult because US Highway 395 and Highway 36 were flooded or washed out. Extensive power, phone, and rural water system impacts occurred. **Source** : Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; Alpine County, 2013, *Natural Hazard Mitigation Plan* ; Alpine County Museum, February 1997, *The History of Flooding in Eastern Alpine County and Carson Valley*; Placer County, April 2010, *Local Hazard Mitigation Plan;* National Weather Service, 2013, *Advanced Hydrologic Prediction Service,* "Flood Impacts & Photos."	$ 407,538,904	Statewide	1986	13	Statewide	X	Flash	Taming Natural Disasters Appendix D; Alpine County LHMP n.a.; Placer County LHMP 2010; National Weather Service Advanced Hydrologic Prediction Service (http://water.weather.gov/ahps2/hydrograph.php?wfo=rev&gage=susc1)
North Lahontan	1992	February	14	Lassen		Susan River	Flooding in Susan River – Winter Weather. **Source:** Lassen County et al., 2013, *Hazard Mitigation Plan.*	$ 9,091	Property Damage	Lassen County				Flash, Slow Rise	Lassen County HMP
North Lahontan	1992	December	10-17	Lassen, Placer		Foresthill, Susan River	**Placer:** Heavy snows on a roof caused damages to a building located in the Forrest Hill Union School District causing $ 3,371 in damages. Several days of continuous rain followed by a downpour caused Miners Ravine to overflow its banks and caused flooding that resulted in several dramatic rescues of people trapped in homes and vehicles. **Lassen:** The Susan River was the primary source of flooding in Lassen County. $1,316 Flooding – Wind – Winter Weather. **Source:** Placer County, April 2010, *Local Hazard Mitigation Plan* ; Lassen County et al., 2013, *Hazard Mitigation Plan.*	$ 4,687	$3371 - Foresthill Union School District, $1316 - Lassen County	1992			X	Alluvial Fan	Placer County LHMP 1992, Lassen County HMP n.a.
North Lahontan	1992-1993	December-February		Alpine, Lassen, Modoc, Sierra	Late Winter Storms	Regionwide	Late winter storms, snow, rain, and high winds. Declared: FEMA 979-DR-CA Alpine (2/19/93), Sierra(1/21/93, for event beginning 1/19/93), Modoc (1/19/93, for event beginning 1/15/93), Lassen, Siskiyou (1/15/93, for event beginning 1/13/93), Federal: 1/15/93 Casualties: 20 deaths, 10 injuries Damage: public property-$32,215, $600 million. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D.*	$600,000,000	Statewide	1993			X	Slow Rise	Taming Natural Disasters Appendix D
North Lahontan	1995	January	10	Alpine, El Dorado, Lassen, Modoc, Mono, Placer, Nevada, Sierra	Late Winter Storms	Regionwide	Late Winter Storms Placer County Federal $190.6 million – public; $122.4 million – individual; $46.9 million – businesses; $79 million – highways; $651.6 million – agricultural. CA-OES FEMA 1046-DR-CA. **Source:** Placer County, December 2009, *Multi-Hazard Mitigation Plan.*	$ 1,100,000,000	Statewide -$190.6 million – public; $122.4 million – individual; $46.9 million – businesses; $79 million – highways; $651.6 million – agricultural.	1995	17	Statewide	X	Slow Rise	Placer County MHMP 2010

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
North Lahontan	1995	January	13	Alpine, El Dorado, Modoc, Mono, Nevada, Sierra, Lassen, Placer	Severe Winter Storms	Regionwide, Gregory Creek, Trout Creek, Donner Lake Road	**Regionwide: Placer County and 44 other counties:** With severe winter storms, flooding, landslides, mud flows, over 100 stations recorded their greatest 1-day rainfall in history. FEMA 1044-DR-CA Modoc, Placer (1/10/1995); Alpine, Nevada (1/11/1995); El Dorado (2/15/1995); and others. Statewide $741.4 million. Brought on by El Niño weather conditions, extremely wet conditions coupled with voluminous Sierra runoff led to very high river stages and caused extensive damage to the flood management system. **Nevada:** Severe storm, Flood. DR-1044. Flooding along Gregory Creek, Trout Creek, Donner Lake Road. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; DWR, 2009, *California Water Plan Update 2009*; Nevada County OES, June 2006, *DMA 2000 Multi-Jurisdiction, Multi-Hazard Mitigation Plan*.	$ 741,000,000	Statewide	1995	11	Statewide	X	Slow Rise, Debris Flow	Placer County MHMP 2010
North Lahontan	1995	March	1	Lassen	Severe Winter Storms	Susan River	**Lassen:** The Susan River is the primary source of flooding within Lassen County. 3/1/1995. Crop damage: $11,241,379.31. Flooding – Severe Storm/Thunderstorm. **Source:** Lassen County et al., 2013, *Hazard Mitigation Plan*.	$ 11,241,379	Susan River - crop damage	1995			X	Flash	Lassen County City of Susanville Susanville Indian Rancheria HMP
North Lahontan	1995	March	9-11	Mono		Walker and Coleville Areas	Particularly large snowmelt floods in the Sierra Nevada were documented in 1995. The total volume was two to four times larger than average. Snow deposition was more than twice average amounts and persisted into April or May. Midwinter rainfall on snow cover produced the highest flows in major Sierra Nevada rivers during this century. All lands adjacent to streams that had been inundated before were at risk in the future. Urban and small stream flooding. $1.5 million total, which included the Lake Tahoe-Truckee area, central Sierra east slopes, extreme western Nevada, and west-central Nevada. Highway 395 closed from the Nevada state line to Bridgeport because of rock and mudslides. One fatality and Mono County declared state of emergency 3/14/95. Two homes destroyed ($160,000); 10 cases of minor damage to rental properties ($100,000); 60 debris clearance sites (cost unknown); 8 emergency proactive measures ($8,000); Storm Damaged Roads ($485,000); countywide electric utility damage ($800,000). Total: $1,553,000. Flooding and avalanches occurred during this storm. **Source:** Mono County and Town of Mammoth Lakes, October 2006, *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan*.	$ 1,553,000	Mono County	1995	1	Mono County	X	Flash	Mono County MJLHMP 2006
North Lahontan	1997	January	1-2	Alpine, El Dorado, Modoc, Mono, Nevada, Placer, Sierra, Lassen	January 1, The Pineapple Express Winter Storm 1997 Floods	East, West Forks of Carson River, Susan Rivers, Truckee River, Walker River	**Lassen:** The Susan River was the primary source of flooding in Lassen County, which sustained $36,670,000 in total damages. **Alpine** : Heavy snows had fallen on the eastern Sierra watershed below Carson Pass in the days prior to Christmas 1996. Then, warm rains began falling shortly after New Year's Eve and increased in intensity as the hours progressed into January 2. Very heavy storm cells hovered over the Hope Valley area, just north and east of Carson Pass, and began pouring warm rain onto snow, resulting in unprecedented amounts of runoff into the West Fork Carson River. The West Carson flows were so high just above and below Woodfords that, for the first time, large, rounded riprap boulders placed along the channel banks were mobilized and became part of the sediment load. Ditches broke in Woodfords damaging an inn and roads. Areas of Markleeville were flooded. Damage to agriculture on the drainages of the Truckee, Walker, and Carson rivers that was estimated to exceed $50 million. Floodwaters crested Truckee River at Farad, the East Fork Carson River at Markleeville, the West Walker River below Little Walker River near Coleville, on January 2, 1997. Floodwaters passed south of Walker, to Antelope Valley into Topaz Lake. Floodwaters crested East Walker River near Bridgeport of January 4. **Placer** : A significant amount of rainfall and snowmelt runoff poured out of the Sierra Nevada from December 30, 1996, through January 1997. This was a very warm system and rain was falling at the 9,000-foot elevation. An estimated 25 inches of rain and snowmelt runoff occurred during this period in the Squaw Creek Basin (the upper Truckee River Basin in Placer County). In Placer County alone, damage estimates for public property were nearly $11 million. Approximately 137 homes and 22 businesses were damaged in the County. Total damage to private homes, businesses, agriculture, and private roads was nearly $10 million. Destruction to the Federal Highway System was nearly $7.7 million. According to information on file with Placer County, as part of the disaster declaration, FEMA reimbursed the County $717,754 and $177,451 was reimbursed through the State. **Mono** : The floods of January 1997 were caused by above-normal precipitation in the Eastern Sierras with 4 to 6 feet snow accumulation below 7,000-foot elevation and up to 8 feet accumulation at higher elevations. Large amounts of moisture and warm air ("The Pineapple Express") were transported from the subtropics into the Eastern Sierra on January 1 and 2, 1997. The resulting rainfall and snowmelt that poured off the mountains led to extensive flooding. Damage from flooding was found in the towns of Mammoth Lakes, Coleville, Walker, and Topaz, Bridgeport. More than 110 homes and 4 businesses were destroyed, totaling at least $25 million in damages. At least 30 families countywide were displaced. Destruction to public facilities was near $5 million. The West Walker River destroyed a 12-mile stretch of Highway 395 (between Topaz and Sonora Junction at Highway 108). The cost for repairs was estimated at $20 million. Total damage to the Federal highway system in the county was near $48 million. TOTAL of all damages: $78 million. **Bridgeport** : The town of Bridgeport was under 2 feet of water in the downtown area. **Coleville/Walker** : Houses were washed away in Coleville and Walker, with helicopter rescues necessary. Agricultural land loss: $15 million; residential land loss: $3.25 million; residences: $5.5 million; mobile homes: $960,000; Sierra East mobile homes sites: $337, 000. **Source** Lassen County et al., 2013, *Hazard Mitigation Plan*; Alpine County, 2013, *Natural Hazard Mitigation Plan*; Placer County, April 2010, *Local Hazard Mitigation Plan*; USGS, April 1999, *Floods in Northern California, January 1997*. Mono County and Town of Mammoth Lakes, October 2006, *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan*.	8400000 (Alpine); 1800000000 (Statewide)	Statewide; Placer County only - public property - $11 million. private homes, businesses, agriculture, and private roads - $10 million. Destruction to the Federal Highway System - $7.7 million $8,400,000 Alpine	1997	8	Statewide	X	Slow Rise, Debris Flow	Placer County MHMP 2005; Lassen County HMP; Alpine County LHMP n.a Nevada County HMP, The History of Flooding in Eastern Alpine County and Carson Valley, 1997, Flood waters crested East Walker River near Bridgeport of January 4.
North Lahontan	2001	January		Mono		Walker River	**Mono:** Walker River flood in January, 2001, Mono County. **Source:** Mono County and Town of Mammoth Lakes, October 2006, *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan*.	X	Mono County					Flash	Mono County MJLHMP 2006
North Lahontan	2005	May	16	Alpine		Markleeville Creek	On May 16, 2005, the United States Forest Service guard station in Markleeville flooded. **Source:** Planning and Conservation League Foundation, 2013, *Conservation Story,* "Friends of the Hope Valley Help Restore Markleeville Floodplain."	X	Markleeville					Flash	Planning and Conservation League Foundation, Friends of the Hope Valley Help Restore Markleeville Floodplain (http://pclfoundation.org/publications/sierranevada/alpine.html)
North Lahontan	2005	December	31	Lassen		Susan River	**Lassen:** The Susan River was the primary source of flooding in Lassen County. 12/31/2005. Property damage: $500,000. Flooding. **Source:** Lassen County et al., 2013, *Hazard Mitigation Plan*.	$ 500,000	Lassen County	2005				Slow Rise	Lassen County City of Susanville Susanville Indian Rancheria HMP
North Lahontan	2005-2006	December-January		Alpine, Placer	New Year's Eve Flood of 2006	Carson River	**Placer:** December 2005/January 2006- Flooding occurred in the county by heavy rains and stormwater runoff. Storms impacted transit on public roads and caused some business closures. **Alpine:** Flood event on Carson River at East Fork near Markleeville and at Woodfords. Rain-on-snow event. Widespread heavy rain began the afternoon of December 20, 2005, and continued until mid-morning of December 31, 2005. **Source:** Placer County, April 2010, *Local Hazard Mitigation Plan*; Carson River Coalition River Corridor Working Group, February 2008, *Carson River Watershed Regional Floodplain Management Plan*.	X	Carson River				X	Slow Rise, Engineered Structure Failure, Alluvial Fan	Placer County LHMP 2010, Carson River Watershed Regional Floodplain Management Plan, 2008
North Lahontan	2006	March-May	March 29-April 1, May 10	Alpine, El Dorado, Lassen, Nevada, Placer, Sierra	2006 Spring Storms	Regionwide	March 29, 2006 to April 1, 2006 – 2006 Spring Storms – DR 1646. Severe Storms, Flooding, Landslides, and Mudslides. El Dorado, Nevada, Placer, and other counties. Severe rainstorms and flooding. **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D.*	X	Regionwide					Flash, Debris Flow	Taming Natural Disasters Appendix D http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf
North Lahontan	2008	January		El Dorado, Nevada, Placer, Sierra	2008 Winter Storms	Regionwide	Extreme winds and heavy rains flooded the region. **Placer:** Severe winter storms brought massive snow, rain, and near record winds to Northern California over the first weekend in January, 2008 beginning on Friday January 4, 2008. It resulted in the temporary loss of power to some 2.5 million Pacific Gas & Electric customers throughout Northern California; approximately 45,000 in Placer County alone. In some cases, power outages lasted up to 6 days; in addition to the power outages, extensive physical damage was recorded in the foothill area between Alta/Dutch Flat and Foresthill due primarily to falling trees or large tree limbs. Numerous other houses and businesses throughout the foothills and western portions of the County were damaged by falling trees, flying debris, water or wind. As a result, Placer County declared a local emergency. The initial damage assessment provided to the State OES indicated damages of over $410,000 in the public sector, and an estimated $600,000 of private, residential damage. Businesses losses were much smaller and initial estimates were in the range of only $205,000 total for five businesses. **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; Placer County, April 2010, *Local Hazard Mitigation Plan* .	$ 805,000	Placer County	2008			X	Flash	Chronological List Of Governor-Proclaimed Disasters For Property Tax Purposes; Placer County LHMP 2010
Sacramento River	1805			Butte, Colusa, El Dorado, Glenn, Nevada, Placer, Solano, Sacramento, Shasta, Sutter, Tehama, Yolo, Yuba		Central Valley	A Flood reportedly inundated "the entire valley floor." **Shasta:** A great flood (described in Indian legend as having swamped the entire Sacramento River Valley with the exception of the Sutter Buttes) occurred in 1805 and probably inundated the Anderson area. The flood caused much loss of life and destruction in Indian villages. **Source:** Shasta County and City of Anderson, September 2011, *Multi-Jurisdictional Hazard Mitigation Plan* ; Sacramento County, December 2004, *Multi-Hazard Mitigation Plan* ; Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan* ; Yuba County Office of Emergency Services, 2013, *Yuba County Multi-Jurisdictional Multi-Hazard Mitigation Plan* .						X	Slow Rise	Shasta County MJHMP 2011, Sacramento County MHMP 2004; Sutter County LHMP 2013Update, Yuba County MJMHMP n.a.

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Sacramento River	1825-1826			Butte, Colusa, El Dorado, Glenn, Nevada, Placer, Solano, Sacramento, Shasta, Sutter, Tehama, Yolo, Yuba		Sacramento River Basin	**Regionwide:** Widespread flooding was experienced in the Sacramento River Basin. Native American Indians recalled the flood of 1826 as a devastating one. Pioneers mention floods in the lower Sacramento River Basin during the season 1825-26. A flood in the valley caused the trapping party of Indian Peter to camp in the Buttes. The hills were full of grizzlies, elk, antelope, and smaller game that had taken refuge there. **Source:** Sacramento County, December 2004, *Multi-Hazard Mitigation Plan* ; Shasta County and City of Anderson, September 2011, *Multi-Jurisdictional Hazard Mitigation Plan* ; USACE, 1999, *Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley, California* ; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; Yuba County Office of Emergency Services, 2013, *Yuba County Multi-Jurisdictional Multi-Hazard Mitigation Plan* .						X	Slow Rise	Sacramento County MHMP 2004, Shasta County HMP 2011, USACE, Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley, California, USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California, Yuba County MJMHMP n.a.
Sacramento River	1839-1840			Shasta		Northern California	John A. Sutter described the area near the present city of Sacramento in the flood of 1840 as a vast expanse of water. **Shasta:** In 1839-40, there was extensive flooding in northern California, which may well have extended to Anderson. **Source:** USACE, 1999, *Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley, California* ; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; Shasta County and City of Anderson, September 2011, *Multi-Jurisdictional Hazard Mitigation Plan* ; Sacramento County, December 2004, *Multi-Hazard Mitigation Plan* .						X	Slow Rise	Shasta County HMP; Sacramento County MHMP 2004
Sacramento River	1846			Sacramento		Sacramento	A *New York Times* article in 1862 noted that in Sacramento "in 1846, the water was seven feet deep for sixty days." **Source:** *New York Times*, January 21, 1862, "The Great Flood in California."						X	Slow Rise	http://www.nytimes.com/1862/01/21/news/the-great-flood-in-california-great-destruction-of-property-damage-10000000.html
Sacramento River	1846-1847			Sutter		Regionwide	**Regionwide:** Data from early settlers indicated that considerable rain caused flooding and the loss of life and villages. **Source:** Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan* ; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*	X	Regionwide		X	Regionwide		Flash	Sutter County LHMP 2013Update, USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California
Sacramento River	1847			Sacramento, Shasta, Yuba		Regionwide	**Regionwide:** In 1847, there was extensive flooding in northern California, which likely extended to Anderson. **Yuba:** Floods in the winter did little damage, simply because there was not much to be injured. **Source:** Shasta County and City of Anderson, September 2011, *Multi-Jurisdictional Hazard Mitigation Plan* ; Sacramento County, December 2004, *Multi-Hazard Mitigation Plan* ; Yuba County Office of Emergency Services, 2013, *Yuba County Multi-Jurisdictional Multi-Hazard Mitigation Plan.*							Slow Rise	Shasta County HMP; Sacramento County MHMP 2004; Yuba County MJMHMP n.a.
Sacramento River	1849-1950			Shasta			In 1849-50, there was extensive flooding in northern California. Flooding may well have extended to Anderson. Flooding occurred on the Sacramento and American rivers, washing out bridges and flooding the city of Sacramento, resulting in much damage to homes and lost lives. The city was navigated in whale ships. Significant areas of the valley were inundated, with the river being several miles wide for more than 100 miles downstream- "an unbroken sea of waters." Major floods were recorded during this time. **Source:** Sacramento County, December 2004, *Multi-Hazard Mitigation Plan* ; DWR, 2009, *California Water Plan Update 2009*; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California;* USACE, 1999, *Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley, California*; Taylor, Nathaniel R., orig. circa 1923, *The Rivers and Floods of the Sacramento and San Joaquin Watersheds*; Shasta County and City of Anderson, September 2011, *Multi-Jurisdictional Hazard Mitigation Plan* .						X	Slow Rise	Shasta County HMP
Sacramento River	1852	January-March	Winter	Placer, Plumas, Sacramento, Shasta, Tehama, Yuba		Sacramento River, American River, Western Placer	**Regionwide:** In 1852, there was extensive flooding in northern California. **Placer:** This was the first big flood to be noted in western Placer. **Yuba:** The city of Marysville was visited by four floods, and the surrounding country was more or less under water the whole season. The water in the Yuba River was backed up by that in the Feather River. Water was 6 to 10 inches deep on the floors of the buildings about the plaza. In March, the water reached 8 inches higher than earlier in the season. The water covered First Street and portions of A, B, C, and D Streets, Maiden Lane, and the Plaza. The country on all sides of Marysville was under water, and Yuba City was completely flooded. The only dry spot in Marysville was the Indian Rancheria on the bank of the river. **Sacramento:** The levee at the mouth of the American River failed. The lower Sacramento River and its tributary, the American River, reached high stages in March. The city of Sacramento was flooded chiefly from overflow of the American River east of the city. **Source:** Sacramento County, December 2004, *Multi-Hazard Mitigation Plan* ; Shasta County and City of Anderson, September 2011, *Multi-Jurisdictional Hazard Mitigation Plan* ; Placer County, December 2009, *Multi-Hazard Mitigation Plan*; Yuba County Office of Emergency Services, 2013, *Yuba County Multi-Jurisdictional Multi-Hazard Mitigation Plan* ; Leon Hunsaker and Claude Curran, November 2005, *"Lake Sacramento"—Can It Happen Again?*; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*						X	Slow Rise, Engineered Structure Failure	Sacramento County MHMP 2004; Placer County LHMP 2010; Yuba County MJMHMP n.a.;
Sacramento River	1852-1853	December-March	Winter	Placer, Plumas, Sacramento, Shasta, Tehama, Yuba	Marysville Floods	Sacramento, American, Yuba, and Feather Rivers	**Regionwide:** Data from early settlers indicated the loss of life and villages. Large floods occurred in the Sacramento River Basin in 1852-1853. The lowlands of the Sacramento River downstream from Colusa were flooded, and it was reported that all places along the right bank of the river were under water except the Indian mounds, and that thousands of cattle were drowned. There was a flood at the junction of the Yuba and Feather rivers in March. This was the fourth and last flood of the season at that place. **Sacramento:** A short, sharp rise of the American River in December flooded the city. The city was reported to have completely flooded in January. **Source:** Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan* ; USACE, 1999, *Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley, California*; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California* ; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*	X	Regionwide		X	Regionwide	X	Slow Rise	Sutter County LHMP 2013Update, USACE, Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley, California; USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California
Sacramento River	1860	March	23-28	Placer		Cook Creek, Auburn Ravine, Bear River	Rains began during the first week of October and culminated in a big storm March 23-28. Major damage was reported from farms and mines along Coon Creek, Auburn Ravine, and Bear River. Main roads remained impassable for weeks. **Source:** Placer County, April 2010, *Local Hazard Mitigation Plan.*	X	Cook Creek, Auburn Ravine, Bear River					Slow Rise	Placer County LHMP 2010
Sacramento River	1861-1862	December-January	Winter	Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, Shasta, Siskiyou, Solano, Sonoma, Sutter, Tehama, Yolo, Yuba	The Great Flood	Sacramento River, Cottonwood Creek, Feather, Yuba, Bear, American Rivers	**Regionwide:** Most notable of the nineteenth-century floods was the "Great Flood" of 1861-1862. These floods were remarkable for the exceptionally high stages reached on most streams, repeated large floods, and prolonged and widespread inundation in the Sacramento River basin. Lower elevations experienced heavy rain, and upper elevations saw continuous snowfall. The American River flooded the city of Sacramento from the east, and the lower Sacramento River flooded lowlands south of Colusa. At least four separate flood events occurred during the winter of 1861-1862. Many reports published during this period describe the lower Sacramento River Basin as one vast sea of water. Floods resulted in significant damage, loss of life, and inundation of farm/ranchland. Thousands of cattle drowned or died of starvation in the flooded regions, and many ranch buildings were destroyed. **Yuba:** In December of 1856, a bridge was constructed, but the town never grew. The bridge was swept away in the great flood of December 1861. December 1861 floods in Marysville caused the floors of the Merchants' Hotel to fall through to the basement. A great many frame houses floated from their positions, and some of them were carried downstream. Nearly all the bridges on the Yuba and Bear rivers washed away, and drift timber and saw logs came down the stream, some of which were piled 30 feet high when the water fell. A thick deposit of sand was left on the bottom lands when the waters retreated, varying in depth from 1 to 6 feet. January 11, 1862, floodwaters raised 6 inches higher than in December. The first levees in Marysville (from 3 to 8 feet high) were constructed, extending from the foot of D Street along the river to F Street. **Sutter:** December 10, 1862, the entire town of Marysville was reported as being underwater. In January 1862, the water was 6 inches higher than 1861. Farmers lost 75% of herds. **Source:** Shasta County and City of Anderson, September 2011, *Multi-Jurisdictional Hazard Mitigation Plan* ; Sacramento County, December 2004, *Multi-Hazard Mitigation Plan* ; DWR, 2009, *California Water Plan Update 2009*; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; USACE, 1999, *Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley, California*; Yuba County Office of Emergency Services, 2013, *Yuba County Multi-Jurisdictional Multi-Hazard Mitigation Plan* ; Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan.*	X	Regionwide		X	Regionwide	X	Slow Rise	Shasta County MJHMP 2011, Sacramento County MHMP 2004; California Water Plan 2009; USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California; USACE, Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley, California; Yuba County MJMHMP n.a.; Sutter County LHMP 2013Update

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Sacramento River	1862	December-March		El Dorado, Placer	Great CA Flood of 1861-62	South Fork of American River, Auburn Ravine, Bear River	**Placer:** Lincoln had just been founded as a railroad and stagecoach center. The Lincoln-Folsom railroad was closed. The Auburn Ravine Turnpike was severely damaged and closed. Mining debris caused Bear River to change its channel to the south of its original course. **El Dorado:** The general belief was that Coloma Bridge was safe against any flood; however, it was destroyed by the spring flood of 1862, which swept away almost all the bridges in the county. **Source:** California Genealogy & History Archives, 2009 (transcribed), *El Dorado County History.*	X	Lincoln-Folsom RR, Auburn Ravine Turnpike, Coloma Bridge				X	Slow Rise	Placer County LHMP 2010 El Dorado County History (http://www.rootsweb.ancestry.com/~cagha/index.htm)
Sacramento River	1866			Yuba		Marysville	**Yuba:** Legendary flood. A severe storm raged several days starting December 19, flooding all the lowlands and some of the streets of Marysville. A great deal of the levee, which was small and of comparatively recent construction, was washed away in various places. **Source:** Yuba County Office of Emergency Services, 2013, *Yuba County Multi-Jurisdictional Multi-Hazard Mitigation Plan* .						X	Flash, Engineered Structure Failure	Yuba County MJMHMP n.a.
Sacramento River	1867-1868	December-March	Winter	El Dorado, Glenn, Nevada, Modoc, Plumas, Sacramento, Siskiyou, Shasta, Sutter, Tehama		Sacramento, San Joaquin River Basins, Pit River, Cow Creek, Yuba River, American River, Feather River, Cache Creek, Putah Creek	One of the four largest floods of this period in the Lower Sacramento and San Joaquin basins. Four major storms bringing heavy rainfall occurred, with Nevada City reporting almost 42 inches of rain in 1 month. Floods on the Sacramento River upstream from the Pit River and on Cow Creek were reported. Foothill tributaries of the Yuba and American rivers were reported to have reached record stages. Cache and Putah creeks, tributaries of the Sacramento River from the Coast Ranges, were reported to have been at unusual stages.In December 1867, the lower Sacramento River Basin was assailed by extremely heavy precipitation followed by excessive runoff. High stages were observed several times. December 1867, on the foothill streams of the Sierra Nevada, and moderate or large floods occurred during the latter part of this month on streams in the Sacramento River Basin. **Sutter:** Extensive property and levee damage. Twenty percent of levees were washed away. **Source:** USACE, 1999, *Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley, California*; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan* .						X	Slow Rise	USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California; USACE, Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley, California; Sutter County LHMP 2013
Sacramento River	1870			Sutter		Meridian, Kirksville	**Sutter:** Large levee constructed in Colusa county penned in water in Sutter County. Meridian and Kirksville were submerged. **Source:** Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan* .							Slow Rise	Sutter County LHMP
Sacramento River	1871	December		Sacramento, Sutter		Sacramento River Basin, Park's Dam vandalism breach	December 27, 1871, Parks Dam was cut by parties unknown; releasing pooled floodwaters downstream. The dam was rebuilt in following year. **Source:** DWR, December 2010, *Fact Sheet: Sacramento River Flood Control System Weirs and Flood Relief Structures* .							Engineered Structure Failure	http://www.water.ca.gov/newsroom/docs/WeirsReliefStructures.pdf
Sacramento River	1875	January		Placer, Sacramento, Siskiyou, Sutter		Feather, Yuba, Bear, Sacramento River Basin, Yuba City, Maryville	**Placer:** Floods occurred along Bear River and destroyed the bridge to Grass Valley from Sheridan. **Yuba and Sutter:** January 20, 1875, water poured over the Marysville levee north of the city near the cemetery for the most disastrous flood to date, as the elevation of the Yuba River channel rose from hydraulic mining debris. At 8:00 p.m., a break occurred near the hospital, and a torrent of water came sweeping down the slough and spread itself out over the first ward. The water steadily advanced until Wednesday noon, when it stood 3 to 5 feet deep in the streets, and in some places in the first ward, 10 feet deep. In most of the houses, the water was from 2 to 5 feet deep, in some much deeper. A strong current ran down the F Street slough to the Yuba River. The whole valley, including the city, was one vast sheet of water on a level with the rivers. **Source:** Yuba County Office of Emergency Services, 2013, *Yuba County Multi-Jurisdictional Multi-Hazard Mitigation Plan* ; Placer County, December 2009, *Multi-Hazard Mitigation Plan;* Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan* .	X	Marysville					Slow Rise, Engineered Structure Failure	Placer County LHMP 2010, Yuba County MJMHMP n.a., Sutter County HMP
Sacramento River	1878	January-February		El Dorado, Glenn, Lassen, Modoc, Nevada, Plumas, Sacramento, Shasta, Siskiyou, Tehama, Yolo		Regionwide	**Regionwide:** Floods of 1878, the Sacramento River at Red Bluff reached a flood height of about 26 feet above low water on January 17. Tributaries in the vicinity of Red Bluff, including Read, Grasshopper, Dibble, and Cottonwood creeks, were at very high stages, and washed out or damaged railway trestles and highway bridges. Cache and Putah creeks reached notably high stages. Continued rains resulted in prolonged inundation of the lowlands on the west side of the river from Colusa to Knights Landing. On January 28, 1878, Elder, Thomas, and Stony creeks were at extremely high stages and flooded the lowlands for miles beyond their channels. The Sacramento River at Sacramento on February 1, 1878, reached a gauge height of 25.2 feet. As a result of a break in the levee below Sacramento, the south part of the city and adjacent lands were flooded. Lowlands upstream from Knights Landing and at other places along the lower river were inundated during the entire month of February. On February 19, Knights Landing was partially flooded when the levees protecting the town were overtopped. On February 20, the Sacramento River at Sacramento again exceeded the previous record, rising to 26 feet. Several breaks in the levees above and below the city caused flooding of the lowlands west of the river. Cache and Putah creeks were again at exceptionally high stages, causing extensive overflow and damage to railroad structures. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*	X	Regionwide					Slow Rise, Engineered Structure Failure	http://pubs.usgs.gov/wsp/0843/report.pdf
Sacramento River	1881	January-February		Butte, El Dorado, Glenn, Lassen, Modoc, Nevada, Plumas, Shasta, Siskiyou, Tehama, Yolo		Sacramento River, Feather River, Yuba River, American River, Cow Creek, Cottonwood Creek, Putah Creek, Battle Creek	**Sacramento:** Numerous breaks in levees along Sacramento River produced flooding. Bridges and railroad were destroyed, lands were inundated, and creeks overflowed their banks. In 1881, floods of considerable magnitude occurred throughout the Sacramento River Basin. The prolonged high-stage period preceding the peaks, which distinguish these events, were primarily due to the changed channel conditions that resulted from mining activities and reclamation work. A storm over the Sacramento River Basin in the middle of January caused high stages in the lower Sacramento River and resulted in numerous levee breaks. At the end of the month, back-to-back storms caused additional flooding in the basin. During this second flood in January, levees again broke on both sides of the Sacramento River downstream from the city of Sacramento. Railroad tracks were submerged and washed out at several locations. Early in February, the Sacramento River upstream from Cow Creek reached one of the highest stages of record. The high stages on Cow Creek washed out bridges and roads. The Feather, Yuba, and American rivers all reached high stages. In fact, the stages for the Feather and Yuba rivers had risen higher than ever known. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; Shasta County and City of Anderson, September 2011, *Multi-Jurisdictional Hazard Mitigation Plan* ; Sacramento County, December 2004, *Multi-Hazard Mitigation Plan* .	X	Regionwide					Slow Rise, Engineered Structure Failure	http://www.deltarevision.com/maps/islands_floods_levees/sac_flood_history-detailed_usace.pdf
Sacramento River	1883	June	18	Nevada, Sierra		Middle Fork, Yuba River	**Nevada:** On the morning of June 18, 1883, the English Dam on the Middle Fork of the Yuba River broke and released 650 million cubic feet of water. **Source:** Nevada County OES, June 2006, *Multi-Jurisdiction, Multi-Hazard Mitigation Plan (Disaster Mitigation Act 2000)* .							Engineered Structure Failure	Nevada County HMP
Sacramento River	1886	January		Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Nevada, Modoc, Placer, Plumas, Sacramento, Shasta, Siskiyou, Sutter, Tehama, Yolo		Sacramento, San Joaquin River Basins, American River, Cache Creek	**Regionwide:** Floods of 1886. There were moderate floods in this basin in January 1886. Maximum stages on the tributaries of the lower Sacramento River, occurring approximately January 24, probably were the highest during the period 1882 to 1888. On some of these tributaries, notably the American River and Cache Creek, the floods apparently were of considerable proportions, and resulted in overflow of farmlands and railroad tracks. The maximum reached on the Sacramento River at Sacramento was 25.6 feet on January 28, the highest between 1882 and 1888. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf

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Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Sacramento River	1889-1890	December-February		Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Napa, Nevada, Placer, Plumas, Shasta, Siskiyou, Sutter, Tehama, Yolo, Yuba		Central Coast Ranges; Sacramento River, Colusa, Sacramento, Red bluff, American River at Folsom, Stony Creek, Feather River	**Regionwide:** The winter of 1889-90 was notable for its prolonged rainy season, which produced damaging floods in the Sacramento River Basin in December 1889 through March 1890. The Sacramento River reached flood stages from Tehama to Sacramento on December 12, 1889. The peak stages at Colusa and Sacramento on this date were the highest yet observed. The storm was evidently very general throughout the lower Sacramento River Basin, but caused only a minor rise on the main river at Red Bluff. The crests at Colusa and Sacramento were higher than they would have been if no reclamation work had been done along the rivers. There were many breaks in the levees from Colusa downstream, and considerable damage was done to grain lands. On January 25, 1890, tributaries of the Sacramento River were again at high stages. The American River at Folsom was reported to have reached on this date a gauged height of 30 feet, possibly not the crest. Stony, Cache, and Putah creeks were at extremely high stages on January 24/25. Stony and Putah creeks were said to have been at the highest stages known to local residents, and there was a considerable overflow from Cache Creek near Yolo, which flooded farms and caused washouts along the railroad. The lower Sacramento River reached only a moderately high crest around January 31. In February 1890, there was a flood on the upper Sacramento River that resulted in the greatest rise of the season at Red Bluff, the river reaching a stage of about 26.5 feet on February 4. The Sacramento River at Redding washed out part of a highway bridge constructed 1885. The lower Sacramento River, at a fairly high stage since January, reached another moderate crest around February 11. The stage at Sacramento was above 21 feet for most of the period from February to June. Again in March 1890, there was a prolonged period of high water on the upper Sacramento River, although the peak stages at Red Bluff were not exceptionally high. Stony Creek and possibly other tributaries from the Coast Ranges were at flood stage on March 5, 1890. The lower Feather River on approximately March 7 apparently reached its highest stage of the season. The crest on the Sacramento River at Sacramento on March 11 was about 2.5 feet below the maximum that had been recorded on December 12. The peak of 1889 at Sacramento exceeded that of 1881, chiefly because of changed channel conditions, but the maximum at Maine Prairie during 1889-90 was roughly 3 feet lower than the record heights of 1881 and 1861-62. The season of 1889-90 featured an exceptionally heavy snowfall in the mountains, and the snow runoff period was one of the heaviest and longest of record. Lowlands in the lower Sacramento River Basin were flooded for many weeks. The maximum known stage on Clear Lake, 13.66 feet, occurred in January 1890. **Source**: Shasta County and City of Anderson, September 2011, *Multi-Jurisdictional Hazard Mitigation Plan* ; Sacramento County, December 2004, *Multi-Hazard Mitigation Plan*; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California;* County of Lake, February 2005, *Lake County, California, Natural Hazard Mitigation Plan*; USACE, 1999, *Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley*.	X	Regionwide					Slow Rise	Shasta County HMP 2011, Sacramento County MHMP 2004; USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California; Lake County NHMP 2012; USACE, Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley
Sacramento River	1891			Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Nevada, Placer, Plumas, Shasta, Siskiyou, Sutter, Tehama, Yolo, Yuba		Sacramento River Basin	**Regionwide:** High stages, but no outstanding flooding. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf
Sacramento River	1892-1893	December-March	Winter	Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Nevada, Placer, Plumas, Sacramento, Shasta, Siskiyou, Sutter, Tehama, Yolo, Yuba		Sacramento River Basin	**Regionwide:** (12/24-27/1892) The Sacramento River flooded after heavy rainfall, extending to Sierra and resulting in flooding. **Plumas:** (1893) Flooding occurred in Quincy. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; Plumas County OES, 2013, *Plumas County Hazard Mitigation Plan*.							Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf
Sacramento River	1895	January		Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Nevada, Placer, Plumas, Sacramento, Shasta, Siskiyou, Sutter, Tehama, Yolo, Yuba		Coastal Streams, Cache Creek	**Regionwide:** (1/22-23/1895) Major floods occurred in coastal streams and in Cache Creek. **Source:** DWR, 2009, *California Water Plan Update 2009*; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf
Sacramento River	1900			Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Nevada, Placer, Plumas, Sacramento, Shasta, Siskiyou, Sutter, Tehama, Yolo, Yuba		Sacramento River Basin	**Regionwide:** High stages, but no outstanding flooding. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf
Sacramento River	1901			Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Nevada, Placer, Plumas, Sacramento, Shasta, Siskiyou, Sutter, Tehama, Yolo, Yuba		Sacramento River Basin	**Regionwide:** High stages, but no outstanding flooding. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf
Sacramento River	1902			Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Nevada, Placer, Plumas, Sacramento, Shasta, Siskiyou, Sutter, Tehama, Yolo, Yuba		Sacramento River Basin	**Regionwide:** High stages, but no outstanding flooding. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf
Sacramento River	1903			Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Nevada, Placer, Plumas, Sacramento, Shasta, Siskiyou, Sutter, Tehama, Yolo, Yuba		Sacramento River Basin	**Regionwide:** High stages, but no outstanding flooding. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf

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Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Sacramento River	1904	January-March		Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Nevada, Placer, Plumas, Shasta, Siskiyou, Sutter, Tehama, Yolo, Yuba		Sacramento River Basin, Sacramento River, Pitt River	**Regionwide:** The upper Sacramento River reached peak stages that were the highest yet observed. These peaks occurred at Kennett and Red Bluff. Cottonwood and Clear creeks were also reported to have been at stages higher than ever observed. From the middle of February to the end of March, flooding was almost continuous in the lower Sacramento River basin. Also during this time, there was a severe flood on the Pit River at Alturas, where it was reported that boats were rowed through the main part of town. In general, the flood of 1904 was considered to have been the most destructive flood in the history of the lower Sacramento Valley up to that time. However, the peak discharge of the lower Sacramento River was believed to have been greater during the flood of 1862.**Shasta:** High stages were reached on Anderson Creek, Sacramento Gulch, and Tormey Drain during floods that occurred in 1904. **Source:** USACE, 1999, *Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley*; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; Shasta County and City of Anderson, September 2011, *Multi-Jurisdictional Hazard Mitigation Plan* .	X	Regionwide				X		USACE, Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley; USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California; Shasta County MJHMP 2011
Sacramento River	1904-1905	Winter		Sacramento			In the winter of 1904, the Edwards levee break occurred 1.5 miles south of Y Street, flooding farmlands 35 miles south of Sacramento. As a result, in October 1905, Sacramento approved $165,000 for levee improvements. **Source:** Sacramento County, December 2004, *Multi-Hazard Mitigation Plan* .	$ 165,000	Sacramento County	1905				Engineered Structure Failure	Sacramento County MHMP 2004
Sacramento River	1907	January-March		Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Nevada, Placer, Plumas, Sacramento, Shasta, Siskiyou, Sutter, Tehama, Yolo, Yuba		Sacramento River at Colusa, Feather River, Sacramento River, Yuba River, San Joaquin River, American	**Regionwide:** In March 1907, a very destructive flood occurred in the Sacramento River basin. The flood was caused by severe rain from March 16 to 20, followed by a period of comparatively high runoff. Stages were exceptionally high throughout the basin. On the Feather River at Oroville, the flood height was the greatest ever observed, although it was believed that the river profile at that location had been raised since 1862 by deposition of mining debris. **Shasta:** Severe floods occurred on the Sacramento River in 1907.**Sutter:** Three weeks of heavy rain and March snowfall led to levees breaking in Districts 1 and 2 in mid-March. The flood wave was sustained for 200 miles. Damage amounted to $1,000. **Sacramento:** Great floods swept the valley in March 1907. The highest water ever known in the island district prevailed on March 21. Fair Oaks Bridge was swept away. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; USACE, 1999, *Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley*; Shasta County and City of Anderson, September 2011, *Multi-Jurisdictional Hazard Mitigation Plan* ; Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan;* Sacramento County, December 2004, *Multi-Hazard Mitigation Plan* .	$1,000	Sutter County	1907			X	Slow Rise; Engineered Structure Failure	USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California; USACE, Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley; Shasta County MJHMP 2011; Sutter County LHMP 2013Update; Sacramento County MHMP 2004;
Sacramento River	1909	January-February		Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Nevada, Placer, Plumas, Sacramento, Shasta, Siskiyou, Sutter, Tehama, Yolo, Yuba		Sacramento River Basin	**Regionwide:** During January 1909, flooding occurred at several places in the Sacramento River Valley from Red Bluff to the mouth of the Sacramento River. The Sacramento River had reached high stages at Red Bluff in January and continued to rise through the beginning of February. The Sacramento River at Red Bluff reached a peak stage that was the highest yet observed. The lower river at Sacramento reached the maximum stage of record in the middle of January, and exceptionally high stages were recorded on nearly all the main tributaries to the river. Flood conditions prevailed in the lower basin through the end of the month. However, damaging floods occurred again in the beginning of February. **Shasta:** Severe floods occurred on the Sacramento River in 1909. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; Shasta County and City of Anderson, September 2011, *Multi-Jurisdictional Hazard Mitigation Plan.*	X	Regionwide				X	Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf; Shasta County MJMHMP 2011
Sacramento River	1911			Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Nevada, Placer, Plumas, Sacramento, Shasta, Siskiyou, Sutter, Tehama, Yolo, Yuba		American River, Feather River, Putah Creek, Cache Creek, Stony Creek, Sacramento River	**Regionwide:** A minor flood occurred in the Sacramento Valley in March 1911. Sacramento River near Red Bluff reached a high stage on March 7, and Stony, Cache, and Putah Creeks had high peak stages on March 6 or 7, 1911. The Feather, American, and lower Sacramento rivers did not reach exceptionally high stages. Damaging floods were confined mainly to the lowlands on the west side of the Sacramento River downstream from Colusa and were the result of heavy runoff from the foothills of the Coast Ranges. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf
Sacramento River	1913-1914	December-March	Winter	Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Nevada, Placer, Plumas, Sacramento, Shasta, Siskiyou, Sutter, Tehama, Yolo, Yuba		Sacramento, American River, Putah Creek	**Regionwide:** High stages and minor flooding occurred along Sacramento River, American River, and Putah Creek. **Source:** USGS 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; Siskiyou County, August 2012, *Hazard Mitigation Plan Volume 1: Planning-Area-Wide Elements.*							Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf
Sacramento River	1915	February		Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Nevada, Placer, Plumas, Sacramento, Shasta, Siskiyou, Sutter, Tehama, Yolo, Yuba		Sacramento River, Putah and Cache creeks	**Regionwide:** High stages and minor flooding occurred along the upper Sacramento River, Cache Creek, and Putah Creek. **Source:** USGS 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; Siskiyou County, August 2012, *Hazard Mitigation Plan Volume 1: Planning-Area-Wide Elements.*							Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf
Sacramento River	1916	March		Siskiyou		Dunsmuir	**Siskiyou:** Flooding occurred on the Sacramento River in Dunsmuir. **Source:** Siskiyou County, August 2012, *Hazard Mitigation Plan Volume 1: Planning-Area-Wide Elements.*							Slow Rise	Siskiyou County HMP 2012
Sacramento River	1926			Siskiyou		Countywide	**Siskiyou:** Flooding in and around the county. **Source:** Siskiyou County, August 2012, *Hazard Mitigation Plan Volume 1: Planning-Area-Wide Elements.*							Slow Rise	Siskiyou County HMP 2012
Sacramento River	1928	March		Butte, Colusa, El Dorado, Lake, Lassen, Modoc, Nevada, Placer, Plumas, Siskiyou, Sutter, Tehama, Yolo, Yuba		Sacramento, Feather, American River Basins	**Regionwide:** In March 1928, flooding was severe in the basins of the Feather and American rivers and moderate throughout the Sacramento River basin. A notable feature of the flood of 1928 was that it occurred during a relatively dry season and was followed by comparatively low stages; whereas, most of the important floods in this basin have occurred during seasons of heavy precipitation. The flood of 1928 occurred during a period of heavy precipitation in the Sierra Nevada. Temperatures were unusually high, and the rainfall was especially heavy at altitudes up to 7,000 feet. The American River at Fair Oaks equaled its maximum recorded discharge of March 1907, and the Feather River at Oroville was exceptionally high. The greatest damage during the flood of 1928 was from overflow of the American River near Sacramento. Several thousand acres, including the town of North Sacramento, were flooded. **Sacramento:** Newspaper accounts of rainfall and stream gauge records indicated that Sacramento experienced significant flooding. In the City of Sacramento. The American River overflowed in 1928, causing extensive flooding in the River Park and Industrial Park areas on the south bank. North Sacramento was flooded for 3 days in late March. **Source:** DWR, 2009, *California Water Plan Update 2009*; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California* ; USACE, 1999, *Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley*; Sacramento County, December 2004, *Multi-Hazard Mitigation Plan* .							Slow Rise	USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California; USACE, Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley; Sacramento County MHMP 2004;
Sacramento River	1937	December		Butte, Shasta, Sutter, Tehama		Butte Creek, E. Biggs, Nicolaus Bridge	During December 1937, a portion of Anderson was flooded. The river reached its highest level in 42 years, and all highways and railroads in the study area were closed to through travel. Bridges and buildings were washed away, and some power and communication facilities were destroyed. **Butte:** Record flood in Butte Creek in December 1937, equivalent of a 20-year flood. **Sutter:** There was a levee break in E. Biggs. Water flowed over Hwy 20. Nicolaus bridge was damaged. **Source:** Shasta County and City of Anderson, September 2011, *Multi-Jurisdictional Hazard Mitigation Plan* ; Tehama County Public Works, April 2012, *Tehama County Hazard Mitigation Plan, Volume 1—Planning-Area-Wide Elements*; Butte County Office of Emergency Management, 2013, *Butte County Local Hazard Mitigation Plan* ; Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan.*	X	Butte, Shasta, Tehama, Sutter Counties				X	Slow Rise	Shasta County HMP 2011; Tehama County HMP 2012; Sutter County LHMP 2013Update; Butte County LHMP, 2013

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Sacramento River	1937	December	11	Sierra	The Great Flood of 1937	North and South Fork of Yuba	The winter of 1937 had not been remarkable. Little snow had fallen at the higher elevations, and the winter weather had been mild until early December. People living along the North Yuba River who had radios tuned to catch weather forecasts were fortunate enough to hear a warning of a pending storm. Most people did not expect the torrential rain that struck the general region. The North and South Forks of the Yuba River had brought fortunes in gold to early settlers of the area. The community of Downieville along the Yuba River was proud of its new highway bridge, and businesses were flourishing. By the morning of December 10, 1937, the North Fork was carrying a great volume of water, and some folks expressed concern that flooding might occur. It had been nearly 10 years since the last high water in 1928. A vast amount of debris and logs had accumulated along the banks of the streams. With the extremely swift rise of the water, this debris and old fallen logs tore away the banks of the streams. Both the North Fork and South Fork were running full and were congested with trees and debris. Initially the logs, telephone poles, and debris passed under the bridges and did not hang up on the bridge piers; however, as the river continued to rise, and the debris load increased, the passage under the bridges became more difficult. The state highway road crew recognized the possibility that logs would jam against the bridge support and create a barrier at the bridge. The head of the local road crew organized an effort to free the debris by cable and truck. The river continued to rise to reach almost the top of the arches of the bridge, and the efforts of the road crew no longer stemmed the tide of debris and water; the men barely had time to escape the dam. Logs and debris were piled against the bridge, blocking the passage of water through the arches and forming a lake. The road on the bridge was level with the business street of Downieville; within a very short time, 2 or 3 feet of water accumulated on the street from the lower end to the Upper Plaza. At the same time, homes and garages along Main Street were lifted from their foundations and began to float downstream before collapsing or breaking apart. Some buildings were destroyed, some badly damaged. Buildings that escaped being torn from foundations received extensive water and mud damage. Meanwhile, the area around Durgan Flat and Durgan Bridge (the courthouse bridge) was also facing the floodwaters and debris, as was the Highway 49 Bridge. Both bridges collapsed and were quickly broken up. Only two pillars were left of the Durgan Bridge, near the riverbank. The headline of the *Mountain Messenger* at that time spelled out the not-so-pretty picture that floodwaters heaped upon the county seat. The *Mountain Messenger* reported that this storm was of unusual ferocity, not previously seen in this area. It ruined homes and flooded the business section of town. A huge logjam, gathered by rushing waters of the North Fork, blocked the new highway bridge and formed a dam that raised the water level 20 feet above normal. The business section was inundated to a depth of 3 feet. The approach to Goodyear Bar Bridge was cut, and the town was isolated. Landslides on the highway blocked east and west communication. Telephone and power services were interrupted. Food and merchandise stocks were ruined or damaged. Families were divided by raging waters of North and South Forks. No fatalities occurred, but several near-tragedies marked the fights to save homes. Much debris that had accumulated during decades of low-water seasons was gathered by the runoff and rushed down upon the unsuspecting dwellers in the mountain canyon. Staggering before the massive pressure of water, the Jersey Bridge crumbled, and in a mass of iron rods and timbers, lodged against the new state highway span. At almost the same instant, the logjam reached town and piled against the bridge. It was apparent to the awed spectators that the fate of the buildings on the North Fork was sealed. On the crest of the waters piling up behind the jam, the Homer Gould home rose majestically from its foundations and, like an oceanliner, sailed southward along the highway to a point just west of the Henry Meyer home, turned and crossed the highway and, gaining speed as it felt the pull of the South Fork torrent, brushed aside the Durgan bridge and hurled itself to destruction in the canyon below Cannon Point. **Source:** *Mountain Messenger*, 1937, "Raging Waters of Yuba Devastate Downieville"; Sierra County Historical Society, 2008, *The Sierran* , "The Great Flood of 1937, Downieville, California."	$ 550,000	Downieville, Durgan Bride	1937			X	Slow Rise	The Sierran The Great Flood of 1937, Downieville, California Winter 2008 Santa Clara Valley Water District Upper Llagas Project History (http://www.valleywater.org/Services/UpperLlagasHistory.aspx)
Sacramento River	1937-1938	December-March		Alpine, Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, Shasta, Sierra, Siskiyou, Solano, Sutter, Tehama, Yolo, Yuba		Regionwide	**Regionwide:** Reliable evidence indicates that the highest river stages ever noted were reached in December 1937 at certain points on the Sacramento River and tributaries in the general vicinity of Red Bluff. Many places in the region suffered damage, including Chester, Downieville, Gerber, Tehama, and agricultural areas in Tehama, Glenn, and Colusa counties. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*						X	Slow Rise	USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California;
Sacramento River	1938	February		Lake		Clear Lake	**Lake:** The highest lake stage that occurred since the construction of Cache Creek Dam was in February 1938, Stage 10.25 feet (10-year event) at elevation 1328.51 feet. **Source:** County of Lake, February 2005, *Lake County, California, Natural Hazard Mitigation Plan.*							Slow Rise	Lake County NHMP 2012
Sacramento River	1940			Shasta, Siskiyou, Sutter			**Shasta:** The pre-Shasta Dam flood of 1940 on the Sacramento River was estimated to have had a peak flow of 186,000 cfs, which is equal to a 180-year flood under present conditions. The estimated total flood damages for the 1940 flood in Shasta County were $278,000. **Siskiyou:** Flooding occurred along Sacramento River in Dunsmuir. **Sutter:** Flood in Meridian from Sutter Bypass. After this flood the Shasta Dam was built to control the Sacramento River. **Source:** Shasta County and City of Anderson, September 2011, *Multi-Jurisdictional Hazard Mitigation Plan*; Siskiyou County, August 2012, *Hazard Mitigation Plan Volume 1: Planning-Area-Wide Elements*; Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan.*	$ 278,000	Shasta County	1940			X	Slow Rise	Shasta County MJHMP 2011, Siskiyou County HMP 2012, Sutter County HMP
Sacramento River	1942	January-February		Alpine, Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, Shasta, Sierra, Siskiyou, Solano, Sutter, Tehama, Yolo, Yuba		Regionwide	The Sacramento River flooded farmland near Tehama and Vina, and the Feather River flooded lands between Oroville and Marysville. **Source:** DWR, February 21, 1942, *Preliminary Report on the Flood of February 1942 in Sacramento Valley, California with Particular Reference to Damage caused by Break in Feather River Levee of Reclamation District 803* .							Engineered Structure Failure	http://carroll.dss.ucdavis.edu/repository/1942%20Hyatt,%20Edward.%20Prelim%20Report%20on%20Sac%20Valley%20Flood-Reference%20to%20Break%20in%20Feather%20River%20Levee.pdf
Sacramento River	1942			Shasta			**Shasta:** Severe floods on the Sacramento River. **Source:** Shasta County and City of Anderson, September 2011, *Multi-Jurisdictional Hazard Mitigation Plan* .							Slow Rise	Shasta County MJHMP 2011
Sacramento River	1942			Sutter		Sutter/Robbins Basin	**Sutter:** Break in Sutter Bypass flooded Sutter/Robbins basin. **Source:** Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan.*							Engineered Structure Failure, Slow Rise	Sutter County LHMP 2013Update
Sacramento River	1944			Sutter		Sutter County	**Sutter:** Break in the Bear River flooded Sutter County. **Source:** Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan* .							Engineered Structure Failure	Sutter County LHMP 2013Update
Sacramento River	1948			Sutter		Rio Oso/Nicolas Basin	**Sutter:** Break in Bear River flooded Rio Oso/Nicolaus Basin. **Source:** Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan* .							Engineered Structure Failure	Sutter County LHMP 2013Update
Sacramento River	1950	November	21	Alpine, Placer			Declared Flood Disaster # CDO 50-01. State Declaration 11/21/50. Location: Placer County (statewide). Damage: 9 deaths and $32,183,000. **Alpine:** Power poles went down. A bridge between Woodfords and Markleeville was carried away. The Woodfords-Markleeville area was flooded. **Regionwide Damage:** Sacramento River Basin above Delta $4,983,000; Sacramento-San Joaquin Delta $4,550,000; San Joaquin River Basin-Consumes River to Upper San Joaquin River $11,460,000; Upper San Joaquin River Basin-Kings River to Kern River $11,190,000; TOTAL-$32,183,000. **Source:** Placer County, April 2010, *Local Hazard Mitigation Plan* ; Alpine County Museum, February 1997, *The History of Flooding in Eastern Alpine County and Carson Valley;* Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D.*	$ 32,183,000	Statewide	1950	9	Statewide	X	Flash	Placer County LHMP 2010; The History of Flooding in Eastern Alpine County and Carson Valley, 1997; Taming Natural Disasters Appendix D
Sacramento River	1950	December				Statewide	CA 47-DR-CA (12/22/55) Federal declaration for floods. Statewide deaths = 74. Statewide damage = $200,000,000. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D.*	$ 200,000,000	Statewide		74	Statewide	X	Slow Rise	Taming Natural Disasters - Appendix D - Disasters Affecting the San Francisco Bay Area 1950 – 2009;

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Sacramento River	1950-1951	November-January		Nevada, Sacramento, Solano, Sutter, Yuba		Lowlands south of the Yuba River, Olivehurst, Del Paso Heights, suburban Sacramento, Yankee Slough, City of Sacramento, the American River, Yuba River	**Statewide/Sacramento:** State Disaster Declaration for Floods: CA OCD 50-01 (11/21/50). Statewide deaths = 9. Statewide damage = $32,183,000. Sacramento Basin damage = $4,983,000. **Sacramento:** Newspaper accounts of rainfall and stream gauge records indicated that Sacramento County experienced significant flooding. In the city of Sacramento, the American River inundated extensive areas on the north bank, including the area in the vicinity of Fulton Avenue and Fair Oaks Boulevard. **Yuba:** Yuba River flooded the communities of Linda and Olivehurst in 1950. Heavy November rains caused extensive flooding in the Sacramento Basin. Flood flows on the Yuba River from the rising stages of the second and largest storm peak broke through the dredger tailings of the Yuba Goldfields in the vicinity of Hammonton, upstream of the Sacramento River Flood Control Project levees. Floodwaters from the Yuba River inundated large areas thought to be adequately protected from flood flows by the downstream project reaches. The communities of Hammonton, Linda, Olivehurst, Arboga, and over 40,000 acres of agricultural land, including Reclamation District 784, were swamped by the overflow. The peak flow in the Yuba River was approximately 107,000 cfs, and approximately 40,000 cfs escaped through the Goldfields breach. Damages occurred to residential property, commercial and industrial properties, public utilities, and agricultural properties. No lives were lost; however, approximately 8,000 people were evacuated from the area. November rains caused a Bear River breach. **Sutter:** A break in Yankee Slough flooded Sutter County. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; Sacramento County, December 2004, *Multi-Hazard Mitigation Plan* ; Yuba County Office of Emergency Services, 2013, *Yuba County Multi-Jurisdictional Multi-Hazard Mitigation Plan* ; Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan* .	$32,183,000, $4,983,000;	(CA OCD 50-01) Statewide, Sacramento basin		9	Statewide	X	Slow Rise, Engineered Structure Failure	Taming Natural Disasters - Appendix D - Disasters Affecting the San Francisco Bay Area 1950 – 2009; Sacramento County MHMP 2004; Yuba County MJMHMP n.a.; Sutter County HMP
Sacramento River	1951			Sacramento		American River	**Sacramento:** Just after ground was broken for Folsom Dam, the American River watershed experienced the first of five record storms. **Source:** Sacramento County, December 2004, *Multi-Hazard Mitigation Plan* .							Slow Rise	Sacramento County MHMP 2004
Sacramento River	1955	December		Placer, Shasta, Siskiyou, Tehama	1955 Christmas Flood	Butte Creek, Yuba City and Nicolaus (Sutter)	**Regionwide:** The "Christmas Day Flood" from the west side levee breach on the Feather River killed 40 people, caused the mandatory evacuation of over 30,000, and devastated the region's economy. This was an all-time record flow, the worst flood in northern California. The December 1955 flood brought large flows to many locations in the Sacramento River Basin. A levee break on the Feather River caused severe flooding in the Yuba City area. The flow in the American River at Fair Oaks was controlled to 70,000 cfs because Folsom Reservoir was nearly empty at the beginning of the event. Had Folsom been up to allowable storage capacity, the project would have exceeded its design outflow and the flow at Fair Oaks probably would have been more than 115,000 cfs. At the Sacramento Weir, 30 gates were opened, and the peak flow reached 48,800 cfs. The peak flow in the Sacramento River at I Street was about 95,000 cfs. Total flow at the latitude of Sacramento, including the Yolo Bypass, was about 380,000 cfs. **Sutter**: A levee break in south of Yuba City occurred at about midnight on December 23. The initial surge water spread west through Gilsizer Slough to the Sutter Bypass and north into Yuba City. Within less than 24 hours, the heart of Sutter County was flooded from the Feather River on the east and south to the Bypass on the west and southwest. To the north, the water spread north of Colusa Avenue (Highway 20) in several areas, including some west of Walton Avenue. Nearly 100,000 acres were flooded and resulted in 38 deaths, injuries to 3,200 people, and nearly $40 million in property damage. The bridge over the Feather River at 5th Street was washed out and telephone service was lost south of Colusa Avenue. Major flooding occurred in Yuba City and Nicolaus in Sutter County due to levee breaks on December 24, 1955. **Siskiyou** : Flooding occurred along Sacramento River in Dunsmuir. **Shasta:** Severe floods occurred on the Sacramento River. **Tehama** : Major floods occurred in December 1955. **Yuba**: "Great flood." **Butte**: There was a record flood in Butte Creek in December 1955, deemed to be a 30-year event. **Placer:** Dry Creek and its tributaries have an extensive record of historic flood, especially in the Roseville area. According to a 1992 report, a damaging flood occurred in December 1955, which was listed on NOAA's website as one of the top 15 notable weather/water/climate events. Significant and extended heavy rain and wind resulted in flooding throughout coastal and inland regions of northern California. Extensive flooding from overflowing small streams occurred in Placer County suburbs. Calculated damages for all areas affected in the state were 28 fatalities and $1.8 billion in losses. **Source**: Yuba County Office of Emergency Services, 2013, *Yuba County Multi-Jurisdictional Multi-Hazard Mitigation Plan*; USACE, 1999, *Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley*; Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan*; Siskiyou County, August 2012, *Hazard Mitigation Plan Volume 1: Planning-Area-Wide Elements*; Shasta County and City of Anderson, September 2011, *Multi-Jurisdictional Hazard Mitigation Plan;* Tehama County Public Works, April 2012, *Tehama County Hazard Mitigation Plan, Volume 1—Planning-Area-Wide Elements;* Butte County Office of Emergency Management, 2013, *Butte County Local Hazard Mitigation Plan;* Placer County, April 2010, *Local Hazard Mitigation Plan.*	$1.8 billion, $40 million	Statewide, Sutter County	1955	28	Statewide	X	Flash, Engineered Structure Failure	Yuba County MJMHMP n.a., Sutter County LHMP 2013Update, USACE, Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley, Siskiyou County HMP 2012, Shasta County HMP 2011, Tehama County HMP 2012, Butte County LHMP, 2013, Placer County LHMP 2010
Sacramento River	1955	December	21-24	Yuba	1955 Christmas Flood	Yuba River	The 1955 flood was the most costly to date for the Yuba River, which has several forks in its watershed. The North Yuba has its headwaters at Yuba Pass and flows into New Bullards Bar Reservoir and Dam and thence into the Middle Yuba prior to Englebright Reservoir. The South Yuba has its headwaters at Donner Summit and Spalding Lake and also flows into Englebright Reservoir west of the entry of the North Yuba. The Middle Yuba has its headwaters at Jackson Meadows Reservoir and is the main channel of the Yuba River flowing southwesterly to Englebright Reservoir and thence through the cities of Marysville and Yuba City where its joins with the Feather River. This confluence of the Yuba and Feather Rivers in Marysville and Yuba City has been the scene of serious municipal flooding in the watershed.. **Source:** DWR, 2009, *California Water Plan Update 2009*.	X					X	Slow Rise	California Water Plan 2009
Sacramento River	1955			Yolo		Lower Cache Creek	**Yolo:** Flooding of Lower Cache Creek downstream from Clear Lake occurred in 1955. **Source:** Yolo County OES, 2013, *Yolo Operational Area Multi-Hazard Mitigation Plan.*							Flash	Yolo Operational Area MHMP 2004
Sacramento River	1955-1956	December-January		Sacramento		City of Sacramento, Arcade Creek	Regionwide: Federal Disaster Declaration, CD 47-Dr-CA, 12/23/55. Sacramento: In the City of Sacramento, Arcade Creek overflowed its banks, inundating portions of Del Paso Park, as well as areas upstream along Winding Way and portions of the Hagginwood District downstream. Flooding also occurred on Dry and Robla Creeks near the Natomas East Main Drainage Canal. Large portions of the Morrison Creek Stream Group Basin were flooded during this time. High backwater conditions on the lower reaches of basin streams were caused by overflow from the Cosumnes and Mokelumne Rivers into the Beach-Stone Lakes area. Morrison Creek overflows flooded portions of the Sacramento Army Depot property, areas downstream from the Southern Pacific Railroad tracks, and other areas east of Stockton Boulevard between 65th Street and Elder Creek Road, and caused the temporary closure of Meadowview Road west of Franklin Boulevard. Also, widespread flooding occurred along Elder, Florin, Unionhouse, and Laguna creeks. The 1955 floodwaters covered about 8,300 acres, and flood damages were estimated at approximately $213,000. This record storm filled Folsom Lake in a week, just as Folsom Dam was being completed. The Dam and Lake design engineers had predicted it would take a year to fill. As a result, Sacramento was saved from flooding. Source: FEMA, July 6, 1998, Flood Insurance Study, City of Sacramento, California, Sacramento County (Volumes 1 and 2); Sacramento County, December 2004, Multi-Hazard Mitigation Plan.						X	Flash, Slow Rise	Sacramento County MHMP 2004
Sacramento River	1956			Yolo		Lower Cache Creek	**Yolo:** Lower Cache Creek flooding downstream from Clear Lake occurred in 1956. **Source:** Yolo County OES, 2013, *Yolo Operational Area Multi-Hazard Mitigation Plan.*							Flash	Yolo Operational Area MHMP 2004
Sacramento River	1957	May	20	Placer		Placer County	Unseasonal and heavy rainfall. State Declaration: 5/20/57 (cherry-producing). Location: Placer County (other cherry-producing areas). Damage: 2 injuries and $6,000,000. **Source:** Placer County, April 2010, *Local Hazard Mitigation Plan* .	$ 6,000,000	Placer County, Cherry Orchards					Flash	Placer County LHMP 2010
Sacramento River	1958	February	26	Alpine, Sierra, Nevada, Placer			**Regionwide:** 2/26/1958 Storm and Flood Damage, Northern California (Southern boundaries of Santa Cruz, Santa Clara, Stanislaus, Tuolumne, Alpine Counties to the Oregon border). **Regionwide and Placer:** Storm and Flood Damage. CDO 58-03. State Declaration: 2/26/58. Location: Placer County (northern California). **Source:** Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update* ; Placer County, April 2010, *Local Hazard Mitigation Plan* ; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*.		Regionwide					Slow Rise, Flash, Stormwater	Placer LHMP 2010, Santa Clara County HMP, Taming Natural Disasters Appendix D

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Sacramento River	1958	February		Alpine, Sierra, Nevada, Placer			**Regionwide:** 2/26/1958 Storm and Flood Damage, Northern California (Southern boundaries of Santa Cruz, Santa Clara, Stanislaus, Tuolumne, Alpine counties to the Oregon border). **Regionwide and Placer:** Storm and Flood Damage. CDO 58-03. State Declaration: 2/26/58. Location: Placer County (northern California). **Source:** Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update* ; Placer County, April 2010, *Local Hazard Mitigation Plan* ; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*.		Regionwide					Slow Rise, Flash, Stormwater	Placer LHMP 2010, Santa Clara County HMP, Taming Natural Disasters Appendix D
Sacramento River	1958	February-April		Colusa, Glenn, Lake, Modoc, Solano, Sonoma, Sutter, Yolo, Northern California (Southern boundaries of Santa Cruz, Santa Clara, Stanislaus, Tuolumne, Alpine counties to the Oregon border)		Northern Sacramento Valley, Colusa Trough, Cache Creek, Delta, Colusa Basin Drain City of Sacramento, Clear Lake, Regionwide, Lower Cache Creek	**Regionwide** : State Disaster Declaration, CD 82-DR-CA, Storm and Flood Damage, 02/26/1958 and Federal Disaster Declaration, 04/04/1958. Statewide deaths 13. Statewide damage $20,000,000 and $4,000,000 for agriculture. Flood damage resulting from two storm periods occurred in February in the North Coastal area, in the northern Sacramento Valley, near Clear Lake, and throughout most of Northern California in April. The later floods inundated areas in or near Hamilton City, Stockton, Walnut Creek, Brentwood, Mendota, Patterson, Mill Valley, Napa, and the Sacramento-San Joaquin Delta. Several locally owned levees failed or were overtopped in the Central Valley and in scattered coastal areas. **Sacramento:** The flooding of 1958 (approximately 10,600 acres) covered a larger area than the floods of 1955; however, the flood damage estimate of $204,000 in 1958 was slightly lower. **Lake:** High lake stage occurred after the construction of Cache Creek Dam rose to 10.86 feet (10-year event), Elevation 1329.12 feet. **Glenn, Colusa, Yolo:** The largest flood in the Cache Creek drainage occurred during February 1958 and was estimated to be a 4 percent annual change event—93,000 acres in the Colusa Basin were flooded. Major flooding in Yolo County in 1958 from Cache Creek overflow in the Capay Valley and south of Cache Creek near the City of Woodland. The greatest flooding in recent years was in 1958, when flooding along the canal extended 70 miles upstream from Knights Landing. In the City of Davis, the Dry Slough-Davis watershed area, major flooding occurred in 1958. Damages to an area of 62,000 acres in the Colusa Trough amounted to $985,000. **Placer:** Dry Creek and its tributaries have an extensive record of historical floods, especially in the Roseville area, including damaging floods that occurred in December 1955. **Shasta:** Severe and damaging floods occurred along the Sacramento River in 1958. **Source:** DWR, February 1965, *Bulletin 159-65: California Flood Control Program 1965;* Sacramento County, December 2004, *Multi-Hazard Mitigation Plan* ; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D* ; County of Lake, February 2005, *Lake County, California, Natural Hazard Mitigation Plan* ; FEMA, June 18, 2010, *Flood Insurance Study, Yolo County, California, and Incorporated Areas*; Butte County Office of Emergency Management, 2013, *Butte County Local Hazard Mitigation Plan* ; Placer County, April 2010, *Local Hazard Mitigation Plan* ; Shasta County and City of Anderson, September 2011, *Multi-Jurisdictional Hazard Mitigation Plan* ; Yolo County OES, 2013, *Yolo Operational Area Multi-Hazard Mitigation Plan* .	$204,000; $20,000,000 and $4,000,000 for agriculture; $985,000	Sacramento; Statewide; Glenn/Colusa/Yolo	1958			X	Slow Rise, Engineered Structure Failure, Flash, Stormwater, Flash	California Flood Control Program 1965 DWR Bulletin No. 159-65, February 1965; Sacramento County MHMP 2004, Lake County NHMP 2012, Placer County LHMP 2010 Yolo County Operational Area MHMP 2004; Yolo County Flood Insurance Study 2010
Sacramento River	1960	February		Sacramento, Yolo		Sacramento River Basin, Delta: Little Holland Tract	**Sacramento River basin:** The most noteworthy peak discharges in the Sacramento River basin occurred on the Feather River and its tributaries. **Delta:** Some flooding occurred in the Little Holland tract in the Sacramento River delta area. **Source:** USGS, 1965, *Water Supply Paper 1790-B: Summary of Floods in the United States during 1960.*							Slow Rise	Summary of Floods in the United States During 1960, USGS 1790-B, 1965
Sacramento River	1962	February		Sacramento		City of Sacramento, Dry Creek and Robla Creeks	Rainfall and stream gauge records indicated that Sacramento experienced significant flooding. The February 1962 floods caused inundation along Arcade Creek in the vicinity of Del Paso Park. The park and the Haggin Golf Course were flooded, and the floodwaters forced the closing of Roseville Road. Dry Creek and Robla Creek caused flooding in the vicinity of the Natomas East Main Drainage Canal where Rio Linda Boulevard was threatened. In the Morrison Creek Sacramento County Hazard Identification Stream Group, floodwaters escaped from Morrison Creek near the Sacramento Army Depot. This overflow, along with other overflows from Morrison Creek upstream of Stockton Boulevard, caused widespread inundation of a primarily residential area east of Stockton Boulevard from the corporate limits north to Fruitridge Road. The Glen Elder section east of Stockton Boulevard and south of Elder Creek Road was the most severely flooded portion in the Morrison Creek Stream Group area. Laguna, Elder, Florin, and Unionhouse creeks also overflowed their banks during this flood, adding to the flood problems in the area. A total of $161,000 in flood-related damages was estimated to have occurred in the entire Morrison Creek Stream Group area during this flood. **Source:** Sacramento County, December 2004, *Multi-Hazard Mitigation Plan* .	$ 161,000	Morrison Creek Stream Group area				X	Slow Rise	Sacramento County MHMP 2004
Sacramento River	1962	October		Butte, Lassen, Placer, Plumas, Modoc, Sacramento, Shasta, Sierra, Solano, Sutter, Yolo, Yuba		Sacramento, Sacramento Valley, Oroville, Redding, Roseville, Chic, Alturas, Adin, Tobin, Wheatland, Delta: Prospect Island, Liberty Island, Little Holland Tract, Dry Creek	**Regionwide:** 1962 Floods and Rain. Storms. DR#138. State declaration 10/17/1962, 10/25/1962, 10/30/1962, and 11/4/1962. Federal declaration 10/24/1962. Statewide damage $4,000,000. The Sacramento River Flood Control Project, an extensive system of dams, levees, and floodways, functioned very efficiently. Shasta Lake controlled the flow in the reach of the Sacramento River immediately below the lake, and Folsom Lake controlled the flow in the American River. Potential floodwaters were retained in each of these reservoirs amounted to more than 200,000 acre-feet. In the lower reaches of the Sacramento Valley, Sutter and Yolo bypasses were utilized as the Sacramento River spilled over the Colusa, Tisdale, and Fremont relief weirs. The principal area of flood damage was along the Feather River near Oroville, where the river reached its highest October stage of record and swept away a cofferdam and part of a fish hatchery that was under construction. Urban areas, including the city of Sacramento, were damaged by local runoff, and agricultural and highway damages were appreciable. There was also minor damage in secondary channels in the Sacramento Valley, caused primarily by accumulated drift on bridges. **Sacramento:** A severe, early season rainstorm occurred in October 1962, resulting in widespread flooding in Sacramento. Arcade Creek overflowed from Marysville Road to past Del Paso Park. Six families on Verno Street had to evacuate because the flood threat was particularly severe in this area. Damages were estimated at $10,000 along Arcade Creek. During the October 1962 floods, excess floodwaters from Dry Creek flowed south along the eastern side of the Western Pacific Railroad to Robla Creek and the Magpie Creek Diversion. The resultant high water was within 2 feet of the top of the southern levee of the diversion. During this event, portions of floodwaters from Magpie Creek bypassed the upper portion of the diversion's levee and flowed into Lower Magpie Creek, causing flooding in the area between Dry Creek Road and Raley Boulevard. Dry Creek and Robla Creek again spread out over their common floodplain near the Natomas East Main Drainage Canal. An estimated $50,000 in flood-related damages were caused by the October 1962 flood on Dry Creek. Many of these damages were caused in areas along Dry Creek upstream of the Sacramento incorporated limits. **Placer:** Dry Creek and its tributaries have an extensive record of historical flooding, especially in the Roseville area, and damaging floods occurred in October 1962. **Sutter:** In October of 1962, a storm caused 6 to 9 inches of rain to fall in a 3-day period. Localized flooding was reported throughout the County. **Source:** Butte County Office of Emergency Management, 2013, *Butte County Local Hazard Mitigation Plan* ; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; USGS, 1968, *Water Supply Paper 1820: Summary of Floods in the United States during 1962*; Sacramento County, December 2004, *Multi-Hazard Mitigation Plan* ; Placer County, April 2010, *Local Hazard Mitigation Plan* ; Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan* .	$ 4,000,000	Statewide	1962	20	Statewide	X	Slow Rise, Engineered Structure Failure, Debris flow	USGS Paper 1820 - "Summary of Floods in the US During 1962"; Sacramento County MHMP 2004; Placer County LHMP 2010 Sacramento County MHMP 2004
Sacramento River	1962-1963	December-February		Colusa, El Dorado, Glenn, Lake, Lassen, Napa, Nevada, Placer, Plumas, Sacramento, Sierra, Solano, Siskiyou, Sutter, Tehama, Yolo, Yuba		Statewide, Sacramento Valley, Portola, Quincy, Chester, American River, Yuba River Basins, Delta:-Liberty Island, Little Holland Tract	**Regionwide:** Numerous communities were flooded and damaged in the American and Yuba River basins. In the Delta, Prospect Island, Liberty Island, and Little Holland Tract flooded. **Plumas:** Flood and rains. **Source:** USGS, 1966, *Water Supply Paper 1830-A: Floods of January-February 1963 in California and Nevada;* Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; Plumas County OES, 2013, *Plumas County Hazard Mitigation Plan* .							Slow Rise, Engineered Structure Failure	Floods of January-February 1963 in California and Nevada, USGS Paper 1830-A, 1966; Taming Natural Disasters - Appendix D - Disasters Affecting the San Francisco Bay Area 1950 – 2009; Plumas County HMP Presentation 3-7-13
Sacramento River	1964	February		Siskiyou			**Siskiyou:** Flooding occurred in Siskiyou County. The 1964 event was estimated to have a recurrence interval of 15 years. **Source:** Siskiyou County, August 2012, *Hazard Mitigation Plan Volume 1: Planning-Area-Wide Elements.*							Slow Rise	Siskiyou County HMP 2012

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Sacramento River	1964			Yolo		Lower Cache Creek	**Yolo:** Flooding of Lower Cache Creek downstream from Clear Lake occurred in 1964. **Source:** Yolo County OES, 2013, *Yolo Operational Area Multi-Hazard Mitigation Plan* .							Flash	Yolo Operational Area MHMP 2004
Sacramento River	1964-1965	December-January	22-23	Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Nevada, Placer, Plumas, Sacramento, Shasta, Sierra, Siskiyou, Solano, Sutter, Tehama, Yolo, Yuba	Northern California Christmas 1964 Disaster Late Winter Storms	Sacramento River - City of Dunsmuir, Morrison Creek, Laguna Creek, Dry Creek, Lower Hell Hole Dam, Butte Creek	**Regionwide:** 1964 Late Winter Storms. (Winter '64-'65) Late Winter Storms. Flood. DR#183. Federal declaration 12/24/1964. OEP 183-DR-CA. Damages $213.1 million. Abnormally heavy and continuous rainfall and windstorm throughout counties of Shasta, Colusa, Glenn, Lassen, Plumas, Sierra, Siskiyou, Sutter, Tehama, Butte, El Dorado, Modoc, Nevada, Placer, and Yuba. This was the first large flood after the devastating 1955 flood. The main center of precipitation was in the basins of the Feather, Yuba, and American rivers. Rainfall was heaviest December 22 and 23, 1964. Runoff from streams of the Coast Ranges, almost without exception, produced peak stages and peak flows that exceeded previous records. Runoff from the Sierra into the Feather, Yuba, and American rivers surpassed all previous records. Based on the flood control diagram for Folsom Reservoir, the storage in Folsom was below allowable flood management levels at the beginning of the flood. During the storm, inflow volume was sufficiently high, partly due to failure of Hell Hole Dam, to result in design capacity releases of 115,000 cfs from Nimbus Dam. Therefore, the peak flow in the American River at Fair Oaks, controlled by Folsom Dam, reached 115,000 cfs. In the remaining watersheds of the Sacramento Valley, peak stages and flows tended to equal those experienced in 1955. At the Sacramento Weir, all 48 gates were opened, and the peak flow reached 84,000 cfs. The peak flow in the Sacramento River at I Street was about 100,000 cfs. Total peak flow at the latitude of Sacramento, including the Sacramento River and the Yolo Bypass, was about 475,000 cfs. **Plumas:** Severe storms. Heavy rains and flooding. **Shasta:** Severe floods on the Sacramento River. **Tehama:** Heavy Rains and Flooding. Damage estimated $1,285,174 in Tehama County. **Sacramento:** The third record flood occurred in less than 15 years and caused engineers to reevaluate storm frequency, concluding that Folsom Dam is designed to handle a 120-year storm, not a 500-year storm. During this flood, Morrison Creek flooded a large region west of the Western Pacific Railroad tracks and south of Meadowview Road. Laguna Creek flooded an area adjacent to the stream that extended for about 6 miles from the town of Elk Grove west to the Union Pacific Railroad tracks. The 1964 flooding in the basin inundated about 7,700 acres and caused an estimated $156,000 in damages. **Placer:** Damaging floods occurred in December 1964. **Sutter:** Flooding resulted in property and crop damages of $1,785,714. The 30,000 acre-foot flood from the dam failure destroyed two suspension bridges and one steel girder State Highway bridge.	$213,149,000; Property damage $1,785,714.29. Crop damage $178.57 156000-Sacramento County	Statewide, Sutter County, Sacramento County	1965			X	Slow Rise, Engineered Structure Failure, Flash	Butte County LHMP 2013, Taming Natural Disasters - Appendix D - Disasters Affecting the San Francisco Bay Area 1950 – 2009, USACE, Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley; Plumas County HMP Presentation 3-7-13; Shasta County HMP 2011; Tehama County HMP 2012; Bulletin No. 161; FLOOD! December 1964-January 1965; Report on Floods of December 1964 in Northern California Coastal Streams Volume I (book) Sacramento County MHMP 2004; Placer County LHMP 2010, Plumas County HMP Presentation 3-7-13; Butte County LHMP, 2013
Sacramento River	1964-1965	December-January	22-23	Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Nevada, Placer, Plumas, Sacramento, Shasta, Sierra, Siskiyou, Solano, Sutter, Tehama, Yolo, Yuba			**Hell Hole Dam** Failure - In 1964, construction of the Hell Hole Dam was underway, and the contractor had stopped operations for the winter. A major storm event (rains) occurred during December 1964 causing the Hell Hole Reservoir to fill. Because the dam was not completed, it failed, sending a considerable amount of water toward Auburn. The water washed out a bridge on Highway 49 over the American River at the confluence of the North and Middle Forks and flooded a quarry. **Butte:** Heavy rains caused a 50-year flood in Butte Creek and record flows in Little Chico Creek, with a 10-year recurrence interval. **Source:** Butte County Office of Emergency Management, 2013, *Butte County Local Hazard Mitigation Plan*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; USACE, 1999, *Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley, California*; Plumas County OES, 2013, *Plumas County Hazard Mitigation Plan*; Shasta County and City of Anderson, September 2011, *Multi-Jurisdictional Hazard Mitigation Plan*; Tehama County Public Works, April 2012, *Tehama County Hazard Mitigation Plan, Volume 1—Planning-Area-Wide Elements*; DWR, January 1965, *Bulletin 161: FLOOD! December 1964 – January 1965*; FEMA, July 6, 1998, *Flood Insurance Study, City of Sacramento, California, Sacramento County*; Sacramento County, December 2004, *Multi-Hazard Mitigation Plan*; Placer County, April 2010, *Local Hazard Mitigation Plan*; Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan;* USACE, 1965, *Report on Floods of December 1964 in Northern California Coastal Streams.*							Flash, Slow Rise	
Sacramento River	1965			Yolo		Lower Cache Creek	**Yolo:** Flooding of Lower Cache Creek downstream from Clear Lake occurred in 1965. **Source:** Yolo County OES, 2013, *Yolo Operational Area Multi-Hazard Mitigation Plan.*							Flash	Yolo Operational Area MHMP 2004
Sacramento River	1966-1967	December-March		Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Nevada, Placer, Plumas, Sacramento, Sutter, Solano, Shasta, Tehama, Yolo, Yuba		Feather River, Colusa Basin, Fairfield, Sacramento River Basins, Arcade Creek	Three major storm periods between December 1966 and March 1967 deposited above-normal precipitation in the Sacramento River Basin, flooding 219,000 acres. Virtually all of the flooded area was cropland, orchards, pasture or grazing land within the confines of flood channels and over- flow basins. The Sacramento River at the I Street gauge in Sacramento reached a peak flow of about 78,000 cfs during early December. January 1967 precipitation ranged as high as 170 percent of normal. Runoff from the above-normal precipitation, although moderately high, was controlled by major reservoirs and flood channels in the Sacramento River Basin. Folsom Reservoir experienced a maximum mean daily inflow of some 36,100 cfs as flood management releases were made in late January. All releases from Folsom Dam were well below project design flows. . A large area flooded was the Colusa Basin, a natural over- flow trough of the Sacramento River. Rainfall and stream gauge records indicated that Sacramento experienced significant flooding during January 1967. Arcade Creek overflowed its banks upstream of the Sacramento corporate limits, and flooding in the city was restricted to minor inundation in Del Paso Park. Moderate agricultural damages estimated were estimated at $104,000; an estimated 8,070 acres were flooded. Significant flooding occurred on Laguna Creek, which overflowed into its floodplain. Dry Creek and Robla creeks, however, overflowed inside the city. **Source:** USACE, 1999, *Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley;* DWR, June 1968, *Bulletin 69-67: California High Water, 1966 – 1967*; Sacramento County, December 2004, *Multi-Hazard Mitigation Plan.*	$ 104,000	Sacramento County				X	Slow Rise	USACE, Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley; California High Water 1966-1967, DWR Bulletin No. 69-67 Sacramento County MHMP 2004
Sacramento River	1967			El Dorado, Lassen, Modoc, Nevada, Placer		Sacramento River	Flooding was characterized by extremely large flows, including record flows at some locations. The Sacramento River Flood Control Project and other flood management programs had been implemented. Project levees, dams, reservoirs, and waterways were employed to control much of the flood flows throughout the Sacramento system; however, local flooding, mostly on agricultural lands, still occurred. **Source:** DWR, 2009, *California Water Plan Update 2009.*	Flooding was characterized by extremely large flows, including record flows at some locations. The Sacramento River Flood Control Project and other flood management programs had been implemented. Project levees, dams, reservoirs, and waterways were employed to control much of the flood flows throughout the Sacramento system; however, local flooding, mostly on agricultural lands, still occurred. Source: DWR, 2009, *California Water Plan Update 2009.*					X	Slow Rise	California Water Plan 2009
Sacramento River	1967			El Dorado, Lassen, Modoc, Nevada, Placer		Sacramento River	Flooding was characterized by extremely large flows, including record flows at some locations. The Sacramento River Flood Control Project and other flood management programs had been implemented. Project levees, dams, reservoirs, and waterways were employed to control much of the flood flows throughout the Sacramento system; however, local flooding, mostly on agricultural lands, still occurred. **Source:** DWR, 2009, *California Water Plan Update 2009.*							Flash, Stormwater	California Water Plan 2009

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Sacramento River	1969	January		Plumas, San Joaquin	Winter '69 Storms	Regionwide, Delta: Sherman Island	**Regionwide:** 1969 Storms. Flood. DR#253. State declaration 1/23/1969-3/12/1969. Federal declaration 1/26/1969. El Dorado, Modoc, Placer, Sacramento, Shasta, Solano, Sierra, Plumas, Tehama, Yuba, Butte, Yolo. Statewide deaths 47. Statewide damage $300,000,000. **Plumas:** Severe storms and flooding were prevalent throughout the area. **Delta:** During the afternoon of 20 January, the levee on the San Joaquin River side of Sherman Island failed and 10,000 acres of agricultural land were flooded. By noon of 21 January, flooding to some degree was occurring along every major tributary to San Joaquin River and along streams on the east slopes of the Coast Ranges. By 28 January, all streams had peaked, and the flood situation began to ease. However, extensive flood fighting continued in the Delta and a levee on Grizzly Island broke. Flows on the San Joaquin River were near project design amounts, and water was reported to be near the top of levees in some locations. The San Joaquin River saw extensive damage along its length. Many Delta levees remained in critical condition for several days. **Source:** Butte County Office of Emergency Management, 2013, *Butte County Local Hazard Mitigation Plan*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; Plumas County OES, 2013, *Plumas County Hazard Mitigation Plan.*	$ 300,000,000	Statewide					Slow Rise, Flash	Plumas County HMP Presentation 3-7-13, Butte County LHMP, 2013, Taming Natural Disasters - Appendix D - Disasters Affecting the San Francisco Bay Area 1950 – 2009 http://www.spk.usace.army.mil/Portals/12/documents/civil_works/levee_safety/Vegetation%20Variance%20Request%20for%20Mitigation%20for%20PL%2084-99%202005-2006%20Repair%20Sites.pdf
Sacramento River	1969-1970	December-March		Butte, Colusa, El Dorado, Glenn, Lake, Modoc, Nevada, Placer, Plumas, Shasta, Siskiyou, Sonoma, Yolo, Yuba, Lake	Winter '70 Northern California Flooding	Sacramento River, American River	**Regionwide:** 1970 Northern California Flooding. DR#283. State declaration 1/27/1970, 2/3/1970, 2/10/1970, 3/2/1970. Federal declaration 2/16/1970. Heavy winds, storms, and flooding were prevalent throughout the counties of Butte, Colusa, Glenn, Lake, Lassen, Modoc, Plumas, Shasta, Siskiyou, Tehama, Sutter, Yuba, El Dorado. Statewide damage $27,657,478. In the Sacramento Valley, floodwaters produced by the January 1969 storms were largely controlled by major reservoirs, flood channels, and the bypass system. As a result, flows in the mainstem of the Sacramento River and its major tributaries remained well below project design lows. However, several unimproved valley and foothill streams overflowed their banks and caused local flooding. At the Sacramento Weir, 16 gates were opened, and the peak flow reached 30,000 cfs. The peak flow in the American River at Fair Oaks was 73,400 cfs. The peak flow in the Sacramento River at I Street was 95,500 cfs. Peak flow at the latitude of Sacramento was approximately 250,000 cfs. The flood of 1970 brought inundation to approximately 550,000 acres, including portions of several small towns. **Plumas:** There were severe storms and flooding. **Lake:** Highest lake stage that occurred since the construction of Cache Creek Dam - January 1970, Stage 10.37 feet (10-year event), Elevation 1328.63 feet. **Tehama:** Declaration #253. Severe storms, flooding. Tehama was flooded. Damage was $10,416 in Tehama County in January flooding. **Shasta:** Reported economic losses in Shasta County amounted to $3,790,000 in 1970. **Source:** Butte County Office of Emergency Management, 2013, *Butte County Local Hazard Mitigation Plan*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; USACE, 1999, *Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley*; DWR, 2009, *California Water Plan Update 2009*; Plumas County OES, 2013, *Plumas County Hazard Mitigation Plan*; County of Lake, February 2005, *Lake County, California, Natural Hazard Mitigation Plan;* Tehama County Public Works, April 2012, *Tehama County Hazard Mitigation Plan, Volume 1—Planning-Area-Wide Elements*; Shasta County and City of Anderson, September 2011, *Multi-Jurisdictional Hazard Mitigation Plan.*	$ 27,657,478	Statewide	1970			X	Slow Rise, Flash	Lake County NHMP 2012; Taming Natural Disasters - Appendix D - Disasters Affecting the San Francisco Bay Area 1950 – 2009;
Sacramento River	1969			Sacramento		Beach-Stone Lakes	1969 – Flooding occurred primarily on agricultural lands, predominantly on lands that lay west of the Union Pacific Railroad tracks in the Beach-Stone Lakes area. Minor flood losses (principally to farmland, crops, and improvements) were incurred east of the UPRR tracks. Floodwaters covered about 10,500 acres, and damages were estimated at $159,000. **Source:** FEMA, July 6, 1998, *Flood Insurance Study, City of Sacramento, California, Sacramento County.*	$ 159,000	Sacramento					Slow Rise	Sacramento County MHMP 2004
Sacramento River	1970			Yolo		Lower Cache Creek	**Yolo:** Flooding along Lower Cache Creek downstream from Clear Lake occurred in 1970. **Source:** Yolo County OES, 2013, *Yolo Operational Area Multi-Hazard Mitigation Plan* .							Slow Rise	Yolo Operational Area MHMP 2004
Sacramento River	1971	June-August	Summer	Butte, Lassen, Modoc, Plumas, Sutter, Yuba		Willow Creek (Plumas County), Susan River tributaries, S Fork Pit River at Likely, Feather River	Flooding closed Highway 395 for several days and covered farmland with silt and debris south of Alturas. Flooding polluted Portola's water supply. Susan River tributaries caused flooding in Susanville. **Source:** DWR, September 1972, *Bulletin No. 69-71: California High Water 1970-1971.*							Flash, Debris Flow	http://www.water.ca.gov/waterdatalibrary/docs/historic/Bulletins/Bulletin_69/Bulletin_69__1971.pdf
Sacramento River	1972	June		Sacramento		Isleton, Delta	Federal Disaster Declaration, OEP 342-Dr-Ca, Andrus Island Levee Break, 06/27/72. Isleton and the Delta flooded. **Source:** Sacramento County, December 2004, *Multi-Hazard Mitigation Plan* ; DWR, 2009, *California Water Plan Update 2009* .						X	Engineered Structure Failure	Sacramento County MHMP 2004; California Water Plan 2009
Sacramento River	1973	January		Tehama			**Tehama:** (1/16/1973) Flooding - Severe Storm/Thunderstorm. **Butte:** (1/8/1973) Flooding - Severe storm/thunderstorm. Heavy rains, floods. Crop damage $35,714. **Sutter:** (1/16/1973) Flooding - Severe storm/thunderstorm. Property damage $86,206. Heavy rains, floods. **Source:** Tehama County Public Works, April 2012, *Tehama County Hazard Mitigation Plan, Volume 1—Planning-Area-Wide Elements*; Butte County Office of Emergency Management, 2013, *Butte County Local Hazard Mitigation Plan* , Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan* .	Crop damage $35,714.29, Property Damage $86,207	Butte County, Sutter County	2013 (Butte and Sutter)				Flash	Tehama County HMP; Butte County LHMP, 2013; Sutter County LHMP 2013Update; Butte County LHMP, 2013
Sacramento River	1973	January-April		Colusa, Glenn, Placer, Sutter, Solano, Yuba	Coastal Flooding	Central Coast Ranges (including Bay Area) to Transverse, Peninsula Ranges	**Regionwide:** (2/1973) Storms and floods. Colusa, Glenn, Napa, Placer, Sutter, Yuba. Statewide damage $1,864,000. **Source:** USGS, 1988, *Professional Paper 1434 Landslides, Floods, and Marine Effects of the Storm of January 3-5, 1982, in the San Francisco Bay Region;* Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; Association of Bay Area Governments, 2013, *Multi-Jurisdictional Local Hazard Mitigation Plan for the Bay Area* .	$ 1,864,000	Statewide	1973				Slow Rise	Taming Natural Disasters - Appendix D - Disasters Affecting the San Francisco Bay Area 1950 – 2009;
Sacramento River	1973	November		Siskiyou		Dunsmuir	Street flooding from the Sacramento River began. **Source:** Siskiyou County, August 2012, *Hazard Mitigation Plan Volume 1: Planning-Area-Wide Elements*.							Stormwater	Siskiyou County HMP 2012
Sacramento River	1974	January		El Dorado, Lassen, Modoc, Nevada, Placer		Regionwide	Residences were inundated due to failed levees, many roads were washed out by high flows, and large sediment loads were deposited on agricultural lands. Flooding was characterized by extremely large flows, including record flows at some locations. The Sacramento River Flood Control Project and other flood management programs had been implemented. Project levees, dams, reservoirs, and waterways were employed to control much of the flood flows through the Sacramento system; however, local flooding, mostly on agricultural lands, still occurred. **Source:** DWR, 2009, *California Water Plan Update 2009.*	X	Regionwide				X	Slow Rise, Debris Flow, Engineered Structure Failure	California Water Plan 2009

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Sacramento River	1974	January-April		Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Nevada, Placer, Plumas, Sacramento, Solano, Siskiyou, Shasta, Yolo, Yuba	1974 Flood	Upper Sacramento River area, Little Chico Creek	**Regionwide:** In 1974, two major floods occurred in the Sacramento Valley. The first occurred from January 11 through 19, 1974, and the second from March 28 through April 1, 1974. The peak flow in the Sacramento River at I Street was 159,000 cfs at Woodland in the Yolo Bypass on January 20 and 95,000 cfs on January 21. The Sacramento Weir gates were never opened. The Tisdale Weir overflowed continuously from November 12 through early February. Weirs overflowed into the Butte Basin causing stages to exceed the record 1970 floods. In the flood of January 1974, floodwaters overtopped and broke through the Murphy Slough Plug, the Wright Levee probably was breached, and the Parrot Plug area was again overtopped. Estimated instantaneous peak flows at the three gauging stations were: 158,000 cfs in the river at Hamilton City, 142,000 cfs at Ord Ferry, and 136,000 cfs at Butte City. After the 1974 flood, the Murphy Slough Plug was lengthened and strengthened by USACE.**Butte:** (03/1974) Record flows in Little Chico Creek. 30-year recurrence interval.**Siskiyou:** Discharge from the 1974 event was estimated to have a recurrence interval of approximately 50 years. Damage from the 1974 flood in Dunsmuir was estimated to be $4.2 million, with 25 homes destroyed. A bridge connecting downtown constricted flow from the Sacramento River, causing an increase in water surface elevation of approximately 3 feet upstream of the bridge. The backwater effect only extended a short distance upstream because of the steep channel slope. An unnamed creek that enters the City of Dunsmuir near Oak Street and Elinore Way has overflowed and caused widespread shallow flooding of city streets and street-level homes. Although this unnamed creek has a small drainage area, the floodwaters have high velocities due to the steep slopes, and flow paths are unpredictable due to the street pattern and topography.**Shasta:** Reported economic losses in Shasta County amounted to $10,650,000 in 1974.**Tehama:** Declaration # 412. Severe storms, flooding on January 25. **Source:** USACE, 1999, *Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley*; Butte County Office of Emergency Management, 2013, *Butte County Local Hazard Mitigation Plan*; Siskiyou County, August 2012, *Hazard Mitigation Plan Volume 1: Planning-Area-Wide Elements*; Shasta County and City of Anderson, September 2011, *Multi-Jurisdictional Hazard Mitigation Plan* ; Tehama County Public Works, April 2012, *Tehama County Hazard Mitigation Plan, Volume 1—Planning-Area-Wide Elements*.	$4.2 million; 10650000	Siskiyou County; Shasta County	1974			X	Slow Rise, Engineered Structure Failure	USACE, Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley; Butte County LHMP, 2013; Siskiyou County HMP 2012; Shasta County HMP 2011; Tehama County HMP 2012
Sacramento River	1977			Shasta		Shasta Lake	In 1977 and again in 1998, prolonged warm spring rainfalls in the watershed above Shasta Dam raised the lake levels as much as 10 feet per day for more than a week. This early snowmelt was followed by intense storms over several days that dropped record precipitation bringing lake levels to within 10 feet of the top. **Source:** Shasta County and City of Anderson, September 2011, *Multi-Jurisdictional Hazard Mitigation Plan* .							Stormwater	Shasta Lake HMP
Sacramento River	1978	March		Butte, Colusa		Little Chico Creek, Colusa Basin Drain	**Butte:** (03/1978) Record flows in Little Chico Creek. 15-year recurrence interval. **Source:** Butte County Office of Emergency Management, 2013, *Butte County Local Hazard Mitigation Plan* .							Slow Rise	Butte County LHMP, 2013
Sacramento River	1979-1980	December-April		Colusa, Lake, Plumas, Sacramento, Solano	Delta Levee Break	Sacramento-San Joaquin Delta, Clear Lake, Delta: Prospect Island, Dead Horse Island, Susan River	**Regionwide:** A combination of high tides and flood-level flows caused breaches and rapid deterioration of private levees. Approximately 11,300 acres of agricultural land were inundated on Webb and Holland tracts and on Prospect and Dead Horse islands. A 350-foot section of a dirt levee gave way, flooding crops and more than 20 houses and 50 barns, forcing the evacuation of 270 people. The salt water threatened the freshwater fish and water supplies. Rain fed the high tides, with strong winds and flooding (Holland and Webb levee breaches). FEMA 3078-EM-CA Contra Costa, Sacramento, San Joaquin (1/23/80).**Sacramento:** Flood. Federal Disaster Declaration, FEMA 3078-EM (80-15), Delta Levee Breaks, 01/23/80. Delta: (1/1980) Delta Levee Break. Regionwide damage $17,388,013. **Source:** Sacramento County, December 2004, *Multi-Hazard Mitigation Plan* ; DWR, 2009, *California Water Plan Update 2009*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*.	$ 17,388,012	Regionwide				X	Coastal, Slow Rise, Engineered Structure Failure	California Water Plan 2009, Sacramento County MHMP 2004
Sacramento River	1980	September		Sacramento		Delta	An Old River levee failed causing the 5,200-acre Lower Jones Tract to flood. **Source:** DWR, 2009, *California Water Plan Update 2009*.							Engineered Structure Failure	California Water Plan 2009
Sacramento River	1981	October-December		Solano		Delta: Prospect Island	**Solano:** October and November 1981—Heavy storms raised river levels, leading to another failure of the Prospect Island levee and failure of Little Franks Tract, 200 acres, in December. **Source:** DWR, 2009, *California Water Plan Update 2009*.						X	Slow Rise, Engineered Structure Failure	Lassen County HMP
Sacramento River	1982	January-February		Sacramento	Winter Storms	Delta: Prospect Island. Cosumnes River, Mokelumne River	**Sacramento:** High water on the Cosumnes River in January breached private levees, flooding farmland and damaging roads and bridges. These areas flooded again when the Cosumnes rose in February. Prospect Island flooded in 1982. Overflow of minor streams damaged bridges and roads in the foothills of the Cosumnes and Mokelumne River watersheds in January. **Source:** DWR, 2009, *California Water Plan Update 2009*; Delta Protection Commission, November 3, 2000, *Update on Prospect Island Ecosystem Restoration Project, Agenda Item #8,*							Slow Rise, Engineered Structure Failure	California Water Plan 2009, Update on Prospect Island Ecosystem Restoration Project, Agenda Item #8, November 3, 2000.
Sacramento River	1982-1983	December-March		Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Nevada, Placer, Shasta, Solano, Sonoma, Sutter, Tehama, Yolo, Yuba	Winter Storms	Regionwide. Sacramento-San Joaquin Delta: Central Valley	**Regionwide:** Winter storms. Flood. DR#677. State declaration. 12/8/1982-3/21/1983. Federal declaration 2/9/1983. (12/1982) High tides, strong winds, and rains. Sacramento. Total $6,964,998. (FEMA 682 DR-CA Winter '82-'83) Winter storms. Heavy rains, high winds, flooding, levee breaks. Sacramento. Regionwide damage $523,617,032. Brought on by El Niño weather conditions, extremely wet conditions coupled with voluminous Sierra runoff led to very high river stages throughout the system and caused extensive damage to the flood management system of the Sacramento Valley. **Sacramento:** Levees failed at Mildred Island, Shima Tract, Fay Island, Little Frank's Tract, and Prospect Island. Bradford Island failed in December 1983. **Butte:** (1/26/1983) Flooding. Property damage $1,666,666.67. Crop damage $16,666.67. (3/1983) Keefer Slough flooded homes in the vicinity of Keefer Road and the area southwest of State Highway 99. State Highway 99 was overtopped for 11.5 hours. These floodflows continued southwest, affecting much of the area between State Highway 99 and the Union Pacific Railroad, including the community of Nord and its vicinity. The March 1983 storm caused the most recent widespread flooding. (3/1/1983) Flooding. Property damage $125,000. Crop damage $12,500.00. **Lake:** Highest lake stage that occurred since the construction of Cache Creek Dam - March 1983, Stage 11.38 feet (50-year event), Elevation 1329.58 feet.**Solano:** (1/1983) Levees failed at Prospect Island. **Tehama:** Declaration No. 677. Coastal storms, floods, slides, tornadoes resulted in damages of $1,791,666 on February 9. **Source:** Butte County Office of Emergency Management, 2013, *Butte County Local Hazard Mitigation Plan* ; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; DWR, 2009, *California Water Plan Update 2009*; County of Lake, February 2005, *Lake County, California, Natural Hazard Mitigation Plan*; Tehama County Public Works, April 2012, *Tehama County Hazard Mitigation Plan, Volume 1—Planning-Area-Wide Elements*.	$ 523,617,032	Regionwide	1983			X	Slow Rise	Butte County LHMP, 2013, Lake County NMHP 2012; California Water Plan 2009
Sacramento River	1983	February		Sacramento			Flood: Federal Disaster Declaration, FEMA 677-DR-CA, 02/09/83. **Source:** Sacramento County, December 2004, *Multi-Hazard Mitigation Plan* .						X	Slow Rise	Sacramento County MHMP 2004
Sacramento River	1983	March		Placer		Dry Creek, Cirby Creek	**Placer:** The March 1983 flood damaged approximately 25 residences along Linda and Cirby creeks in Roseville. Portions of Royer Park were under water, as well as areas in the Sierra Lakes Mobile Home Park. Dry Creek overflowed the Darling Way and Riverside Avenue bridges, disrupting traffic and flooding six businesses along Riverside Avenue. Floods generally caused by a combination of prolonged rainfall leading to saturated soils and a short period of intense precipitation occur from October through April. Dry Creek and its tributaries have an extensive record of historic flood, especially in the Roseville area. The 1983, 1986 and 1995 floods were the largest and most damaging on record. **Source:** Placer County, April 2010, *Local Hazard Mitigation Plan*	X	Roseville Area					Flash	Placer County LHMP 2010
Sacramento River	1983			Yolo		Lower Cache Creek, County Road 102 in Woodland	**Yolo:** Floods along Lower Cache Creek downstream from Clear Lake occurred in 1983. In 1983, a levee failure near County Road 102 caused flooding in the area that is now Woodland's industrial area. **Source:** Yolo County OES, 2013, *Yolo Operational Area Multi-Hazard Mitigation Plan* .							Flash	Yolo Operational Area MHMP 2004

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Sacramento River	1986	February		Alpine, Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Napa Nevada, Plumas, Shasta, Sierra, Siskiyou, Solano, Sonoma, Sutter, Tehama, Yolo, Yuba	St. Valentine's Day Storm	Regionwide, Delta: Dead Horse, Tyler Islands, McCormack-Williamson Tract	**Regionwide** : Rains, winds, flooding and mudslides occurred. The floods of 1986 caused extensive damage to the flood management system of the Sacramento Valley. **Sacramento:** 1986 – Record Flood: A February 1986 storm dumped 10 inches of rain on Sacramento in 11 days. The American River dumped more water into Folsom Dam than it was designed to handle. After 2 days of releases at the design level, (115,000 cfs), officials boosted releases to 134,000 cfs. Folsom performance was downgraded to about a 60-year storm. Releases from Folsom exceeded the design capacity of the lower American River levee system for over 2 days, causing extensive erosion along the toe of the north and south levees of the American River near California State University, Sacramento. Some damage occurred in certain sections to the two main levees. These failures were the result of instability, seepage, and boils. This flood resulted in the largest peak-flow record on Morrison creek. One of the most significant flooding problems in Sacramento City was the result of overflow along Arcade Creek. During the 1986 flood, successive storms damaged 1,730 private homes and businesses. The storms caused close to $50 million in public and private property damage, excluding damage to roads and other infrastructure. In the northern Delta, 1,600 people were evacuated, and $20 million in property damage occurred. Interstate 5, Interstate 80, State Highway 99, and numerous local roads were flooded. Federal Disaster Declaration, FEMA 758-DR-CA, 1986 Spring Storms, 02/18/1986. February 1986—Record high tides and record Sacramento River inflow both occurred, leading to failure of Tyler and Dead Horse Islands and McCormack-Williamson and New Hope Tracts. **Placer**: This flood was classified as an approximate 70-year event, and Placer County was designated a Federal Disaster Area. The flooding caused widespread damage in most of the Dry Creek watershed. Flooding was significant in the Roseville, Rocklin, and Loomis areas. Nearly all bridges and culverts were overtopped, with 30 sustaining embankment damages and the crossing at Rocky Ridge Drive washed out. Two bridges over Dry Creek were damaged and street cave-ins occurred at a number of locations. Around 100 homes were flooded, with water levels up to 5 feet above flood levels. Many businesses in downtown Roseville were damaged or destroyed. According to information on file with Placer County, as part of the disaster declaration, FEMA reimbursed the county $376,611; no monies were reimbursed through the State.	$407.5 Million, $70 million, $7.5 million, $5 million	Sacramento County, Placer County, Sutter County	2013 (Sutter)	13	~~Statewide~~	~~X~~	Slow Rise, Stormwater	Sacramento County MHMP 2004, Placer County LHMP 2010, Yuba County MJMHMP n.a.; Sutter County LHMP 2013Upate
Sacramento River	1986	February		Alpine, Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Napa Nevada, Plumas, Shasta, Sierra, Siskiyou, Solano, Sonoma, Sutter, Tehama, Yolo, Yuba	St. Valentine's Day Storm	Regionwide, Delta: Dead Horse, Tyler Islands, McCormack-Williamson Tract	**Yuba:** A series of storms in 1986 caused a levee break near the town of Linda in Yuba County. In February 1986, a tropical weather system triggered extensive flooding throughout California and contributed to the levee failure south of Marysville on the Yuba River. The 1986 Flood was responsible for the loss of one life, flood damage to 10,700 acres and damage to over 3,000 homes estimated to be over $100 million. The break occurred just east of the confluence of the Yuba and Feather rivers, impacting the communities of Linda, West Linda, Olivehurst, and Arboga. The State of California recently settled a $450 million flood lawsuit with flood victims for damages and losses caused by the levee failure. A breach in the levee in 1986 put Linda under 15 feet of water, totally inundating the Peach Tree Mall that was only a few years old. A major flood occurred in Linda on February 20, due to a levee breach on the Yuba River during the greatest 10-day flow ever recorded. The levee was breached while the river was well below design level and flooded the communities of Linda and Olivehurst, as well as thousands of acres of agricultural land in Reclamation District 784, taking several lives and causing millions of dollars of damage. **Sutter:** (2/17/1986) Flooding. Property damage $5,000,000. Flash Flooding. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; Sacramento County, December 2004, *Multi-Hazard Mitigation Plan* ; DWR, 2009, *California Water Plan Update 2009*; Placer County, April 2010, *Local Hazard Mitigation Plan* ; Butte County Office of Emergency Management, 2013, *Butte County Local Hazard Mitigation Plan*; Yolo County OES, 2013, *Yolo Operational Area Multi-Hazard Mitigation Plan* ; Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan* .							Flash, Slow Rise	
Sacramento River	1986	February		Butte, Lake, Sutter		Ruddy Creek/Ruddy Creek Tributary , Wyman Ravine, Clear Lake, Linda Olivehurst	**Butte:** Minor flood damage was reported at Ruddy Creek and Ruddy Creek Tributary Areas after the February 1986 storm. The storm of February 1986 produced flow over Lone Tree Road from Wyman Ravine, extending 500 feet north and 1,000 feet south of the creek. (2/18/1986) Flash flooding. Property damage $5,000,000. 50-year flood in Butte Creek. **Lake:** Highest lake stage that occurred since the construction of Cache Creek Dam - February 1986, Stage 11.34 feet (approximately a 50-year event), Elevation 1329.60 feet. **Sutter:** In February of 1896, a storm caused 6 to 9 inches of rain to fall in a 10-day period. The left levee of the Yuba River failed just upstream of the Feather River confluence (RD 784). The communities of Linda and Olivehurst were inundated, resulting in one death, 895 destroyed homes, and 150 destroyed businesses. The most serious problems were located in the southern area of the county, which is sparsely populated. Slumping was experienced in the Robbins area. In the southeast area of the county, surface flow from Placer County led to extensive ponding. This coupled with two failures of minor levees (Linda levee broke) and flooded 30 square miles, inundating numerous rural residences and agricultural facilities. Emergency declared by Governor. **Source:** Butte County Office of Emergency Management, 2013, *Butte County Local Hazard Mitigation Plan*; County of Lake, February 2005, *Lake County, California, Natural Hazard Mitigation Plan* ; Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan* .	Property damage $5,000,000.	Butte	2013	1	Sutter County		Slow Rise	Butte County LHMP, 2013, Lake County NHMP 2012; Sutter County LHMP 2013Update
Sacramento River	1986	March		Sacramento		Dry Creek, Auburn/Bowman Area	**Placer:** Specifically, flooding of up to 2 or 3 feet has been known to occur on Dry Creek Road between Dry Creek Road Bridge and Twin Pines Trail Bridge during a major storm event (e.g., March 1986). The flood of 1986 caused the most severe flooding damage to date in the Auburn/Bowman area. In addition to the overtopping of bridges and culverts at several locations, flooding of structures occurred in the floodplains. Over 60 percent of the stream crossings are inadequate for even the 25-year flood. **Source:** Placer County, April 2010, *Local Hazard Mitigation Plan* .							Flash	Placer County LHMP
Sacramento River	1986			Placer		Auburn	**Placer:** 1986 Auburn Cofferdam Failure - As a result of area flooding, the cofferdam at Auburn breached and partially washed away. **Source:** Placer County, April 2010, *Local Hazard Mitigation Plan* .							Engineered Structure Failure	Butte County LHMP, 2013
Sacramento River	1986			Nevada			**Nevada:** 1986 floods with likely flood damage. **Source:** Nevada County OES, June 2006, *DMA 2000 Multi-Jurisdiction, Multi-Hazard Mitigation Plan.*							Flash, Slow Rise	Nevada County MJMHMP 2006
Sacramento River	1990-1991	December-February		Butte, Placer		Regionwide	**Regionwide:** 1990 Severe Storms. Floods. Storms. DR#894. State declaration 12/19/1990-1/18/1991. Federal declaration 2/11/1991. GP#989-06. State declaration 2/22/1990. **Placer:** (2/1/1990) A rainstorm caused water damage to a floor in the Forrest Hill Union School District, resulting in $4,680 in damages. **Source:** Butte County Office of Emergency Management, 2013, *Butte County Local Hazard Mitigation Plan*; Placer County, April 2010, *Local Hazard Mitigation Plan.*	$ 4,680	Placer County	1991				Slow Rise	Butte County LHMP, 2013; Placer County LHMP 2010
Sacramento River	1991	March	3	Butte			**Butte:** Flooding. Property damage $1,666.67. **Source:** Butte County Office of Emergency Management, 2013, *Butte County Local Hazard Mitigation Plan.*	$ 1,667	Butte	1991				Slow Rise	Butte County LHMP, 2013
Sacramento River	1992	February		Butte, Tehama			**Tehama:** Flooding-Winter weather caused $20,717 in damages. **Butte:** (2/11/1992) Flooding - winter weather. Property damage $11,627.91. (2/14/1992) Flooding - winter weather. Property damage $9,091. Winter storm, flash flood. **Sutter:** (2/11/1992) Flooding - winter weather. Property damage $10,416. Winter storm. Flash Flood. (2/14/1992) Flooding - winter weather. Property damage $8,928. Winter storm. Flash Flood. **Source:** Tehama County Public Works, April 2012, *Tehama County Hazard Mitigation Plan, Volume 1—Planning-Area-Wide Elements*; Butte County Office of Emergency Management, 2013, *Butte County Local Hazard Mitigation Plan*; Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan* .	$20,717; $1,666.67; $9,090.91; $10,416.67 and $8,928.57	Tehama County; Butte County; Sutter County	1992 (Butte and Sutter)			X	Slow Rise	Tehama County HMP; Butte County LHMP, 2013; Sutter County LHMP 2013Update
Sacramento River	1992			Placer		Miners Ravine	**Placer:** Several days of continuous rain followed by a downpour caused Miners Ravine to overflow its banks and caused flooding that resulted in several dramatic rescues of people trapped in homes and vehicles. **Source:** Placer County, April 2010, *Local Hazard Mitigation Plan* .							Slow Rise	http://www.placer.ca.gov/~/media/ceo/emergency/documents/Final%20Hzd%20Mit%20Plan/Placer%20CountyLHMPMaster.ashx

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Sacramento River	1992-1993	December-February		Alpine, Lassen, Modoc, Napa, Plumas, Sierra, Siskiyou, Tehama	Late Winter Storms	Statewide	**Statewide:** Late winter storms. (DR#979 12/1992) Snow, rain, and high winds. Alpine, Napa, Sierra, Tehama, Modoc, Lassen, Siskiyou Plumas. Statewide deaths 20. Statewide damage $600,000,000. **Plumas:** DR#979 (2/03/1993). Late Winter Storms and flooding. Damages $226,018,111. **Butte:** (1/13/1993). Flash flooding. Property damage $55,555.56. Crop damage $55,555,56. **Tehama:** (2/3/1993) Declaration # 979. Severe Storm, Winter Storm, Mud & Landslides, Flooding caused $40,108 in damages. **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; Plumas County OES, 2013, *Plumas County Hazard Mitigation Plan*; Butte County Office of Emergency Management, 2013, *Butte County Local Hazard Mitigation Plan*; Tehama County Public Works, April 2012, *Tehama County Hazard Mitigation Plan, Volume 1—Planning-Area-Wide Elements*.	$600,000,000, $226,018,111 , Property damage $55,555.56. Crop damage $55,555,56, $40,108	Statewide, (Statewide from Plumas Co. Presentation), Butte County, Tehama County	1993, 2013 (Butte)	20	Statewide	X	Slow Rise, Flash, Debris Flow	http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf; Tehama County HMP; Taming Natural Disasters Appendix D; Plumas County HMP Presentation 3-7-13; Butte County HMP
Sacramento River	1993	February		Lake, Butte		South Portion, Gridley	**Lake:** (2/23/1993) Flooding. **Butte:** (2/8/1993) Property damage $50,000 in the South Portion. Moderate to heavy rainfall on saturated ground caused water to flow into 10 homes and 4 businesses in Palermo, and 3 homes in Gridley. **Source:** County of Lake, February 2005, Lake County, California, *Natural Hazard Mitigation Plan*; Butte County Office of Emergency Management, 2013, *Butte County Local Hazard Mitigation Plan*.	$ 50,000	Lake County	1993				Flash, Slow Rise	Lake County NHMP 2012, Butte County LHMP 2013
Sacramento River	1993			Shasta			In 1993, a small tributary along the Sacramento River in north Redding, experienced what was later calculated as a 50 year storm event, causing rapid rise and fast flows along the channel, which had raised banks. A tree along the bank of the channel, upstream of a double box culvert, dislodged and flowed downstream becoming wedged in one of the culvert openings. The obstruction caused an overflow of the channel into the adjoining residential neighborhood, flooding 12 homes as the water followed the path of least resistance to the river. About eight of the homes experienced garage flooding and damage to equipment and personal property, while four homes suffered flooding within the main house, as well as damage to personal property. The channel was subsequently widened, and an additional cell was added to the double box culvert to provide for a 100-year storm event. **Source:** Shasta County and City of Anderson, September 2011, *Multi-Jurisdictional Hazard Mitigation Plan*.	X	Shasta County					Stormwater	Shasta County HMP
Sacramento River	1995	January		Sacramento		Arcade Creek, Cripple Creek, Dry Creek, Elk Grove Creek, Linda Creek, Morrison Creek, Rock Creek Keefer Slough Areas, Rock Creek Keefer Slough Areas, Natomas East Main Drain and their tributaries	**Sacramento:** Federal Disaster Declaration, 01/10/1995. This storm was a record in terms of localized rainfall intensity and water levels. Record high water was recorded on Arcade Creek, Cripple Creek, Dry Creek, Elk Grove Creek, Linda Creek, Morrison Creek, Natomas East Main Drain and their tributaries. Piped storm drain systems were overwhelmed, and there was widespread street flooding. Water ponded in low areas filling to levels that flooded homes. Deep flooding occurred east of the Natomas East Main Drain Canal (prior to the construction of the D-15 Pump Station). Hundreds of homes reported flooding. **Placer:** The total damages in Placer County were estimated at $8.3 million with 750 damaged or destroyed structures. $4.2 million in damages were estimated for the Roseville area. Of the $4.2 million in damages, $1 million was for road and bridge repairs, and $2 million was for utility repairs. Within the Roseville area of Placer County, 385 homes, businesses, apartments, and mobile homes were damaged or destroyed; 2 sewage treatment plants were overtopped; and 1 landfill was damaged. Impassable roads caused the closure of most schools. According to information on file with Placer County, as part of the disaster declaration, FEMA reimbursed the County $882,158 and $166,735 was reimbursed through the State. As a result of the 1995 floods, a creek crossing (bridge where Carolinda Drive crosses the Miners Ravine Creek) in the San Juan water district washed out in two separate incidents (January 9 and again in February/March). The first washout exposed the 10-inch main pipeline and made it vulnerable to high water and swift current. The crossing was rebuilt in January, and the line went back into service. The second washout occurred in late February/early March, again due to high water and swift currents. This time, the pipe was removed and a new bridge was built with the pipeline now being supported by the new bridge. The cost of repairs and replacement was $30,400, of which $27,000 was received through disaster funds. **Butte:** Homes flooded, State Highway 99 was covered with floodwater for several hours. **Tehama:** Severe Storm, Winter Storm, Mud and Landslides, Flooding caused $11,241,379 in damages. **Source:** Sacramento County, December 2004, *Multi-Hazard Mitigation Plan*; Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan*; Placer County, April 2010, *Local Hazard Mitigation Plan*; Sacramento County, December 2004, *Multi-Hazard Mitigation Plan*; Tehama County Public Works, April 2012, *Tehama County Hazard Mitigation Plan, Volume 1—Planning-Area-Wide Elements*.	$ 221,948,347	Statewide	1995	11		X	Slow Rise	Sacramento County MHMP 2004; Plumas County HMP Presentation 3-7 13
Sacramento River	1995	January-March		Butte, Colusa, El Dorado, Glenn, Lake, Modoc, Napa, Nevada, Plumas, Sacramento, Shasta, Sierra, Siskiyou, Solano, Tehama, Yolo, Yuba	Severe Winter Storms	Sacramento River Basin	**Regionwide:** 1995 Severe winter storms. Flood. Storms. DR#1044. State declaration 1/6/1995-3/14/1995. Federal declaration 1/13/1995. (1/1995) Alpine, Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, Shasta, Siskiyou, Solano, Sutter, Tehama, Yolo, Yuba. Severe winter storms, flooding, landslides, mud flows. Over 100 stations recorded their greatest 1-day rainfall in history. Most of the storms hit the Sacramento River Basin, which resulted in small-stream flooding due to drainage system failures. Statewide deaths 11. Statewide damage $741,400,000. Brought on by El Niño weather conditions, extremely wet conditions, coupled with voluminous Sierra runoff, led to very high river stages throughout the system and caused extensive damage to the flood management system of the Sacramento Valley. **Plumas:** DR#1044 (1/10/1995). Severe storms. Severe winter storms, flooding, landslides, mud flows. Event total deaths 11. Event total damages $221,948,347. **Placer:** (1995 Winter storms) The roof drains of the Placer Union High School gymnasium became clogged, damaging the roof and flooding the gymnasium. Damages were incurred, and FEMA paid out disaster monies in the amount of $7,108. **Source:** Butte County Office of Emergency Management, 2013, *Butte County Local Hazard Mitigation Plan*; "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; DWR, 2009, *California Water Plan Update 2009*; Plumas County OES, 2013, *Plumas County Hazard Mitigation Plan*; Placer County, April 2010, *Local Hazard Mitigation Plan*.	$221,948,347, $741,400,000, $7,108.33	Statewide (according to Plumas), Statewide (according to Taming Natural Disasters), Placer				X	Slow Rise, Engineered Structure Failure	http://www.water.ca.gov/floodmgmt/docs/Bul69-95/00-bul69-95front.pdf; Plumas County HMP Presentation 3-7-13; http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf;
Sacramento River	1995	February-March		All 57 counties except for Del Norte	Late Winter Storms	Statewide	**Regionwide:** 1995 Severe winter storms. Flood. Storms. DR#1046. State declaration 1/6/1995 through 3/14/1995. Federal declaration 3/12/1995. (2/1995) Late winter storms in 57 counties (all except for Del Norte). (DR#1046 2/1995) Late winter storms. Severe winter storms, flooding, landslides, mud flows. Statewide deaths 17. Statewide damage approximately $1,100,000,000. **Plumas:** DR#1046 (03/12/1995). Severe storms. Severe winter storms flooding, landslides, mud flow. **Tehama:** (3/12/1995) Declaration #1046. Severe Storm, Winter Storm, Mud and Landslides, Flooding caused $871,254 in damages. **Butte and Sutter:** (3/2/1995) Flooding - Severe storm/thunderstorm. Flood, rain, winds. Crop damage $11,241,79. **Lake:** Highest lake stage that occurred since the construction of Cache Creek Dam - March 1995, Stage 10.72 feet (10-year event), Elevation 1328.98 feet. **Source:** Butte County Office of Emergency Management, 2013, *Butte County Local Hazard Mitigation Plan;* "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; Plumas County OES, 2013, *Plumas County Hazard Mitigation Plan*; Tehama County Public Works, April 2012, *Tehama County Hazard Mitigation Plan, Volume 1—Planning-Area-Wide Elements;* County of Lake, February 2005, Lake County, California, *Natural Hazard Mitigation Plan*; Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan*.	$1,100,000,000, $871,254, $11,241,379.31	Statewide, Tehama County, Butte County	1995	17	Statewide	X	Flash, Debris Flow	Butte County LHMP 2013, http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf; Taming Natural Disaster's Appendix D, Tehama County HMP, Lake County NHMP 2012
Sacramento River	1995			Lake, Nevada, Yuba		Gregory Creek, Trout Creek, Clear Lake, Scotts Creek, Lower Cache Creek	**Yolo:** Flooding occurred in 1995 along Lower Cache Creek downstream from Clear Lake. **Lake:** Significant flood losses occurred due to Clear Lake flooding in 1995, indicating that the original studies may have underestimated flood damages. When the levee at Scotts Creek failed in 1995, the flooding was rapid and deep. **Sutter:** The 1995 floods were caused by two direct downpours that created major surface drainage backups at numerous locations throughout the county. Most of the water simply was on the wrong side of the levees. The storms were accompanied by high winds that contributed significantly to the damage. The two separate events occurred in January and March and resulted in more than $850,000 in damage to county facilities. **Nevada:** Flooding along Gregory Creek, Trout Creek, along Donner Lake Road and South Shore Road. **Source:** Yolo County OES, 2013, *Yolo Operational Area Multi-Hazard Mitigation Plan*; County of Lake, February 2005, Lake County, California, *Natural Hazard Mitigation Plan*; Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan*; Nevada County OES, June 2006, *DMA 2000 Multi-Jurisdiction, Multi-Hazard Mitigation Plan.*	$ 850,000	Sutter County	1995				Flash, Stormwater, Engineered Structure Failure	Yolo Operational Area MHMP 2004; Nevada County HMP, Butte County LHMP 2013, Lake County NMHP 2012; http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf; Sutter County LHMP 2013Update

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Sacramento River	1995			Nevada		Gregory Creek, Trout Creek	**Nevada:** 1995 floods with likely flood damage. Flooding along Gregory Creek, Trout Creek, as well as along Donner Lake Road and South Shore Road. **Source:** Nevada County OES, June 2006, *DMA 2000 Multi-Jurisdiction, Multi-Hazard Mitigation Plan* .							Slow Rise, Engineered Structure Failure	Nevada. 1986 floods with likely flood damage. Source: Nevada County MJMHMP 2006
Sacramento River	1996			Placer		South Placer County	Heavy rain and clogged storm drains caused water to flow into the Cavitt School Gymnasium (Eureka Union School District) in southern Placer County, and a wood floor was lost. The $85,976 in damages was covered by Emergency Services under a disaster declaration. The drainage system has since been modified. **Source:** Placer County, December 2009, *Multi-Hazard Mitigation Plan.*	$ 85,976	Placer County	1996				Slow Rise, Stormwater	Placer County LHMP 2010
Sacramento River	1996-1997	December-January		Alpine, Butte, Colusa, El Dorado, Glenn, Lake, Modoc, Napa, Nevada, Plumas, Sacramento, Shasta, Sierra, Siskiyou, Tehama, Yolo, Sutter, Yuba, Placer	Pineapple Express	Regionwide—Delta: Dead Horse Island, McCormack-Williamson Tract, Unincorporated areas of McCloud; Carson Pass, Squaw and Panther Creeks	**Regionwide:** The fifth record flood in 46 years occurred over the New Year holiday. Federal Disaster Declaration, FEMA 1155-DR-CA, 96/97 Winter Storms, 01/04/97. DR#1155. State declaration 1/2/97-1/31/97. **Plumas:** Severe storms, flooding, mud and landslides. Damages $194,352,509. The Sierra Valley filled with a several feet of water. Three hundred square miles were flooded, including the Yosemite Valley. Over 120,000 people had to be evacuated in Northern California. Several levee breaches were reported across the Sacramento and San Joaquin Valleys. **Butte and Sutter:** (12/29/1996) Flooding. Property damage $2,857. **Sacramento:** January 1997—Storms caused one of the worst floods of the century. McCormack-Williamson Tract and Dead Horse Island levees failed again. Particularly high flows in the San Joaquin River led to failure of a levee at Mossdale, flooding that area and Stewart Tract, and the nearby Paradise Cut levee breach flooded the Pescadero District. Sacramento was spared when the fury of the storm hit 40 miles north in the Feather River basin. Unprecedented flows from rain and melted snow surged into the Feather and the San Joaquin rivers (north and south of Sacramento County, a result of the storm splitting). Reportedly, this relatively short-duration, high-intensity storm showed the 24-hour rainfall across northern California with several regions exceeding 8 inches for the period. Several more comparable days, with the addition of significant snowmelt in the Sierras, led to widespread flooding in the Sacramento and San Joaquin Valleys. It was fortunate that Folsom Reservoir on the American River was low at the time of the flood warning because the flood storage capacity was much needed. Releases from the dam were at the design capacity of the Lower American River (115,000 cfs). Record flows in the Cosumnes River were recorded causing widespread failure of the levee system and flooding to dozens of homes. Through traffic was discontinued on Highway 99 as floodwater passed over. There was much loss of dairy and other livestock. The subsequent major levee repair project was funded by Natural Resources Conservation Service and managed by Sacramento County Department of Water Resources. The 1997 flood was considered the perfect storm as 100-year peak flows from multiple major rivers collided and flowed into the **Yolo Bypass** to the Sacramento River Delta. There was a major, successful, flood fight at Andrus Island, potentially affecting the City of Isleton. Flooding from the Bear and Feather rivers stressed the levees of the Cross Canal in Sutter County. This system held back the floodwaters saving the North Natomas area of Sacramento. The new pump station on the Natomas East Main Drain was also instrumental in protecting properties in Elverta and Rio Linda to the east of the Natomas East Main Drain levee. Sacramento City and County were saved from major catastrophe by functional flood control features on the Sacramento and American rivers and storm centering that stressed but did not fail those systems. **Alpine:** Heavy snows had fallen on the eastern Sierra watershed below Carson Pass in the days prior to Christmas 1996. Then, warm rains began falling shortly after New Year's Eve and increased in intensity as the hours progressed into January 2. **Siskiyou:** A significant flood occurred in the unincorporated area of McCloud between December 1996 and January 1997. **Tehama:** Severe Storms/Flooding. Damage estimates $1,238,671 in Tehama County.	54000000, $1.5 billion; $194,352,509, Property damage $2,857.14.	Individuals and businesses -$18 million, agricultural losses - $5 million, public agencies - $10 million, 21000000-Placer County, Statewide, Statewide (from Plumas County Presentation), Butte County	1997, 2013 (Butte)	11	3-Yuba County	X	Slow Rise, Engineered Structure Failure	Sutter County LHMP 2013Update; Yuba County MJMHMP, Placer County HMP, http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf; Plumas County HMP Presentation 3-7-13; Butte County LHMP 2013
Sacramento River	1996-1997	December-January		Alpine, Butte, Colusa, El Dorado, Glenn, Lake, Modoc, Napa, Nevada, Plumas, Sacramento, Shasta, Sierra, Siskiyou, Tehama, Yolo, Sutter, Yuba, Placer	Pineapple Express	Regionwide—Delta: Dead Horse Island, McCormack-Williamson Tract, Unincorporated areas of McCloud; Carson Pass, Squaw and Panther Creeks	**Sutter and Yuba:** A series of storms dumped warm, heavy rains onto a nearly double than average snow pack in the Sierra Nevada Mountains in late December. Sutter County Board of Supervisors directed a mandatory evacuation of the Nicolaus area and of all areas east of the Sutter Bypass and south of Pease Road. Meridian was the hardest hit area of Sutter County with approximately 50 square miles under water. Virtually every facility in the basin was destroyed or damaged, including nearly 100 homes and a school standing in 4 feet of water. A second break in the levee was intentionally made at the south end of the basin to allow the waters to return to the Bypass. The estimated financial losses to individuals and businesses were about $18 million and agricultural losses exceeded $5 million, not including long-term damage to orchard trees. Losses sustained by public agencies within the county amounted to about $10 million. The left levee of the Feather River failed near Arboga (RD 784), killing one person, destroying 180 homes and businesses, and prompting evacuation of about 15,000 people from Linda and Olivehurst. Flood in Yuba County, Plumas Lake area where 80,000 were evacuated. The Pineapple Express was responsible for very heavy rainfall in 1986 and 1997 when levee failure resulted in disastrous flooding in the towns of Linda, Olivehurst, and Arboga. Almost 40 inches of rain fell in the Feather River basin in 8 days. The "New Year's Day" Arboga flood from a levee breach on the Feather River killed 3 people, caused hundreds of millions of dollars in damage, and required one of the largest evacuations in State history. Over 38 American Red Cross shelters were established in the Yuba–Sutter area, as over 100,000 were forced to flee. **Placer:** A significant amount of rainfall and snowmelt runoff poured out of the Sierra Nevada from December 30, 1996, to January 1997. In Placer County, flooding eroded away mountainsides, breaking sewer, water, and power lines. In Placer County alone, damage estimates for public property were nearly $11 million. Approximately 137 homes and 22 businesses were damaged in the county. Total damage to private homes, businesses, agriculture, and private roads was near $10 million. Destruction to the Federal Highway System was nearly $7.7 million. FEMA reimbursed the County $717,754 and $177,451 was reimbursed through the State. **Source:** Butte County Office of Emergency Management, 2013, *Butte County Local Hazard Mitigation Plan*; Plumas County OES, 2013, *Plumas County Hazard Mitigation Plan*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan*; DWR, 2009, *California Water Plan Update 2009* Sacramento County, December 2004, *Multi-Hazard Mitigation Plan;* Alpine County, 2013, *Natural Hazard Mitigation Plan*; Siskiyou County, August 2012, *Hazard Mitigation Plan Volume 1: Planning-Area-Wide Elements*; Tehama County Public Works, April 2012, *Tehama County Hazard Mitigation Plan, Volume 1—Planning-Area-Wide Elements*; Yuba County Office of Emergency Services, 2013, *Yuba County Multi-Jurisdictional Multi-Hazard Mitigation Plan*; Placer County, December 2009, *Multi-Hazard Mitigation Plan.*							Flash, Slow Rise	
Sacramento River	1997	January	22	Butte, Placer		Chico, Butte Creek Canyon, Palermo, Squaw Creek	**Chico:** (1/22/1997) Flooding damaged 20 homes as heavy rains overflowed in more urbanized areas and along the City's creeks. **Butte** Creek Canyon: (1/22/1997) Flooding from Butte Creek damaged 20 homes and buildings. **Palermo:** (1/22/1997) Heavy rains brought two small creeks in the town above their banks, damaging 10 homes. **Yuba:** In January 1997, significant rain occurred at high elevations in the Sierra Nevada Mountains after deep accumulation of snow. This caused the Feather River to flood and a levee failure to occur south of Olivehurst in Yuba County. **Placer:** The overflowing and diversion of Squaw Creek (upper Truckee River basin), was responsible for the January floods of 1997 in eastern Placer County. The Wayne Road Landslide was the most significant of the three landslides that occurred. The Wayne Road Landslide was actually the result of two separate failures occurring in separate drainages. The drainages meet just upslope of the impacted area directly west of the intersection of Sandy Way and Wayne Road. The Sandy Way Landslide occurred approximately 0.25 mile west of the Wayne Road Landslide, originating just west of Squaw Summit Road, and deposited significant debris upslope of several residences on Sandy Way. The Navajo Court Landslide originated just east of a 300,000-gallon water storage tank located above the intersection of Navajo Court and Squaw Summit Road. The landslide debris flowed downslope, inundating the intersection of Navajo Court and Squaw Summit Road and plugged two culverts beneath Squaw Summit Road. The channel rerouted to the west and flowed down both sides of Navajo Court, eroding new gullies on both sides of the road. Debris continued downslope, plugged two culverts beneath Christy Lane, and deposited a significant amount of debris behind the post office on Squaw Valley Road. **Source:** Butte County Office of Emergency Management, 2013, *Butte County Local Hazard Mitigation Plan*; Placer County, December 2009, *Multi-Hazard Mitigation Plan.*							Slow Rise	Butte County LHMP 2013; Placer County LHMP 2010
Sacramento River	1997	January	26	Placer		Granite Bay	**Placer:** Flash Flood. Granite Bay. $150,000. Included in FEMA 1155. **Source:** Placer County, April 2010, *Local Hazard Mitigation Plan.*	$ 150,000.00	Granite Bay	1997				Flash Flood	Placer County MHMP 2005
Sacramento River	1998	January-March		Butte, Glenn, Lake, Sacramento, Tehama, Yolo, Yuba	El Niño Floods	Regionwide	**Regionwide:** January 12, 1998 - The National Climatic Data Center reported that heavy rains from a strong Pacific storm caused widespread but minor flooding across the Sacramento and Northern San Joaquin Valleys and nearby foothills. Hundreds of traffic accidents occurred on the highways and city streets throughout the region. January 18, 1998 - The National Climatic Data Center reported that 0.75 inches of rain in 6 hours in downtown Sacramento was one of the lighter rainfall totals as a Pacific storm brought brief but heavy rain to the Sacramento and Northern San Joaquin Valleys and surrounding foothills. Approximately 27,000 customers across the area lost power at sometime during the storm. **Source:** Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan* .							Flash, Slow Rise	Butte County LHMP, 2013; Lake County NHMP 2012

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Sacramento River	1998	February	9	Tehama			**Tehama:** (02/09/1998) Declaration # 1203. Severe Winter Storms and Flooding caused $2,971,428 in Tehama County. **Source:** Tehama County Public Works, April 2012, *Tehama County Hazard Mitigation Plan, Volume 1—Planning-Area-Wide Elements.*	$ 2,971,428	Tehama County				X	Flash	Tehama County HMP
Sacramento River	1998	February	2	Butte, Colusa, Glenn, Lake, Napa, Sacramento, Siskiyou, Solano, Sutter, Tehama, Yolo, Yuba	El Niño Floods	Statewide, Little Chico Creek	**Statewide:** El Nino rains. (02/02/1998) DR#1203 Butte, Colusa, Glenn, Lake, Napa, Sacramento, Siskiyou, Solano, Sutter, Tehama, Yolo, Yuba. Statewide deaths 17. Statewide damage $550,000,000. Federally declared on 2/19/1998. **Butte:** (2/2/1998) Flooding. Property damage $2,971,428. Crop damage $928,571. **Lake:** Highest lake stage that occurred since the construction of Cache Creek Dam - February 1998, Stage 11.44 feet (approximately a 50-year event), Elevation 1329.70 feet. **Sutter:** (2/2/1998) Flooding. Property damage $3,362,337. Crop damage $1,637,662. (2/3/1998) Flood surge in Little Chico Creek, which resulted in the flooding of Alberton Avenue Bridge. **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; Butte County Office of Emergency Management, 2013, *Butte County Local Hazard Mitigation Plan*; County of Lake, February 2005, *Lake County, California, Natural Hazard Mitigation Plan*; Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan*.	Property damage $2,971,428.57. Crop damage $928,571.43; Property damage $3,362,337.66. Crop damage $1,637,662.34	Butte, Sutter	2013				Slow Rise	Chronological_Listof_GovernerProclaimed_Disasters_for_Property_Tax purposes; Taming Natural Disasters - Appendix D - Disasters Affecting the San Francisco Bay Area 1950 – 2009; Butte County LHMP, 2013; Lake County NHMP 2012; Sutter County LHMP 2013Update; Butte County MHMP 2007
Sacramento River	1998	February, April		Sacramento		Citrus Heights	Federal Disaster Declaration, FEMA 1203-DR-CA, 02/06/1998. On April 1, 1998, flooding occurred in Citrus Heights. **Source:** Sacramento County, December 2004, *Multi-Hazard Mitigation Plan*.						X	Slow Rise	Sacramento County MHMP 2004
Sacramento River	1999	January	12	Lake			**Lake:** Flooding and levee failures along Scotts Creek. **Source:** County of Lake, February 2005, *Lake County, California, Natural Hazard Mitigation Plan.*							Flash, Slow Rise	Lake County NHMP 2012
Sacramento River	2000	January	23	Sutter			**Sutter:** (1/23/2000) Flooding. Property damage $4,166. **Source:** Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan*.	$ 4,167	Sutter	2013				Slow Rise	Sutter County LHMP 2013Update
Sacramento River	2005			Nevada		Gregory Creek, Trout Creek, Scotts Creek, Alley Creek	Flooding along Gregory Creek, Trout Creek, as well as along Donner Lake Road and South Shore Road. **Lake:** When the levee failed along Scotts Creek and Alley Creek in 2005, the flooding was rapid and deep. **Source:** Nevada County OES, June 2006, *DMA 2000 Multi-Jurisdiction, Multi-Hazard Mitigation Plan;* County of Lake, February 2005, *Lake County, California, Natural Hazard Mitigation Plan*.							Slow Rise, Engineered Structure Failure	Nevada County MJMHMP 2006, Lake County NHMP 2012
Sacramento River	2005-2006	December-February	December 17-February 3	Butte, Contra Costa, El Dorado, Lake, Modoc, Napa, Nevada, Plumas, Sacramento, Shasta, Siskiyou, Solano, Yuba .	2005/06 Winter Storms		**Regionwide:** Severe storms. (12/2005) Butte, Colusa, El Dorado, Lake, Lassen, Napa, Nevada, Placer, Plumas, Sacramento, Shasta, Sierra, Siskiyou, Yolo, Yuba. DR#1628 (02/03/2006). Severe storms, flooding, mudslides, and landslides. Damages $128,964,501. 2005/06 Winter storms. Flood. DR#1628. Federally declared on 02/03/2006. **Placer:** Flooding occurred in the county because of heavy rains and stormwater runoff caused by severe winter storms. Storms affected transit on public roads and caused some business closures. **Sutter:** December 17, 2005 – The National Climatic Data Center reported that a series of powerful warm winter storms brought heavy rainfall to Northern California during a 5-day period, during which rainfall totals in the County amounted to 3.5 to 4.5 inches. These 2005-2006 storms flooded several areas throughout Sutter County. Yuba City also incurred damage because of high-water events occurring during the 2005-2006 winter storms from December 17, 2005 through January 3, 2006. Heavy rains and severe storms caused the Feather River to flood its banks, overtopping the adjacent percolation ponds and causing damage to the structure of each of the six ponds. The damages sustained included silt debris deposits, scour along the pond levee slopes and pond bottoms, tearing and displacement of the fabric lining of the ponds, washout of riprap and fill along the pond slopes, and erosion damage plus washout of fill around the concrete spillways of each pond. Severe storms caused the Feather River to flood over its banks and resulted in major roadway flooding that washed out the roadway and roadway shoulders, as well as integral ground of both along sections of the Low Lift Station Access Road. (12/27/2005 and 1/1/2006) Flooding. Property damage $900,000. **Butte:** (Winter of 2005) In Rock Creek/Keefer Slough areas. State Highway 99 was covered with floodwater for several hours. There was extensive bank erosion in several areas. One property owner lost an acre of land due to erosion. Extensive road damage throughout the county amounted to over $774,000. More than five homes flooded, post office, market, downtown intersection flooded with 6 to 8 inches of water. Community of Nord experienced heavy rains with sheet flooding affecting many homes. **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; Plumas County OES, 2013, *Plumas County Hazard Mitigation Plan*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; Placer County, December 2009, *Multi-Hazard Mitigation Plan*; Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan*; Butte County Office of Emergency Management, 2013, *Butte County Local Hazard Mitigation Plan*.	$ 128,964,501	Statewide				X	Flash, Slow Rise	Chronological List Of Governor-Proclaimed Disasters For Property Tax Purposes; Plumas County HMP Presentation 3-7-13; Butte County LHMP 2013; Taming Natural Disasters - Appendix D - Disasters Affecting the San Francisco Bay Area 1950 – 2009; Placer County LHMP 2010; Sutter County LHMP 2013Update; Butte County MHMP 2007
Sacramento River	2006	March-April		El Dorado, Lake, Napa, Nevada, Placer	2006 Spring Storms	Regionwide	**Regionwide:** (3/29/2006 - 4/1/2006) DR#1646 Severe storms, flooding, landslides, and mudslides. **Placer:** Spring storm resulted in local disaster proclamation from extended rain and wind storm. Placer County roadways in unincorporated areas, particularly Foresthill Road and Ophir Road, were significantly damaged due to rain and mudslides. Costs to public agencies were in excess of $1 million. **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*; Placer County, December 2009, *Multi-Hazard Mitigation Plan*.	$ 1,000,000	Regionwide	2006				Flash, Debris Flow	http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf; Placer County LHMP 2010
Sacramento River	2006	May	10	Alpine, Butte, Colusa, El Dorado, Lake, Lassen, Napa, Nevada, Placer, Plumas, Sacramento, Siskiyou, Shasta, Sierra, Sutter, Solano, Yolo, Yuba		Regionwide	**Regionwide:** (05/10/2006) Storms. Roadway damage. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D*.	X	Regionwide					Flash, Debris Flow	Taming Natural Disasters - Appendix D - Disasters Affecting the San Francisco Bay Area 1950 – 2009
Sacramento River	2006			Shasta		Olney Creek	Flooding in South Redding along Olney Creek in 2006. **Source:** Shasta County and City of Anderson, September 2011, *Multi-Jurisdictional Hazard Mitigation Plan*.							Slow Rise	Shasta County HMP 2011

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Sacramento River	2008	January	5-14	Butte, Colusa, El Dorado, Glenn, Mendocino, Nevada, Placer, Sacramento, Sierra, Sutter, Yolo, Yuba	2008 Winter Storms	Regionwide	**Regionwide:** Extreme winds and heavy rains flooded the region. **Butte:** Disaster # GP 2008-01. State declaration on 1/15/2008. **Placer:** Severe winter storms brought massive snow, rain, and near-record winds to Northern California over the first weekend in January 2008 beginning on Friday January 4, 2008. It resulted in the temporary loss of power to some 2.5 million Pacific Gas & Electric customers throughout Northern California; approximately 45,000 in Placer County alone. In some cases, power outages lasted up to 6 days; in addition, extensive physical damage was recorded in the foothill area between Alta/Dutch Flat and Foresthill due primarily to falling trees or large tree limbs. Numerous houses and businesses throughout the foothills and western portions of the County were damaged by falling trees, flying debris, water or wind. As a result, Placer County declared a local emergency. The initial damage assessment provided to the State OES indicated damages of over $410,000 in the public sector, and an estimated $600,000 of private, residential damage. Business losses were smaller with initial estimates in the range of $205,000 total for five businesses. **Sutter:** On January 4, 2008, a winter storm with strong winds caused loss of power throughout Northern California. Unofficial reports of gusts from 89-92 MPH around the Sutter Buttes were later confirmed as probable by the National Weather Service based on damage sustained and radar imagery observed. Widespread wind damage caused sustained power outages to most of the county. At approximately 7:00 a m on January 4, 2008, the power was lost throughout Yuba City. During the morning of January 4, 2008, the town of Robbins lost power. With the outage, the community had no fresh water or sewage treatment. Additionally, on January 4, 2008, DWR and Reclamation District 70/1660 lost power to its pumps during the morning hours. Power was to be restored to Pump Station 1 and Pump Station 2 at approximately 2:00 am on January 6, 2008. On January 6, 2008, a local emergency was declared due to the amount of storm damage, the continued power outage, and the strong possibility of flooding due to DWR pumps being out on the Sutter Bypass. **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; Butte County Office of Emergency Management, 2013, *Butte County Local Hazard Mitigation Plan*; Placer County, December 2009, *Multi-Hazard Mitigation Plan*; Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan* .	$410,000 (public), $600,000 (private), $205,000 (business)	Regionwide	2008			X	Slow Rise	http://www.cbsnews.com/stories/2008/01/06/national/main3679613.shtml; Butte County LHMP 2013 http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf Butte County HMP
Sacramento River	2008	October	3, 31	Butte		Pulga, Big Bend	**Pulga:** Cal Fire reported numerous debris flows on Highway 70 due to heavy rain over adjacent areas burned earlier in the year. Several of the flows were located between its fire station and the Pulga Bridge. **Big Bend:** The California Highway Patrol reported multiple locations of rock and mud debris on Highway 70 near Yankee Road and the town of Concow. A wildfire had burned this area earlier in the year, making it susceptible to debris slides. **Source:** Butte County Office of Emergency Management, 2013, *Butte County Local Hazard Mitigation Plan* .							Debris Flow	Butte County LHMP 2013
Sacramento River	2009	March	3	Sutter		Nicolaus	**Sutter:** March 3, 2009 – The National Climatic Data Center reported a system that generated thunderstorms in the Central Valley, bringing heavy rain, flash flooding, and other severe effects. Numerous car accidents from wet roads were reported across the area, as well as trees falling from a combination of wet ground and wind. Minor flooding of rural county roads in the Nicolaus area of the county was reported. **Source:** Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan* .							Flash	Sutter County LHMP 2013Upate
Sacramento River	2010	January	17-21	Siskiyou	Winter Storms		**Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013.							Slow Rise	http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf
Sacramento River	2011	March		Butte, Modoc, Sierra, Sutter			Rain storms - Butte, Sierra, Sutter. Flooding - Modoc. **Sutter:** Starting on March 19, 2011, a series of winter storms caused conditions of extreme peril to the safety of persons and property within this county. Disruption of electrical power at flood control pumping stations threatened homes, businesses, and roads throughout the county. Localized flooding was present in low-lying areas due to the large amount of precipitation and associated drainage. On April 14, 2011, Sutter County Office of Emergency Management and Public Works accompanied FEMA and CalEMA personnel to assess the damage. The initial damage estimate for Sutter County was $22,988,000. Repairs began on the Tenth Street Bridge (Highway 20) on June 21. Caltrans completed the repair at a cost of $12 million in December 2011. **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan* .	$ 22,988,000	Sutter County	2011			X	Slow Rise	http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf; Sutter County LHMP 2013Update
Sacramento River	2012	November-December		Sutter		Robbins	**Sutter:** A severe winter storm event occurred over the county between November 30 and December 3, 2012. During this period, the wastewater treatment plant was nearly overwhelmed by inflow and infiltration. Because the treatment plant could not keep up with the influent (which was observed to be close to 100 gallons per minute), the entire collection system, including septic tank pumping system tanks, was back-charged. This placed the entire community of Robbins at risk of sanitary spills occurring both on property and in homes. **Source:** Sutter County, 2007 (2013 update in process), *Local Hazard Mitigation Plan* .							Flash	Sutter County LHMP 2013Upate
San Francisco Bay	1798-1799	December-January		Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma		Regionwide	Heavy rain lasted 28 days in the region. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Flash, Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf
San Francisco Bay	1819	January-February		Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma		Regionwide	Heavy rains changed the course of many rivers in the region. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Flash, Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf
San Francisco Bay	1849-1850	November-April		Napa, Santa Clara		Valleys	**Napa and Santa Clara:** Extensive flooding in Napa and Santa Clara Valleys remained for several weeks. **Contra Costa:** Outstanding flood event. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California;* Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan* .							Flash, Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf
San Francisco Bay	1852-1853			Napa		Napa River	**Napa:** A bridge over Napa River at Napa washed out, and the river overflowed into town. Lowland areas flooded. **Contra Costa** : Outstanding flood event. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan.*	X	Napa					Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf
San Francisco Bay	1861-1862	December-January		Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma	The Great Flood	Regionwide	**Regionwide:** Severe storm in the San Francisco Bay Area Region. A devastating flood in 1861-1862 (the "Great Flood") inundated large areas of the West Coast, including the San Francisco Bay area. **Napa:** On December 8, the town of Napa flooded and floodwaters washed away houses. Napa flooded again on December 28 and again in January. **Alameda:** The towns of Alvarado and San Leandro, and were flooded in January. Floodwaters also washed out bridges and mills in Santa Clara and San Mateo counties. **Contra Costa** : Outstanding flood event. Pacheco flooded in January. **Santa Clara** : The Guadalupe River flooded San Jose's downtown and Alviso community with severe flooding. **San Francisco** : For a week, there was no tidal inflow at the Golden Gate, only an outflow of river water 18 to 20 feet deep, floating on the salt water. **Source:** Bush, Devin, November 2012, *California Floods 1862/1964;* DWR, 2009, *California Water Plan Update 2009*; USGS, 1988, *Professional Paper 1434: Landslides, Floods, and Marine Effects of the Storm of January 3-5 1982, in the San Francisco Bay Region;* USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan*; Santa Clara County , 2013, *Local Hazard Mitigation Plan 2011 Update.*	X	Town of Napa; Santa Clara and San Mateo Counties				X	Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf; Contra Costa County HMP 2011; Santa Clara County LHMP 2011
San Francisco Bay	1867	December		Sonoma		Petaluma Creek	**Sonoma:** Heavy rain created flooding in late December, which resulted in record flows in Petaluma Creek and flooding of railroad and buildings. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Flash	http://pubs.usgs.gov/wsp/0843/report.pdf
San Francisco Bay	1869	February		Napa, Santa Clara		Los Gatos, Guadalupe Creek, Napa River	**Santa Clara and Napa:** Flood covered the Santa Clara Valley in every direction from San Jose and the Napa Valley. In the Napa Valley, railroad bridges were washed out south of Calistoga and Napa. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*	X	Napa Valley					Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
San Francisco Bay	1871	December		Santa Clara		Los Gatos Creek, Guadalupe Creek	**Santa Clara** : San Jose flooded from overflows of Los Gatos and Guadalupe creeks.**Contra Costa** : Outstanding and flood event. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California;* Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan* .							Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf
San Francisco Bay	1874	November		Sonoma			**Sonoma:** Excessive rains caused flooding in Sonoma County. **Source:** USGS, 1939, W*ater Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf
San Francisco Bay	1875			Contra Costa			**Contra Costa:** Outstanding flood event. **Source:** Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan.*							Slow Rise	Contra Costa County HMP 2011
San Francisco Bay	1878	January		Contra Costa, Sonoma			**Sonoma:** High waters and damaging flooding occurred in Sonoma.**Contra Costa** : Outstanding and severe flood event. Large portions of the delta area were inundated, and there was widespread and extensive damage. **Source:** Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan;* USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*	X	Sonoma, Delta					Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf
San Francisco Bay	1879	March	5-8	Napa, Solano		Napa River	**Napa:** Napa River flooded with its largest flows since 1862, flooding the town and washing away houses. **Contra Costa** : Outstanding and severe flood event. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan.*	X	Napa					Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf
San Francisco Bay	1881	January		Napa, Sonoma		Napa River, Petaluma Creek	**Napa:** A stone bridge and a railroad bridge near Napa both washed away.**Contra Costa** : Outstanding and severe flood event. Large portions of the delta area were inundated, and there was widespread and extensive damage. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan.*	X	Napa, Delta					Slow Rise	Contra Costa County HMP 2011
San Francisco Bay	1889-1890	December-March	Winter	Napa, Santa Clara		Napa River	**Napa and Santa Clara** : Precipitation for the winter season 1889-90 was the greatest of record at many points in the San Francisco Bay region. There were floods on January 24-25, nearly as high as any known at the time. The Napa River at Napa was reported to have been on January 24 only a foot below the record height of 1881, and the flood in the Santa Clara Valley near San Jose was said to have been the greatest since 1862. Bridges were destroyed at several points in the San Francisco Bay region, railroad tracks were washed out, towns and farms were flooded, and at least two persons were drowned. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*	X	San Francisco Bay Region		2	San Francisco	X	Flash	http://pubs.usgs.gov/wsp/0843/report.pdf
San Francisco Bay	1892	November	30	Alameda		Alameda Creek	Flood of great magnitude on Alameda Creek. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Flash	http://pubs.usgs.gov/wsp/0843/report.pdf
San Francisco Bay	1894	January-February		Alameda		Alameda Creek	Moderate flood. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf
San Francisco Bay	1895	January	18, 21-22	Alameda, Napa, Santa Clara		Alameda Creek (Niles Dam), Napa River, Guadalupe River	**Alameda:** Outstanding flood/flood of considerable magnitude. Mean daily discharge at Niles Dam for this date is listed as 16,200 second-feet. **Santa Clara** : The Guadalupe River flooded San Jose's downtown and Alviso community with severe flooding. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California* ; DWR, 2009, *California Water Plan Update 2009*; Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update.*							Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf; Santa Clara County LHMP 2011
San Francisco Bay	1900	November		Alameda		Alameda Creek	Moderate flood. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Flash	http://pubs.usgs.gov/wsp/0843/report.pdf
San Francisco Bay	1902			Contra Costa			Outstanding flood event. **Source:** Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan* .							Flash	http://www.co.contra-costa.ca.us/DocumentCenter/Home/View/6024
San Francisco Bay	1903	March		Alameda, Santa Clara		Alameda Creek, Coyote Creek	Moderate flood. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*							Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf
San Francisco Bay	1904			Contra Costa			Outstanding and severe flood event. Large portions of the Delta area were inundated, and there was widespread and extensive damage. **Source:** Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan.*	X	Delta					Slow Rise	http://www.co.contra-costa.ca.us/DocumentCenter/Home/View/6024
San Francisco Bay	1906	January		Alameda, Santa Clara		Alameda Creek, Coyote Creek	**Alameda:** Moderate flood. **Contra Costa** : Outstanding flood event. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California;* Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan.*							Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf
San Francisco Bay	1907	March	19; 23	Alameda, Contra Costa, Napa, Santa Clara		Northern, Central California (Oregon border to Santa Barbara, including the Bay Area)	Guadalupe Creek, Alameda Creek, Coyote Creek, and Los Gatos Creek all overflowed, flooding agriculture land and washing out bridges. Outstanding and severe flood event. Large portions of the Delta area were inundated, and there was widespread and extensive damage. **Source:** Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan* ; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; DWR, 2009, *California Water Plan Update 2009;* USGS, 1988, *Professional Paper 1434 Landslides, Floods, and Marine Effects of the Storm of January 3-5, 1982, in the San Francisco Bay Region;* USGS, 1970, *Hydrologic Investigations, Floods on the Napa River at Napa California.*	X	Alameda, Contra Costa, Napa, Santa Clara Counties				X	Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf
San Francisco Bay	1909	January	21	Contra Costa, Santa Clara		Alameda Creek, Coyote Creek	**Santa Clara:** Alameda and Coyote creeks flooded at the same magnitude as 1907.**Contra Costa** : Outstanding and severe flood event. Large portions of the Delta area were inundated, and there was widespread and extensive damage. **Source:** Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan* ; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*	X	Contra Costa, Santa Clara Counties				X	Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf
San Francisco Bay	1911	January-March	Winter	Alameda, Napa, Santa Clara		Alameda Creek, Guadalupe River, Coyote Creek	There was a flood on Alameda Creek March 7, 1911, which was about the same magnitude as that of 1892. The maximum recorded discharge at the gauging station on Coyote Creek near Madrone was in 1911, probably on March 7. This gauging station has been operated since 1902, except for the period 1913-15. The stream-flow record for Coyote Creek near Madrone, started in 1902, shows a high peak discharge of 15,000 second-feet on March 31, 1903, exceeded only in March 1911 for the periods of record 1902-12, and 1916-38.**Santa Clara:** The Guadalupe River flooded San Jose's downtown and Alviso community with severe flooding. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California;* Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update;* DWR, 2009, *California Water Plan Update 2009.*							Debris Flow, Coastal, Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf; Santa Clara County LHMP 2011
San Francisco Bay	1914	January-March	Winter	Alameda, Marin,		Regionwide, Alameda Creek, Corte Madera Creek	Alameda Creek reached high stages on January 25, 1914. Corte Madera Creek flooding damaged San Anselmo, Ross, Kentfield, Larkspur, Fairfax, and vicinity numerous times, notably in 1914. **Source:** DWR, 2009, *California Water Plan Update 2009*; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; Town of San Anselmo, February 2008, *Flood Mitigation Plan.*	X	San anselmo, Ross, Kentfield, Larkspur, and Fairfax					Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf; http://www.waterplan.water.ca.gov/docs/cwpu2009/1009prf/3-rr_sf_pre-final_app.a-c_pdf_13oct09.pdf; http://hazardmitigation.calema.ca.gov/docs/fmp/San_Anselmo_Flood_Mitigation_Plan08.pdf
San Francisco Bay	1917	February	21	Santa Clara		Coyote Creek; Guadalupe River	There were moderate floods on Coyote Creek near Madrone on February 21, 1917. Significant floods were fed by the Guadalupe River. **Source:** Santa Clara Valley Water District, 2013, "Timeline of the History of Water in Santa Clara County"; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
San Francisco Bay	1919	February	10	Alameda		Alameda Creek, Coyote Creek; Northern California, unincorporated areas of Alameda County; San Lorenzo Creek	Alameda Creek reached high stages on February 10, 1919. There were moderate floods on Coyote Creek near Madrone on February 10, 1919. Major flooding of San Lorenzo Creek. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California;* County of Alameda, August 2011, *Annex to 2010 Association of Bay Area Governments Local Hazard Mitigation Plan Taming Natural Disasters.*							Slow Rise, Flash	http://pubs.usgs.gov/wsp/0843/report.pdf; http://quake.abag.ca.gov/wp-content/documents/2010LHMP/AlamedaCo-Annex-2011.pdf
San Francisco Bay	1922	February	10	Alameda		Alameda Creek; Coyote Creek	Alameda Creek reached high stages on February 10, 1922. There were moderate floods on Coyote Creek near Madrone on February 10, 1922. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf
San Francisco Bay	1925	February		Alameda, Marin		Unincorporated Areas of Alameda County, San Anselmo, San Lorenzo Creek	**Marin:** The worst flood in the history of Marin County followed 7 inches of rain in February. San Anselmo, Ross, and Kentfield suffered heaviest damages. **Alameda:** Major flooding of San Lorenzo Creek. **Source:** County of Alameda, August 2011, *Annex to 2010 Association of Bay Area Governments Local Hazard Mitigation Plan Taming Natural Disasters* ; San Anselmo Historical Society, February 2013, *Chronological History of San Anselmo* .	X	San Anselmo, Ross, and Kentfield				X	Flash	http://www.sananselmohistory.org/pages/chronological_history.html; http://quake.abag.ca.gov/wp-content/documents/2010LHMP/AlamedaCo-Annex-2011.pdf
San Francisco Bay	1927	February	13	Alameda, Marin, Napa, Solano		Coyote Creek; Regionwide—San Anselmo	There were moderate floods on Coyote Creek near Madrone on February 13, 1927. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California;* USGS, 1988, *Professional Paper 1434 Landslides, Floods, and Marine Effects of the Storm of January 3-5 1982, in the San Francisco Bay Region*; Town of San Anselmo, February 2008, *Flood Mitigation Plan.*							Debris Flow, Coastal, Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf
San Francisco Bay	1931	December		Alameda, Santa Clara		Coyote Creek; Unincorporated Areas of Alameda County, Lower Guadalupe River, San Jose - Alviso, Milpitas - Alviso Roads, San Lorenzo Creek	**Alameda:** Major flooding of San Lorenzo Creek. **Santa Clara:** There were moderate floods on Coyote Creek near Madrone on December 28, 1931. **Source:** County of Alameda, August 2011, *Annex to 2010 Association of Bay Area Governments Local Hazard Mitigation Plan Taming Natural Disasters;* USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise, Flash	http://pubs.usgs.gov/wsp/0843/report.pdf http://quake.abag.ca.gov/wp-content/documents/2010LHMP/AlamedaCo-Annex-2011.pdf
San Francisco Bay	1937-1938	December-March		Alameda, Contra Costa		Regionwide	**Alameda:** Flooding in Pleasanton, Livermore, and the Dublin area after a 20-year storm event. **Source:** Zone 7 Water Agency, 2007, *The History of Flooding and Flood Protection in the Livermore-Amador Valley* 2007; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Debris Flow, Coastal, Slow Rise	http://pubs.usgs.gov/wsp/0843/report.pdf http://www.zone7water.com/streamwise/docs/streamwise-history.pdf.
San Francisco Bay	1940	February	27	Alameda, Napa, Solano		San Lorenzo Creek, Bay Area	**Alameda:** Major flooding of San Lorenzo Creek. 1940 storm was only 65.3 million cubic meters in San Lorenzo. Streams may also have carried additional sediment supplied by landslides during the 1940 storm. **Source:** USGS, 1988, *Professional Paper 1434: Landslides, Floods, and Marine Effects of the Storm of January 3-5, 1982, in the San Francisco Bay Region;* County of Alameda, August 2011, *Annex to 2010 Association of Bay Area Governments Local Hazard Mitigation Plan Taming Natural Disasters.*							Debris Flow, Coastal, Slow Rise	http://quake.abag.ca.gov/wp-content/documents/2010LHMP/AlamedaCo-Annex-2011.pdf
San Francisco Bay	1942	January-February	6	Marin, Napa		San Lorenzo, Napa River, Corte Madera Creek	**Alameda:** Major flooding of San Lorenzo Creek. **Napa:** (2/6/1942) Major flood on the Napa River. Serious flood. **Marin:** On Corte Madera Creek major flooding was reported in 1942. **Source:** Town of San Anselmo, February 2008, *Flood Mitigation Plan* ; County of Alameda, August 2011, *Annex to 2010 Association of Bay Area Governments Local Hazard Mitigation Plan Taming Natural Disasters* ; USGS, 1970, *Hydrologic Investigations, Floods on the Napa River at Napa California* ; City of Napa, February 2004 updated October 2007, *Napa Operational Area Hazard Mitigation Plan.*							Slow Rise	http://quake.abag.ca.gov/wp-content/documents/2010LHMP/AlamedaCo-Annex-2011.pdf
San Francisco Bay	1943			Napa		Napa River	**Napa:** Serious flood. **Source:** City of Napa, February 2004 updated October 2007, *Napa Operational Area Hazard Mitigation Plan.*							Flash	Napa Operational Area HMP 2004
San Francisco Bay	1946	April		Marin, San Mateo		Regional coast	**Marin:** 13.5-foot wave hit Muir Beach. Drake's Bay, CA; boat capsized 1946. A tsunami generated in the Aleutian Islands caused tsunami flooding in parts of California, including a surge in Half Moon Bay that flooded over 1,000-feet inland. **San Mateo:** The Half Moon Bay area was struck by waves estimated at 10 to 14 feet high, which damaged several boats and structures along the waterfront, and caused an estimated $20,000 in damage. **Source:** City of Ventura, 2013, Ready Ventura County: "Tsunami Watch, Advisory, or Warning"; USC Tsunami Research Center, 2013, *1946 Aleutian Tsunami*; Whitmore et al., 2008, "NOAA/West Coast and Alaska Tsunami Warning Center Pacific Ocean Response Criteria," *Science of Tsunami Hazards*, Vol. 27, No. 2.	$ 20,000	Half Moon Bay					Tsunami	
San Francisco Bay	1950	January-March	Winter	Contra Costa		Unincorporated Areas of Alameda County, Sacramento San Joaquin Delta Area, Fremont	**Contra Costa:** The 1950 flood flows inundated about 18,000 acres and caused about $1.2 million in damages. **Source:** Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan* ; FEMA, 2003 revised July 16, 2010, *Flood Insurance Study Contra Costa County, California, Unincorporated Areas.*	$ 1,200,000		1950			X	Slow Rise	
San Francisco Bay	1950	December		Alameda		Statewide, San Lorenzo Creek	**Statewide:** Floods. statewide CD 47-DR-CA (12/22/55). 74 deaths (statewide). $200 million (statewide). **Alameda:** Major flooding of San Lorenzo Creek. **Source:** County of Alameda, August 2011, *Annex to 2010 Association of Bay Area Governments Local Hazard Mitigation Plan Taming Natural Disasters*; Association of Bay Area Governments, 2010, Appendix D: "Disasters Affecting the San Francisco Bay Area 1950-2009," *Multi-Jurisdictional Local Hazard Mitigation Plan.*	$ 200,000,000	Statewide	1950			X	Slow Rise	http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf; http://quake.abag.ca.gov/wp-content/documents/2010LHMP/AlamedaCo-Annex-2011.pdf
San Francisco Bay	1951			Marin		Corte Madera Creek	Corte Madera Creek damaged San Anselmo, Ross, Kentfield, Larkspur, Fairfax, and vicinity numerous times, notably in 1951. **Source:** DWR, 2009, *California Water Plan Update 2009.*	X	San anselmo, Ross, Kentfield, Larkspur, and Fairfax					Slow Rise	http://www.waterplan.water.ca.gov/docs/cwpu2009/1009prf/3-rr_sf_pre-final_app.a-c_pdf_13oct09.pdf
San Francisco Bay	1955-1956	December-January		Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma	1955 Christmas Flood	Alameda Creek, Bay Area, Novato Creek, Corte Madera Creek, Petaluma River, San Rafael Creek, Pescadero Creek, San Francisquito Creek, Coyote Creek, Stevens Creek, Matadero Creek, Guadalupe River, Russian River, Communities of Byron, Brentwood, Knightsen, Tree Haven, Fairfax, Fair Oaks, Meadow Homes, Sherman Acres, Gregory Gardens, City of Walnut Creek	**Contra Costa:** Severe winter storms, flooding. $22 million in damages. The flood of December 1955 had an estimated recurrence interval of 22 years. Flood conditions created by heavy rains were aggravated by high tides. The damage in Contra Costa County was extensive, with an estimated loss to private dwellings of $1.25 million (1955 dollars). Approximately 460 families were evacuated from Byron, Brentwood, Knightsen, Tree Haven, Fair Oaks, Meadow Homes, Sherman Acres, Gregory Gardens (now part of the City of Pleasant Hill), and the City of Walnut Creek. Flooding occurred in the City of Concord from Pine Creek in December, 1955.**Alameda and Santa Clara** : Precipitation from a warm, moist air mass caused widespread flooding within the region and throughout the rest of California in December 1955. In that event, a levee failed on Alameda Creek, allowing floodwaters to inundate portions of Niles, Centerville, Mission San Jose, Irvington, and Warm Springs. Major flooding of San Lorenzo Creek. **Alameda:** The largest flood on record occurred in 1955 and caused significant flooding across the Valley. **Santa Clara** : San Francisquito Creek overflowed, causing extensive damage to Palo Alto. **Marin:** (December 1955 and January 1956) During December 21-23, two 6- to 8-hour bursts of heavy rainfall separated by 12 hours followed a week of moderate to heavy rain. Debris flows were observed in Marin County at these times, and again during a downpour on January 18 that was part of the regional storm sequence that began 35 days earlier. The City of Sonoma and Tubbs Island suffered damage from high flows on Nathanson Creek and Tolay Creek, respectively, during the flood of December 1955. Several homes were inundated in Sonoma. **Source:** DWR, February 1965, Bulletin No. 159-65: California Flood Control Program 1965; USGS, 1988, *Professional Paper 1434: Landslides, Floods, and Marine Effects of the Storm of January 3-5, 1982, in the San Francisco Bay Region*; Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan* ; FEMA, December 2003, *Flood Insurance Study Contra Costa County, California, Unincorporated Areas* ; DWR, 2009, *California Water Plan Update 2009*; County of Alameda, August 2011, *Annex to 2010 Association of Bay Area Governments Local Hazard Mitigation Plan Taming Natural Disasters*; Zone 7 Water Agency, 2007, *The History of Flooding and Flood Protection in the Livermore-Amador Valley.*	$ 22,000,000	Contra Costa				X	Slow Rise, Engineered Structure Failure, Coastal	Contra Costa County HMP 2011

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
San Francisco Bay	1955			Marin, Contra Costa, Napa		Napa River, Corte Madera Creek, Delta, Guadalupe River, Pinole	**Marin:** Corte Madera Creek flooding damaged San Anselmo, Ross, Kentfield, Larkspur, Fairfax, and vicinity numerous times, notably in 1955. Major storms in 1955 resulted in damage estimated to be in excess of $170,000. **Napa:** Serious flood. Floods during 1955 inundated up to 12,000 acres with damages to commercial, industrial, and agricultural lands and roads and bridges, with most damage in the City of Napa. **Contra Costa** : Floods in 1955 were outstanding in peak outflows through the Delta area, and several islands were flooded. The 1955 flood flow inundated almost 38,000 acres, and caused about $3.3 million in damage. The Delta area suffered permanent damage to a sizeable amount of agricultural land. Concurrent strong onshore winds generated high waves that threatened many islands. Flooding in the business district and a residential subdivision in Pinole occurred in 1955. Flooding of residences and business establishments in Rodeo occurred in 1955. Santa Clara: The Guadalupe River flooded San Jose's downtown and Alviso community with severe flooding. **Source:** DWR, February 1965, *Bulletin No. 159-65: California Flood Control Program 1965*; Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update;* DWR, 2009, *California Water Plan Update 2009;* City of Napa, February 2004 updated October 2007, *Napa Operational Area Hazard Mitigation Plan* ; Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan.*						X	Flash	http://www.waterplan.water.ca.gov/docs/cwpu2009/1009prf/3-rr_sf_pre-final_app.a-c_pdf_13oct09.pdf; Napa Operational Area 2004, Contra Costa County HMP 2011, Santa Clara County LHMP 2011
San Francisco Bay	1958	February	26	Santa Clara, Santa Cruz		Southern boundaries of Santa Cruz and Santa Clara, Guadalupe River	**Santa Clara and Santa Cruz:** (2/26/1958) Storm and Flood Damage, Northern California (Southern boundaries of Santa Cruz, Santa Clara). The Guadalupe River severely flooded San Jose's downtown and Alviso community. **Source:** Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update* ; DWR, 2009, *California Water Plan Update 2009.*							Slow Rise, Flash	Santa Clara County LHMP 2011
San Francisco Bay	1958	February-April		Alameda, Contra Costa, Marin, San Mateo, Santa Clara, Solano, Sonoma, San Francisco, Santa Clara		San Francisco Bay Area, Corte Madera Creek, San Francisquito Creek, Penitencia Creek, Guadalupe River, San Tomas Aquinas Creek, Stevens Creek, Permanente Creek, Matadero Creek, Russian River, Guadalupe River, Las Trampas Creek, San Ramon Creek, Marsh Creek, Coyote Creek	**Regionwide:** (2/1958) Storm and flood damage. **Santa Clara** . (4/1958) Storm and flood damage. 13 deaths (statewide). $20 million, plus $4 million agricultural (statewide). **Alameda:** Major flooding of San Lorenzo Creek. **Santa Clara and Santa Cruz** : (2/26/1958) Storm and Flood Damage, Northern California (Southern boundaries of Santa Cruz, Santa Clara). The Guadalupe River flooded San Jose's downtown and Alviso community with severe flooding. **Contra Costa:** (2/1958 and 4/1958) Las Trampas Creek and San Ramon Creek overflowed down the main street of the City of Walnut Creek. Marsh Creek washed out a county bridge. Precipitation from a warm, moist air mass caused widespread flooding within the **San Francisco Bay region** in 1958. Flooding in the aftermath of levee failure on Alameda Creek destroyed crops and damaged industries, along with more than 225 homes in Niles (Fremont), Alvarado (Union City), and Alviso (San Jose). San Francisquito Creek also overflowed, causing extensive damage to Palo Alto. Arroyo Valle washed out the Southern Pacific Railroad bridge in Pleasanton. Levees failed on the Guadalupe River and Coyote Creek, inundating Alviso. **Source:** USGS, 1988, *Professional Paper 1434: Landslides, Floods, and Marine Effects of the Storm of January 3-5, 1982, in the San Francisco Bay Region*; DWR, 2009, *California Water Plan Update 2009;* Association of Bay Area Governments, 2010, Appendix D: "Disasters Affecting the San Francisco Bay Area 1950-2009," *Multi-Jurisdictional Local Hazard Mitigation Plan* ; County of Alameda, August 2011, *Annex to 2010 Association of Bay Area Governments Local Hazard Mitigation Plan Taming Natural Disasters* ; Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update* ; DWR, February 1965, *Bulletin No. 159-65: California Flood Control Program 1965.*	20000000; plus $4000000 agricultural; statewide	Statewide	19589	13	Statewide	X	Debris Flow, Coastal, Slow Rise, Engineered Structure Failure	http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf; http://www.water.ca.gov/waterdatalibrary/docs/historic/Bulletins/Bulletin_159/Bulletin_159-65__1965.pdf
San Francisco Bay	1958			Marin, Alameda, Santa Clara, Contra Costa		Corte Madera Creek, Alameda Creek, Niles, Alvarado, Alviso, San Francisquito Creek, Palo Alto, Pinole	**Marin:** Corte Madera Creek flooding damaged San Anselmo, Ross, Kentfield, Larkspur, Fairfax, and vicinity numerous times, notably in 1958. **Alameda and Santa Clara:** Precipitation from a warm, moist air mass caused widespread flooding within the region and throughout the rest of California in 1958. Floods breached a levee, destroying crops and damaging industries and more than 225 homes in Niles, Alvarado, and Alviso. The same year, San Francisquito Creek overflowed, causing extensive damage to Palo Alto. **Napa:** Floods during 1958 inundated up to 12,000 acres with damages to commercial, industrial, and agricultural lands and roads and bridges, with most damage in the City of Napa. **Contra Costa:** Flooding in the business district and a residential subdivision in Pinole occurred in 1958. Flooding of residences and business establishments in Rodeo occurred in 1958. **Source:** DWR, February 1965, *Bulletin No. 159-65: California Flood Control Program 1965*; DWR, 2009, *California Water Plan Update 2009*;						X	Slow Rise	http://www.waterplan.water.ca.gov/docs/cwpu2009/1009prf/3-rr_sf_pre-final_app.a-c_pdf_13oct09.pdf
San Francisco Bay	1960	May		Marin, San Francisco, San Mateo		Regional coast, Novato Creek, Corte Madera Creek, Half Moon Bay	**Marin:** Novato Creek in the northern part of the county historically caused damage to large numbers of homes in the 1960s. A tsunami recorded all along the West Coast damaged boats at San Rafael and interrupted ferry service.**San Mateo** : Tsunami hit California coast, a wave approximately 7 feet high. Half Moon Bay had three near drownings, much flooding, and boat damage. A small fishing boat at Half Moon Bay was washed on shore by the tsunami that hit the California coast. Most of the damage on the California coast was to small boats such as this one, and to harbors, docks, and moorings. **Source:** USGS, May 1960, *Historic Earthquakes Chile 1960 May 22, "The Largest Earthquake in the World";* Marin County Sheriff Office of Emergency Services, April 2006, *Marin County Operational Area Hazard Mitigation Plan* ; Pararas-Carayannis, Dr. George, 2013, "Chile Earthquake and Tsunami of 22 May 1960," *Disaster Pages of George Pararas-Carayannis;* Whitmore et al., 2008, "NOAA/West Coast and Alaska Tsunami Warning Center Pacific Ocean Response Criteria," *Science of Tsunami Hazards,* Vol. 27, No. 2.	X	Half Moon Bay					Tsunami	Marin County Operational Area 2006 USGS "Historic Earthquakes Chile 1960 May 22" http://earthquake.usgs.gov/earthquakes/world/events/1960_05_22_articles.php
San Francisco Bay	1960			Marin		Corte Madera Creek	**Marin:** Corte Madera Creek flooding damaged San Anselmo, Ross, Kentfield, Larkspur, Fairfax, and vicinity numerous times, notably in 1960. **Source:** DWR, 2009, *California Water Plan Update 2009.*	X	Ross, Kentfield, Larkspur, and Fairfax				X	Slow Rise	http://www.waterplan.water.ca.gov/docs/cwpu2009/1009prf/3-rr_sf_pre-final_app.a-c_pdf_13oct09.pdf
San Francisco Bay	1962	October		Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma		Regionwide	**Regionwide:** (Fall 1962) Flood and rainstorms. Alameda, Contra Costa, Napa, San Mateo. $4 million +. In the coastal areas south of San Francisco Bay, the heavy runoff was concentrated in the East Bay area and in parts of the Santa Clara Valley. The city of Oakland was virtually isolated as local floodwaters and mudslides closed many access roads and streets. To a less serious degree, the cities of Concord, Pleasant Hill, and Walnut Creek in Contra Costa County were encircled by local floodwaters, and roads to these cities were blocked by slides and washouts. Throughout the San Francisco Bay area, mudslides and flooding destroyed scores of homes and business establishments. In storm-battered Pacifica, on the coast just south of San Francisco, more than 200 persons were evacuated from their homes as masses of mud and water poured down from the hills. In parts of the town, water stood at depths of 1 to 5 feet. Agricultural and highway damage was heavy throughout the region, and many low-lying areas were inundated. Nineteen persons lost their lives as a result of the storm and floods. Three victims were buried in mudslides, one was drowned, one was electrocuted, one was killed by a falling tree, and the others were killed in weather-influenced traffic accidents. Damage in California was estimated at $10 million of which $2 to $3 million was damage to roadways and drainage structures. The heaviest losses were concentrated in the urban areas of the San Francisco Bay region. **Alameda and Contra Costa** : Local flooding and landslides were prevalent. There was severe erosion with mudslides at San Leandro, Hayward, Berkeley, Oakland, Pleasanton, Walnut Creek, and Martinez, which damaged roads and flood control facilities. The Broadway Tunnel flooded, cutting off access from Oakland eastward. Lake Merritt overflowed onto Shoreline Drive and other roads. In the October 1962 storm, partially completed Cull Canyon Dam was damaged, as was the University of California's Botanical Gardens in Strawberry Canyon. Suffering and loss of property by private residents were also large. **San Mateo** : Low-lying areas flooded in Linda Mar and San Bruno. State Highways 1 and 12 were closed. In Pacifica and Half Moon Bay, infrastructure was damaged and debris deposited. **Source:** DWR, 1964, *Bulletin 69-63: California High Water, 1962-1963;* USGS, 1988, *Professional Paper 1434: Landslides, Floods, and Marine Effects of the Storm of January 3-5, 1982, in the San Francisco Bay Region*; Association of Bay Area Governments, 2010, Appendix D: "Disasters Affecting the San Francisco Bay Area 1950-2009," *Multi-Jurisdictional Local Hazard Mitigation Plan* ; USGS, 1968, *Water Supply Paper 1820: Summary of Floods in the United States in 1962*; DWR, February 1965, *Bulletin No. 159-65: California Flood Control Program 1965*; DWR, 1964, *Bulletin 69-63: California High Water, 1962-1963.*	$10,000,000, $10 million, with 2-3 million as damage to roadways and drainage structures (statewide)	Statewide		19	Statewide	X	Debris Flow, Slow Rise, Coastal	http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf; USGS Paper 1820 - "Summary of Floods in the US During 1962"
San Francisco Bay	1962			Marin, Napa		Corte Madera Creek, Napa River	**Marin and Napa:** Corte Madera Creek flooding damaged San Anselmo, Ross, Kentfield, Larkspur, Fairfax, and vicinity numerous times, notably in 1962. **Source:** City of Napa, February 2004 updated October 2007, *Napa Operational Area Hazard Mitigation Plan* ; DWR, 2009, *California Water Plan Update 2009.*	X	San anselmo, Ross, Kentfield, Larkspur, and Fairfax					Slow Rise, Flash	http://www.waterplan.water.ca.gov/docs/cwpu2009/1009prf/3-rr_sf_pre-final_app.a-c_pdf_13oct09.pdf; Napa Operational Area HMP 2004

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
San Francisco Bay	1962-1963	December-February		Alameda, Contra Costa, Marin, Napa, Solano, Sonoma, Santa Clara		Northern, Central California (Sonoma to San Francisco), Corte Madera Creek, Russian River, Guadalupe River, Napa River, communities of Napa and Alviso. Delta: Van Sickle Island	**Regionwide:** The January-February storms caused regionwide flooding, including Napa and Alviso. Many major highways, municipal waterworks, levees, and small dams were damaged by the floodwaters. Serious flood. Peak flow 25,000 cfs. 10-year flood. Estimated damage $5.5 million (2007 dollars). **Regionwide:** (2/1963) Flood and rainstorms. **Santa Clara:** (2/26/1963) Flooding, Flood and Rainstorms, Disaster declared in Santa Clara and Santa Cruz by FEMA. The Guadalupe River flooded San Jose's downtown and Alviso community with severe flooding. Flood damage to agricultural and public facilities during the flood was particularly serious along the streams flowing from west-side tributaries. The Napa River flooded downtown **Napa** and residences, causing an estimated $5.5 million in damages. Morgan Hill, Agnew, and Alviso flooded, causing damage and leaving debris deposits. **Source:** DWR, 2009, *California Water Plan Update 2009*; USGS, 1988, *Professional Paper 1434: Landslides, Floods, and Marine Effects of the Storm of January 3-5, 1982, in the San Francisco Bay Region*; City of Napa, 2012, *Record of Historic Floods*; City of Napa, February 2004 updated October 2007, *Napa Operational Area Hazard Mitigation Plan;* Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update;* Association of Bay Area Governments, 2010, Appendix D: "Disasters Affecting the San Francisco Bay Area 1950-2009," *Multi-Jurisdictional Local Hazard Mitigation Plan;* DWR, February 1965, *Bulletin No. 159-65: California Flood Control Program 1965.*	5500000 in Napa; unspecified for other locations		2007			X	Flash, Slow Rise, Stormwater	http://www.waterplan.water.ca.gov/docs/cwpu2009/1009prf/3-rr_sf_pre-final_app.a-c_pdf_13oct09.pdf; Napa Operational Area HMP 2004; http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf; Santa Clara County LHMP 2011
San Francisco Bay	1964	March		Marin, San Francisco, San Mateo		Regional coast	**Regionwide:** September 1964 – Tsunami Caused by March 1964 Earthquake in Alaska. This earthquake generated a tsunami with waves between 10 and 20 feet high along parts of the California, Oregon, and Washington coasts. The cost of damages in California was $32 million (calculated in 1983 dollars), with the bulk of the costs incurred in Crescent City where 11 of the 13 California deaths occurred. A Tsunami warning was issued for Marin County for this event, but no significant damage was caused. Strong currents from the tsunami caused boats and piers at marinas in Marin County to crash into other crafts. **San Mateo:** Tsunami wave was 2.5 meters high. Pacific Beach, CA; injuries, damage. **Marin:** The tsunami wave at Tomales Bay was 3.28 feet high. Damage to docks ($6,000), approximately 20-knot currents reported. In Bolinas, the tsunami wave hit with unknown amplitude. One person drowned 13 hours after tsunami's first arrival. In San Francisco Bay, the tsunami wave was up to 4.92 feet. Damage to boats and docks throughout the bay occurred and was especially severe at San Rafael. Estimated damage $1 million.**San Mateo at** Half Moon Bay, a wave of unknown amplitude caused some damage to boats. **Source:** NOAA West Coast and Alaska Tsunami Warning Center, 2013, *March 28, 1964 Gulf of Alaska Tsunami*, "Damage Summary"; Association of Bay Area Governments, 2010, Appendix D: "Disasters Affecting the San Francisco Bay Area 1950-2009," *Multi-Jurisdictional Local Hazard Mitigation Plan;* Whitmore et al., 2008, "NOAA/West Coast and Alaska Tsunami Warning Center Pacific Ocean Response Criteria," *Science of Tsunami Hazards*, Vol. 27, No. 2.	$ 32,000,000	Statewide	1983			X	Tsunami	http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf
San Francisco Bay	1964-1965	December-January		Alameda, Contra Costa, Marin, Napa, Solano, Sonoma	Northern California Christmas 1964 Disaster	Russian River, Bay Area	**Regionwide:** (Winter '64-'65). Late winter storms produced abnormally heavy and continuous rainfall and windstorms. Office of Emergency Planning (OEP) 183-DR-CA Sonoma, Marin. Total-$213.149 million. Warm, moist air brought heavy rain to all of Northern California north of a line from San Francisco to Stockton and Alameda. **Source:** DWR, February 1965, *Bulletin No. 159-65: California Flood Control Program 1965;* Association of Bay Area Governments, 2010, Appendix D: "Disasters Affecting the San Francisco Bay Area 1950-2009," *Multi-Jurisdictional Local Hazard Mitigation Plan.*	$ 213,149,000	Statewide	1964			X	Flash, Slow Rise	http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf
San Francisco Bay	1967	January		Alameda, Marin, Napa, Santa Clara, Solano		San Francisco Bay Area, San Francisquito, Permanente, Matadero, Hale, Saratoga, Wildcat, Guadalupe, Ross, Coyote, Penitencia, Uvas, Berryessa, Napa River, San Francisco, Berryessa, Corte Madera Creek	**Regionwide:** Localized storms impinged upon much smaller segments of the Pacific coastline and released continuous, very intense rains lasting for several hours to a maximum of about 4 days. The storms struck the Pacific coast in California between Monterey County on the south and Mendocino County on the north, and produced flooding and other damage mostly confined to the San Francisco Bay region.**Napa:** Serious flood with a peak flow of 22,000 cfs (10-year flood). Estimated damage $5.2 million (2007). **Santa Clara** : The peak flow of 2,000 cfs in San Francisquito Creek resulted in considerable erosion damage along the creek, but fortunately did not overflow the banks. High flows in the main channels of Adobe, Barron, and Matadero Creeks resulted in backing up of street drainage in Palo Alto. Erosion and sheet flooding was noted on tributaries of Permanente and Heney Creeks. Erosion damage was experienced at the railroad bridge over the unimproved section of San Tomas Aquino Creek and in the recently constructed portion of Calabasas Creek between Wolfe Road and Pomery Avenue. Several areas adjacent to the unimproved portion of Smith Creek were subject to shallow flooding. Almaden Reservoir discharged over its spillway. Discharge downstream from Lexington Dam inundated Vasona Park damaging the roadway and the adjacent improved park area. Golf and Greystone creeks suffered erosion damage where the channel had not been stabilized. Berryessa Creek experienced over-bank flooding. Inlets to Sierra Creek and Crosley Creek became clogged with silt from the Berryessa area and caused sheet flooding, ponding, and silting. The culvert at Los Coches Creek near Piedmont clogged and flooding damaged homes. Water topped existing unimproved channels in Penitencia Creek at its confluence with Coyote Creek. Water topped bridges, including Noble Avenue bridge and another private bridge downstream of Penitencia, which resulted in sheet flow and the flooding of one home. The greatest problems were in the Berryessa-Milpitas area. The total estimated damages exceeded $175,000 (1967). A preliminary estimate of damage to private property will exceed $20,000 (1967). **Source:** Santa Clara County Flood Control and Water District, January 1967, *Reconnaissance Report on Floods of January 21-24, 1967;* USGS, 1988, *Professional Paper 1434: Landslides, Floods, and Marine Effects of the Storm of January 3-5, 1982, in the San Francisco Bay Region;* City of Napa, February 2004 updated October 2007, *Napa Operational Area Hazard Mitigation Plan*; USGS, 1970, *Hydrologic Investigations, Floods on the Napa River at Napa California.*	$ 5,200,000	Napa	2007				Debris Flow, Slow Rise	
San Francisco Bay	1967			Marin		Corte Madera Creek	**Marin:** Corte Madera Creek flooding damaged San Anselmo, Ross, Kentfield, Larkspur, Fairfax, and vicinity numerous times, notably in 1967. **Source:** DWR, 2009, *California Water Plan Updated 2009 San Francisco Bay Hydrologic Region Appendix A.*	X	San Anselmo, Kentfield, Fairfax					Slow Rise	http://www.waterplan.water.ca.gov/docs/cwpu2009/1009prf/3-rr_sf_pre-final_app.a-c_pdf_13oct09.pdf http://www.waterplan.water.ca.gov/docs/cwpu2009/0310final/v3_sanfrancisco_cwp2009.pdf
San Francisco Bay	1968-1969	December-February		Alameda, Contra Costa, Marin, Santa Clara, Solano, Sonoma	Winter '68-69 Storms	San Francisco Bay area, Elk River, Gualala River, Corte Madera Creek, Pajaro River, Salinas River, San Lorenzo River, Guadalupe River, Grizzly Island	**Regionwide:** (Winter '69) Storms, caused flooding in Solano, Contra Costa, Sonoma, and Marin counties. Total damages were approximately $300 million. **Contra Costa** : In January and February 1969, high tides and adverse wave action in the Delta area combined with large river inflows and rain-soaked levees to cause the flooding of several islands and the endangerment of many other islands. Approximately 11,400 acres were inundated and flood damages amounted to approximately $9.2 million. **Source:** Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan*; Association of Bay Area Governments, 2010, Appendix D: "Disasters Affecting the San Francisco Bay Area 1950-2009," *Multi-Jurisdictional Local Hazard Mitigation Plan.*	$9.2 million $300 million Regionwide	Contra Costa County				X	Coastal, Slow Rise	Contra Costa County HMP 2011
San Francisco Bay	1969			Marin, Santa Clara		Corte Madera Creek, Guadalupe River, Arroyo Mocha, Ross Creek, Coyote Creek	**Marin:** Corte Madera Creek flooding damaged San Anselmo, Ross, Kentfield, Larkspur, Fairfax, and vicinity numerous times, notably in 1969. **Santa Clara** : The Guadalupe River severely flooded San Jose's downtown and Alviso community. **Source:** Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update*; DWR, 2009, *California Water Plan Update 2009.*							Slow Rise	Santa Clara County LHMP 2011

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
San Francisco Bay	1969-1970	December-April		Contra Costa, Marin, Napa, San Francisco, San Mateo, Solano, Sonoma	Northern California Flooding	Corte Madera Creek, Guadalupe River, Arroyo Mocha, Ross Creek, Coyote Creek	**Regionwide:** (Winter '70) Northern California flooding with heavy winds, and storms. Total damages were estimated at $27,657,478. (2/1970) Slide damage was caused by heavy rains and storms. **Alameda County:** Severe storms, flooding in the City of Oakland caused $11.5 million in damages. (4/1970) Storms and floods. **Contra Costa:** 1/18/1969 DR 253 Flood - severe/storm/thunder $862,068 in property damages. **Marin:** Winter storms of 1970 heavy rainfalls, excessive water consistently triggered mudslides in the county, which caused significant damage. **Napa:** Heavy precipitation falling upon water-logged soils caused the Napa River to overtop its banks and inundate lands and roads around St. Helena. The flood brought inundation to approximately 550,000 acres, including portions of several small towns. Mudslides destroyed homes near Oakland and in Marin County. Local runoff flooded streets in San Francisco, Daly City, and Marin County. High flows in the Napa River washed out the bridge at Rutherford Road. Declared Federal 2/16/1970. **Source:** USGS, 1988, *Professional Paper 1434: Landslides, Floods, and Marine Effects of the Storm of January 3-5, 1982, in the San Francisco Bay Region*; DWR, 1971, *Bulletin 69-70: California High Water 1969-1970;* Association of Bay Area Governments, 2010, Appendix D: "Disasters Affecting the San Francisco Bay Area 1950-2009," *Multi-Jurisdictional Local Hazard Mitigation Plan* ; Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan* ; Marin County Sheriff Office of Emergency Services, April 2006, *Marin County Operational Area Hazard Mitigation Plan* ; DWR, 2009, *California Water Plan Update 2009 San Francisco Bay Hydrologic Region. appendix A - Flood Management.*	$27,657,478 (Winter '70), $11,500,000 (2/10/1970), $862,068	Northern California (Marin Alameda), Oakland, Contra Costa	1970			X	Slow Rise, Debris Flow, Coastal, Stormwater	http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf; Contra Costa County HMP 2011, Marin County Operation Area HMP 2006
San Francisco Bay	1972	October-November		San Mateo		Corte Madera Creek, Guadalupe River, Arroyo Mocha, Ross Creek, Coyote Creek	**San Mateo:** (10/1972 and 11/1972) Colma Creek overflowed and flooded South San Francisco. **Source:** DWR, February 1965, *Bulletin No. 159-65: California Flood Control Program 1965.*							Slow Rise	http://ia600302.us.archive.org/32/items/highwatercalifor6973calirich/highwatercalifor6973calirich.pdf
San Francisco Bay	1973	January	16	Contra Costa, Santa Clara			**Contra Costa** (1/16/1973): Flood. Severe storm/thunder. $86,206 in property damages. **Santa Clara** (1/16/1973): Flooding - Severe Storm, thunder Storm, heavy rains, floods. **Source:** Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update*; Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan.*	$ 86,206	Contra Costa, Santa Clara	1973				Flash, Stormwater	Contra Costa County HMP 2011, Santa Clara County LHMP 2011
San Francisco Bay	1973	January-February		Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Solano	Coastal Flooding	Coastal Counties, Central Coast Ranges (including Bay Area) to Transverse, Peninsula Ranges, Colma Creek, City of Pacifica	**Regionwide** : Coastal flooding. Marin, City of South San Francisco (San Mateo County 1/30/73). Heavy rains, winds, floods, and tidal action. Public-$5,291,350; private-$12,706,900; Declared Federal 2/3/73. TOTAL-$17,998,250. Storms and Floods (Napa - 2/1973). public-$1.357 million; private-$507,000; TOTAL-$1.864 million. **Alameda:** (2/1973) Public and private property in Alameda County sustained extensive flood and slide damage. **Marin:** Winter storms of 1973 heavy rainfalls, excessive water consistently triggered mudslides in the county causing significant damage. Abundant debris flows in Marin County occurred in January 1973, largely in the southern part of the county. (1/1973) Flooded streets in Mill Valley and San Rafael. Estimated damages. $2 million. **Napa:** (1/1973) 20 inches of rain at some gauging stations in Napa. Edgerly Island flooded in the Napa River delta. (2/1973) Flooding and Erosion in Napa County. **San Mateo** : Colma Creek overflowed and flooded South San Francisco. (1/1973) In South San Francisco, Colma Creek once again flooded extensive portions of the adjacent residential, commercial, and industrial sections of the City. (2/1973) Public and private property in San Mateo County sustained extensive flood and slide damage. **Solano:** (1/1973) Flooding of Van Sickle Island in the Suisun Marsh, and Liberty Island near the downstream end of the Yolo Bypass. **Sonoma:** (2/1973) Public and private property in southern Sonoma County sustained extensive flood and slide damage. **Source:** DWR, 1974, *Bulletin 69-73: California High Water, 1972-1973*; Association of Bay Area Governments, 2010, Appendix D: "Disasters Affecting the San Francisco Bay Area 1950-2009," *Multi-Jurisdictional Local Hazard Mitigation Plan* ; Marin County Sheriff Office of Emergency Services, April 2006, *Marin County Operational Area Hazard Mitigation Plan;* USGS, 1988, *Professional Paper 1434: Landslides, Floods, and Marine Effects of the Storm of January 3-5, 1982, in the San Francisco Bay Region*; USACE, September 1987, *San Francisco Bay Shoreline Study, Interim II Report on Historical Flooding.*	$ 17,998,250	Regionwide	1973				Debris Flow, Slow Rise	http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf; Marin County Operational Area HMP 2006
San Francisco Bay	1973	April		San Mateo		City of Pacifica	**Regionwide:** Storms and Floods. City of Pacifica—San Mateo (4/11/73) (Tax Relief). public-$450,000; private-$250,000; TOTAL-$700,000. **Source:** Association of Bay Area Governments, 2010, Appendix D: "Disasters Affecting the San Francisco Bay Area 1950-2009," *Multi-Jurisdictional Local Hazard Mitigation Plan.*	public-$450,000; private-$250,000; TOTAL-$700,000	Pacifica	1973				Slow Rise	http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf
San Francisco Bay	1973			Napa		Corte Madera Creek, Guadalupe River, Arroyo Mocha, Ross Creek, Coyote Creek	Napa: Serious flood. **Source:** City of Napa, February 2004 updated October 2007, *Napa Operational Area Hazard Mitigation Plan.*							Slow Rise	Napa Operational Area HMP 2004
San Francisco Bay	1974	February		Napa, San Francisco, Solano, Sonoma		San Francisco Bay Area	Floodplain, high water marks, discharge, rainfall. **Source:** USGS, 1988, *Professional Paper 1434: Landslides, Floods, and Marine Effects of the Storm of January 3-5, 1982, in the San Francisco Bay Region*; DWR, 2009, *California Water Plan Update 2009.*							Debris Flow, Coastal, Slow Rise	
San Francisco Bay	1977			Napa		Napa River	Napa: Serious flood. Peak flow 5,000 cfs. 2-year flood. Estimated damage $1 million. **Source:** City of Napa, February 2004 updated October 2007, *Napa Operational Area Hazard Mitigation Plan.*	$ 1,000,000	Napa					Flash	Napa Operational Area HMP 2004
San Francisco Bay	1978	January		Contra Costa, Santa Clara		San Tomas Aquino Creek, Saratoga Creek, Calabazas Creek, Ross Creek, Wildcat Creek, Smith Creek, Los Gatos Creek	**Santa Clara:** Countywide damage $450,000. Minor erosion damage at Adobe Creek. Existing erosion scallops were made worse on Matadero Creek. Extensive erosion occurred on Calabasas Creek. Floodwaters overtopped and in some areas breached several levees on Calabasas Creek. Erosion occurred along the banks of Junipero Sierra, Mistletoe Creek, Regnart Creek, Rodeo Creek, Saratoga Creek, Sunnyvale East, and Sunnyvale West. Extensive concrete riprap failed along San Tomas Aquino Creek. High flows in Almendra Creek and Calero Creek caused flooding. Severe erosion damage occurred along Canoas Creek. A retaining wall and concrete work failed near Guadalupe Creek/River. A catch basin was damaged near Los Gatos Creek. Ross Creek overtopped. Erosion occurred along Berryessa Creek, Lower Penitencia Creek, North Babb Creek, and Thompson Creek. A private roadfill/dam at Los Coches Creek was pumped out. Debris was removed from Penitencia Creek and Babb Creek. Floodwaters in Flint Creek caused sheet flooding, but no damage was reported. Floodwater in Fisher Creek, Lyons Creek, and Llagas Creek overtopped their banks and caused sheet flooding. Erosion occurred along Almaden-Calero Canal. Slides occurred along the Coyote-Alamitos Canal. Siltation occurred along the Coyote Canal Extension/Metcalf Canal. **Source:** Santa Clara Valley Water District, April 1980, *Flood Emergency Report Feb. 13 through Feb. 22, 1980.*	$ 450,000	Santa Clara County	1978				Slow Rise, Engineered Structure Failure	
San Francisco Bay	1978			Napa		Napa River	Napa: Serious flood. **Source:** City of Napa, February 2004 updated October 2007, *Napa Operational Area Hazard Mitigation Plan.*							Flash	Napa Operational Area HMP 2004
San Francisco Bay	1980	January		Contra Costa	Delta Levee Break	Sacramento-San Joaquin Delta	**Regionwide:** A 350-foot section of a dirt levee gave way, flooding crops and more than 20 houses and 50 barns, forcing the evacuation of 270 people. The salt water threatened the freshwater fish and water supplies. Rain high tides, strong winds and flooding (Holland and Webb levee breaches). Public-$11,158,700; private-$1,479,500; agriculture-$3,887,195; total-$17,388,013 in damages. Approximately 9,600 acres under water. FEMA 3078-EM-CA Contra Costa, Sacramento, San Joaquin (1/23/80). **Source:** Association of Bay Area Governments, 2010, Appendix D: "Disasters Affecting the San Francisco Bay Area 1950-2009," *Multi-Jurisdictional Local Hazard Mitigation Plan* ; Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan.*	$ 17,388,013	Delta	1980				Coastal, Flash, Engineered Structure Failure	http://www.contracosta.ca.gov/DocumentCenter/Home/View/6024
San Francisco Bay	1980	February	13-22	Santa Clara		Countywide	**Santa Clara:** (2/13-2/22/1980) The overbanking of floodwaters in several creeks and rivers throughout the county were the cause of flooding and erosion. Extensive damage occurred in San Francisquito Creek, Calabasas Creek, Saratoga Creek, and, San Tomas Creek. Total damages $1,554,500. **Source:** Santa Clara Valley Water District, April 1980, *Flood Emergency Report Feb. 13 through Feb. 22, 1980.*	$ 1,554,500	Santa Clara	1980				Slow Rise	Flood Emergency Report Feb 13 - 22, 1980: http://www.valleywater.org/Services/FloodReports.aspx;
San Francisco Bay	1980	March		Solano			**Regionwide:** Rain, winds, mud slides, and flooding. public-$164,990,642; private-$75,755,500; agricultural-$75,894,675; TOTAL-$316,640,817 (statewide). **Source:** Association of Bay Area Governments, 2010, Appendix D: "Disasters Affecting the San Francisco Bay Area 1950-2009," *Multi-Jurisdictional Local Hazard Mitigation Plan.*	$ 316,640,817	Statewide	1980				Slow Rise	http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
San Francisco Bay	1981-1982	December-April		Alameda, Contra Costa, Marin, San Mateo, Santa Clara, Sonoma, Solano, Napa	Winter Storms	San Francisco Bay Area, Penitencia Creek, Los Gatos Creek, Llagas Creek, San Francisquito Creek, Uvas Creek, City of Petaluma - Payran Ranch	**Alameda:** (1/3-5/1982) Damage in Alameda County was concentrated in Oakland, Piedmont, and Berkeley. Damages $3,560,000. **Contra Costa** (1/3-5/1982) Damage in Contra Costa County was concentrated in the areas of Richmond, El Sobrante, El Centro de Libertad, Martinez, Orinda, Walnut Creek, and Lafayette. Damages $7,014,000. **San Francisco County and City** : (1/3-5/1982) Most landslides in San Francisco County were located in the center of the city in the Twin Peaks, Mount Davidson, and Glen Canyon Park areas. Most of the damage was to private dwellings. Damages $399,000. **Sonoma:** The Petaluma River has also caused significant flood problems historically. According to the USACE, floods in 1982 caused damage within the City of Petaluma, particularly in the Payran Ranch area. **Marin:** Winter storms of 1982 heavy rainfalls, excessive water consistently triggered mudslides in the county causing significant damage. Corte Madera Creek has had a history of flooding with the largest recorded flow in the winter of 1982. Intense and sustained rainfall on January 3-5, 1982, triggered abundant landslides in Marin County, as well as in other parts of the San Francisco Bay region. These debris flows caused the three landslide-related fatalities and most of the $18,464,000 in landslide damage in the county that resulted from the storm. Damage in Marin County was concentrated in the southeastern part of the county between Sausalito and Fairfax. Other areas with high concentrations of damage were near Inverness, Novato, and Lagunitas.	$3,560,000, $7,014,000, $18,464,000, $7,473,000, $399,000, $583,000, $403,000, $6 million,	Alameda, Contra Costa, Marin, San Mateo, San Francisco (County and City), Santa Clara, Solano, Alviso	1982	3	Marin County	X	Slow Rise, Flash, Coastal, Debris Flow, Stormwater	Marin County Operational Area HMP 2006; Sonoma County HMP 2006
San Francisco Bay	1981-1982	December-April		Alameda, Contra Costa, Marin, San Mateo, Santa Clara, Sonoma, Solano, Napa		San Francisco Bay Area, Penitencia Creek, Los Gatos Creek, Llagas Creek, San Francisquito Creek, Uvas Creek, City of Petaluma - Payran Ranch	**San Mateo:** San Mateo County during the weeks before the storm revealed that a few debris flows had been triggered by storms during late December. In La Honda study area, 5 debris flows were triggered in December, in comparison with 74 triggered by the January 1982 storm. (1/3-5/1982) The most extensive damage in San Mateo County occurred in Pacifica. South San Francisco, Brisbane, Daly City, and west of Woodside. Damages: $7,473,000. **Santa Clara:** (1/3-5/1982) Damage in Santa Clara County was more scattered than in the other counties. Pockets of damage occurred near Morgan Hill, in Saratoga and Gilroy, and near the Anderson and Lexington Reservoirs. Damages $583,000. **Solano:** (1/3-5/1982) Damage in Solano County was reported near Vallejo and Vacaville. Damages $403,000. **Source:** USGS, 1988, *Professional Paper 1434: Landslides, Floods, and Marine Effects of the Storm of January 3-5, 1982, in the San Francisco Bay Region;* Sonoma County, 2008 updated 2011, *Sonoma County Hazard Mitigation Plan* ; Marin County Sheriff Office of Emergency Services, April 2006, *Marin County Operational Area Hazard Mitigation Plan.*						Flash, Slow Rise, Debris Flow	
San Francisco Bay	1982	January	3	Alameda, Contra Costa, Marin, Santa Clara, San Mateo, Solano, Sonoma			**Santa Clara:** (1/3-5/1982) Damage in Santa Clara County was more scattered than in the other counties. Pockets of damage occurred near Morgan Hill, in Saratoga and Gilroy, and near the Anderson and Lexington Reservoirs. Damages $583,000. **Source:** USGS, 1988, *Professional Paper 1434: Landslides, Floods, and Marine Effects of the Storm of January 3-5, 1982, in the San Francisco Bay Region.*	$273,850,000, $7,142,857, $7,143,571	Statewide, Contra Costa County, Santa Clara County	1982	33, 5	Statewide, Santa Clara County	X	Slow Rise	http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf; http://www.contracosta.ca.gov/DocumentCenter/Home/View/6024; Santa Clara County LHMP 2011
San Francisco Bay	1982	March	30	Contra Costa, Santa Clara			**Solano:** (1/3-5/1982) Damage in Solano County was reported near Vallejo and Vacaville. Damages $403,000. **Source:** USGS, 1988, *Professional Paper 1434: Landslides, Floods, and Marine Effects of the Storm of January 3-5, 1982, in the San Francisco Bay Region.*	$166,667, $166,834	Contra Costa County, Santa Clara County	1982				Flash, Stormwater	Contra Costa County HMP 2011, Santa Clara County LHMP 2011
San Francisco Bay	1982	April	2	Santa Clara			**Santa Clara:** (4/2/1982) Flooding. Damages $505,000. **Source:** Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update.*	$ 505,000	Santa Clara County	1982				Flash, Stormwater	Santa Clara County HMP
San Francisco Bay	1982	October		Solano			**Regionwide:** Rains caused agricultural losses. Agricultural $345,195,974. **Source:** Association of Bay Area Governments, 2010, Appendix D: "Disasters Affecting the San Francisco Bay Area 1950-2009," *Multi-Jurisdictional Local Hazard Mitigation Plan.*	$ 345,195,974	Statewide (agricultural)	1982			X	Slow Rise	http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf; Marin County Operational Area HMP 2006
San Francisco Bay	1982	December		Contra Costa			**Regionwide:** High tides, strong winds, and rains. public-$5,313,198; private-$1,651,800; TOTAL-$6,964,998 (statewide) **Source:** Association of Bay Area Governments, 2010, Appendix D: "Disasters Affecting the San Francisco Bay Area 1950-2009," *Multi-Jurisdictional Local Hazard Mitigation Plan.*	public-$5,313,198; private-$1,651,800; TOTAL-$6,964,998	Statewide	1982				Slow Rise	http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf; Marin County Operational Area HMP 2006
San Francisco Bay	1982			Napa, Santa Clara, Marin		Napa River	**Napa:** Serious flood. **Santa Clara** : The Guadalupe River severely flooded San Jose's downtown and Alviso community. Severe flood also occurred on Coyote Creek in the Alviso area of San Jose, causing more than $6 million in damages to about 360 homes and 40 businesses. **Marin:** Record flooding on Corte Madera Creek damaged San Anselmo, Ross, Kentfield, and Larkspur in 1982. There was a major flood on Novato Creek. **Sonoma:** The largest of the Petaluma Creek sheet flow floods occurred in some or all of the Denman Flat, Lynch Creek, and Payran Floodplain areas, causing about $28 million in damages plus damaging Petaluma's wastewater treatment plant. **Source:** DWR, 2009, *California Water Plan Update 2009*; City of Napa, February 2004 updated October 2007, *Napa Operational Area Hazard Mitigation Plan* ; Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update.*	$ 28,000,000	Marin	1982				Flash	Napa Operational Area HMP 2004, Santa Clara County LHMP 2011
San Francisco Bay	1982-1983	November-March		Alameda, Contra Costa, Marin, Napa, San Mateo, Santa Clara, Solano, Sonoma	Winter '82-'83 - Winter Storms	Corte Madera Creek, Coyote Creek, Guadalupe River, Penitencia Creek, Calabazas Creek, Los Gatos Creek, San Anselmo, Napa River	**Regionwide** : Heavy rains, high winds, flooding, levee breaks. Public-$151,185,870; Private-$158,641,170; Agricultural-$213,789,992; TOTAL- $523,617,032 (statewide). **Marin** : Winter storms, heavy rainfall, excessive water consistently triggered mudslides in the county causing significant damage. Record flooding on Corte Madera Creek damaged San Anselmo, Ross, Kentfield, and Larkspur. There was a major flood on Novato Creek. **Santa Clara:** Severe floods occurred on Coyote Creek in the Alviso area of San Jose, causing more than $6 million in damages. Guadalupe River and Calabasas Creek experienced overbanking and Coyote-Alamitos Canal experienced flooding causing damage to homes and businesses in San Jose, Cupertino and Sunnyvale. Properties were damaged in San Jose and Milpitas as a result of flooding from Coyote Creek, Berryessa Creek, Lower Penitencia Creek, Upper Penitencia Creek, Los Coches Creek, and Sweigert Creek. Floodwaters from Coyote Creek inundated farm land. Minor flooding in Palo Alto from Barron and Adobe Creeks. Permanente Creek also caused flooding. **Sonoma:** The largest of the Petaluma Creek sheet flow floods occurred in some or all of the Denman Flat, Lynch Creek, and Payran Floodplain areas, causing about $28 million in damages plus damaging Petaluma's wastewater treatment plant. **Source:** DWR, 2009, California Water Plan Update 2009; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area* ; Marin County Sheriff Office of Emergency Services, April 2006, *Marin County Operational Area Hazard Mitigation Plan* ; USACE and the State of California, April 1984, *Coastal Storm Damage, Winter 1983*; Santa Clara Valley Water District, October 1983, *Report on Flooding and Flood Related Damages in Santa Clara County January 1 through April 1, 1983.*	public-$151,185,870; private-$158,641,170; agricultural-$213,789,992; TOTAL-$523,617,032; $15,000,000	Statewide; Regionwide	1983			X	Slow Rise, Debris Flow, Coastal, Stormwater, Engineered Structure Failure	http://www.waterplan.water.ca.gov/docs/cwpu2009/1009prf/3-rr_sf_pre-final_app.a-c_pdf_13oct09.pdf; http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf; Marin County Operational Area HMP 2006
San Francisco Bay	1983	January	25,26	Santa Clara	Winter '82-'83 - Winter Storms		**Santa Clara:** (1/25-26/1983) Heavy rains, high winds, flooding, levee breaks. Damages $388,462 (1/25); $8,341,666 (1/26). **Source:** Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update.*	$388,462 (1/25), $8,341,666 (1/26)	Santa Clara County	1983			X	Flash, Engineered Structure Failure	Santa Clara County LHMP 2011
San Francisco Bay	1983	February	9	Contra Costa			**Contra Costa** : (2/9/1983) DR: 677: Flood - severe weather. $384,165 in property damage. **Source:** Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan.*	$ 384,165	Contra Costa County	1983				Slow Rise	http://www.contracosta.ca.gov/DocumentCenter/Home/View/6024
San Francisco Bay	1983	March	1	Napa, Santa Clara		Napa River	**Napa:** Serious flood. Peak flow 17,000 cfs. 2-year flood. Estimated damage $3.5 million. **Santa Clara:** (3/1/1983) Flooding. Damages $500,000. **Source:** Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update* ; City of Napa, February 2004 updated October 2007, *Napa Operational Area Hazard Mitigation Plan.*	$3,500,000, $500,000	Napa, Santa Clara County	2007, 1983				Slow Rise	Napa Operational Area HMP 2004, Santa Clara County LHMP 2011
San Francisco Bay	1983	December		Alameda, Contra Costa		Regionwide, Contra Costa	**Regionwide:** Levee Failure, High Winds, High Tides, Floods, Storms, Wind Driven Water public-$7,240,785; private-$2.669 million; agricultural-$1 million; Total- $10,909,785. **Contra Costa:** (12/9/1983) - Levee failure, high winds, high tides, floods, storm, wind driven water. Public - $7,240,785; private - $2669 million; agricultural - $1 million in damages. **Source:** Association of Bay Area Governments, 2010, Appendix D: "Disasters Affecting the San Francisco Bay Area 1950-2009," *Multi-Jurisdictional Local Hazard Mitigation Plan.*		Regionwide	1983				Engineered Structure Failure	http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf; http://www.contracosta.ca.gov/DocumentCenter/Home/View/6024

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
San Francisco Bay	1986	December-February		Contra Costa, Marin, Napa, Santa Clara, Sonoma	Winter Storms, St. Valentine's Day Storm	City of Petaluma - Payran Ranch, Marin, Napa River, Nathanson Creek, Guadalupe River, Calabazas Creek, San Tomas Creek, Ross Creek, Guadalupe Creek, Los Gatos Creek, Upper Penitencia Creek, Llagas Creek, Uvas Creek, Corralitos Creek, Corte Madera Creek	**Regionwide:** February 1986—Strong gusts coupled with high tides and heavy precipitation from the St. Valentine's Day storm caused streams to pool at their confluences with San Pablo Bay in 1986, flooding shoreline buildings and arterial roads. FEMA 758-DR-CA Rains, winds, flooding, and mudslides. **Napa:** The February 1986 flood was estimated to have been a 35-year event. The flood resulted in 3 people dead, 27 injured, 5,000 evacuations, 250 homes destroyed, and another 2,500 residences damaged countywide, totaling $100 million in damages.Estimated $2 million in damage to vineyards. The Napa River floodwaters inundated several areas in the Napa County. **Sonoma:** The Petaluma River caused significant flood problems historically. According to the USACE, floods in 1986 caused damage in the City of Petaluma, particularly in the Payran Ranch area. Significant flooding also occurred on Nathanson Creek in Sonoma. **Marin:** Winter storms of 1979 heavy rainfalls, excessive water consistently triggered mudslides in the county, causing significant damage. **Santa Clara:** (2/17/1986) Flash Flooding, Early February 1986 – Storms, rains, winds, flooding, and mud slides. Damages $5,000,000. The Guadalupe River flooded San Jose's downtown and Alviso community. (2/12-20/1986) Sheet flooding occurred in Northeastern Santa Clara County. In the north-central portion of the county overbanking of Calabazas Creek and San Tomas Creek floodwaters caused severed flooding. The floodwaters from the Guadalupe River flooded central Santa Clara County, but no major damage was reported. Ross Creek, Guadalupe Creek, and Los Gatos Creek overflowed, which resulted in either sheet flow or flooding. Floodwaters overbanked creeks such as Upper Penitencia Creek in the east, and Llagas Creek, Uvas Creek and, Corralitos Creek in the south, which flooded homes and farmlands. Preliminary estimated damage totaled $7,334,800. **Contra Costa:** DR 578: Flooding (flash flooding). $5 million in property damages. FEMA 758-DR-CA Rains, winds, flooding, and mudslides. **Source:** Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan*; DWR, 2009, *California Water Plan Update 2009*; Association of Bay Area Governments, 2010, Appendix D: "Disasters Affecting the San Francisco Bay Area 1950-2009," *Multi-Jurisdictional Local Hazard Mitigation Plan*; City of Napa, February 2004 updated October 2007, *Napa Operational Area Hazard Mitigation Plan*; Napa County Flood Control and Water Conservation District, 2013, "The History of Floods and the Creation of a New Project"; Sonoma County, 2008 updated 2011, *Sonoma County Hazard Mitigation Plan*; Marin County Sheriff Office of Emergency Services, April 2006, *Marin County Operational Area Hazard Mitigation Plan*; Source: Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update ;* Santa Clara Valley Water District, June 1988, *Report on Flooding and Flood Related Damages in Santa Clara County February 12 to 20, 1986;*	$100,000,000, $5,000,000, 2,000,000	Napa, Santa Clara, Sonoma, Marin Counties	1986	3	Napa	X	Flash, Debris Flow	Napa Operational Area HMP 2006, Marin County Operational Area HMP 2006, Sonoma County HMP 2006, http://www.waterplan.water.ca.gov/docs/cwpu2009/1009prf/3-rr_sf_pre-final_app.a-c_pdf_13oct09.pdf; Santa Clara County LHMP 2011;
San Francisco Bay	1987			Contra Costa, Santa Clara		Coyote Creek	Coyote Creek flow exceeded that of 1982, causing damage upstream of Alviso. Flood management works protected downstream areas in Alviso. **Source:** DWR, 2009, *California Water Plan Update 2009.*	X	Upstream of Alviso					Slow Rise	http://www.waterplan.water.ca.gov/docs/cwpu2009/1009prf/3-rr_sf_pre-final_app.a-c_pdf_13oct09.pdf
San Francisco Bay	1988			Contra Costa, Santa Clara		Coyote Creek	Coyote Creek flow exceeded that of 1982, causing damage upstream of Alviso. Flood management works protected downstream areas in Alviso. **Source:** DWR, 2009, *California Water Plan Update 2009.*							Slow Rise	http://www.waterplan.water.ca.gov/docs/cwpu2009/1009prf/3-rr_sf_pre-final_app.a-c_pdf_13oct09.pdf
San Francisco Bay	1990	May	28	Contra Costa			Flooding (flash flood). $500,000 in property damage. **Source:** Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan.*	$ 500,000	Contra Costa County					Flash	http://www.contracosta.ca.gov/DocumentCenter/Home/View/6024
San Francisco Bay	1992	February	11, 14	Contra Costa, Santa Clara			**Santa Clara:** Flooding - Winter Weather, Winter Storm, Flash Flood. Damage $11,627 (2/11), $9,090 (2/14). **Contra Costa:** Flooding, severe weather. **Source:** Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update*; Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan.*	$11,627 (2/11), $9,090 (2/14); $20,718 (2/14)	Santa Clara County; Contra Costa	1992			X	Flash, Slow Rise	Santa Clara County LHMP 2011; http://www.co.contra-costa.ca.us/DocumentCenter/Home/View/6024
San Francisco Bay	1992	December		Contra Costa, Napa, Santa Clara, Sonoma	Late Winter Storms		**Regionwide:** Snow, rain, and high winds. public property-$32,215, $600 million (Statewide). **Santa Clara:** (12/10/1992) Flooding - Wind - Winter Weather, Winter Storm, High Wind, Flash Flood. Contra Costa, Napa, Sonoma. **Contra Costa:** (12/11/1992) Flooding, severe weather. $131,579 in property damages. **Source:** Association of Bay Area Governments, 2010, Appendix D: "Disasters Affecting the San Francisco Bay Area 1950-2009," *Multi-Jurisdictional Local Hazard Mitigation Plan*; Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update*; "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan.*	$600 million, $131,579 (12/11/1992)	Statewide, Contra Costa				X	Slow Rise, Flash	http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf; Santa Clara County LHMP 2011, http://www.co.contra-costa.ca.us/DocumentCenter/Home/View/6024
San Francisco Bay	1992			Sonoma		Miners Ravine, Petaluma River	**Sonoma:** Flooding often occurs as sheetflow, which occurred in 1992 requiring closing of schools and evacuation of homes. The Petaluma River flooded some or all of the Denman Flat, Lynch Creek, and Payran Floodplain areas with sheet flow. **Source:** City of San Francisco, 2006, *Bay Area Integrated Regional Water Management Plan*; DWR, 2009, *California Water Plan Update 2009.*							Stormwater, Slow Rise	http://cdm16658.contentdm.oclc.org/cdm/singleitem/collection/p267501ccp2/id/3588/rec/19, http://www.waterplan.water.ca.gov/docs/cwpu2009/1009prf/3-rr_sf_pre-final_app.a-c_pdf_13oct09.pdf
San Francisco Bay	1993	January	13	Contra Costa, Santa Clara			**Contra Costa:** DR: 979: Flooding (flash flood). $5.5 million property and crop damage. **Santa Clara** : Flash Flooding. Damage $111,111. **Source:** Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan;* Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update* .	$5,500,000, $111,111	Contra Costa County, Santa Clara County	unknown, 1993			X	Flash	Contra Costa County HMP 2011, Santa Clara County LHMP 2011
San Francisco Bay	1993	January	20-25	Contra Costa, Napa, Sonoma	Late Winter Storms, Floods of 1993	Napa River	**Napa:** Estimated $4.2 million in damages with inflation. **Sonoma:** Flood of '93 was emergency operations center (EOC) activated, was a local emergency, and had Gubernatorial, and Presidential Declaration. **Source:** City of Napa, February 2004 updated October 2007, *Napa Operational Area Hazard Mitigation Plan* ; Sonoma County, 2008 updated 2011, *Sonoma County Hazard Mitigation Plan.*	$4,200,000 ($600,000,000)	Napa (Statewide)	2007 (Napa)	(20)	(Statewide)	X	Stormwater, Flash	
San Francisco Bay	1995	January	8-31	Sonoma			Flooding in January 8-31, 1995 caused $21 million in damages. Over 50 roads closed. 15,000 residents without power. Total displaced persons exceeded 2,000, of which 456 flood victims were evacuated by air. 13 medical cases were treated and 2 flood-related fatalities occurred. **Source:** Sonoma County, 2008 updated 2011, *Sonoma County Hazard Mitigation Plan.*	$21,000,000	Sonoma		2	Sonoma	X	Flash	Sonoma County HMP 2006
San Francisco Bay	1995	January-March		Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma		Napa River, Guadalupe River, Los Gatos Creek, Llagas Creek, Upper Penitencia Creek, Coyote Creek, Pacheco Creek, San Francisco Bay	**Regionwide:** (January and February) Severe Winter Storms, Flooding, Landslides, Mud Flows. Over 100 stations recorded their greatest 1-day rainfall in history. Most of the storms hit the Sacramento River Basin, which resulted in small-stream flooding due to drainage system failures. January Total-$741.4 million. February Total-approximately $1.1 billion. (1/1995) Sever winter storms and (2/1995) Late Winter Storms.**Contra Costa:** 3/12/1995 DR1046: Flooding. 1/10/1995 DR 1044: Severe winter storms, flooding, landslides, and mudflows. $11.2 million in damages. **Napa:** January - Serious flood. Peak flow 22,000 cfs. 10-year flood. Estimated damage $80 million. March - Serious flood. Peak flow 32,600 cfs. 20-year flood. Estimated damage $170 million. **Santa Clara:** The Guadalupe River overflowed in January and March, damaging downtown San Jose and Alviso. Stormwater damaged the San Francisco storm drain/sewer system. High water in Los Gatos Creek flooded about 300 homes and businesses, and caused $10 million in damages. **Source:** Association of Bay Area Governments, 2010, Appendix D: "Disasters Affecting the San Francisco Bay Area 1950-2009," *Multi-Jurisdictional Local Hazard Mitigation Plan;* "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan;* City of Napa, February 2004 updated October 2007, *Napa Operational Area Hazard Mitigation Plan;* DWR, 2009, *California Water Plan Update 2009.*	$741.4 millions (1/1995), $1.1 billion (2/1995); $11.2 million; $10 million (3/1995); $80,000,000, $170,000,000	Statewide; Contra Costa; Along Los Gatos Creek; Napa County	2010; 1996			x	Slow Rise, Flash, Coastal, Stormwater, Debris Flows	http://www.waterplan.water.ca.gov/docs/cwpu2009/1009prf/3-rr_sf_pre-final_app.a-c_pdf_13oct09.pdf; http://www.water.ca.gov/floodmgmt/docs/Bul69-95/00-bull69-95front.pdf; Contra Costa County HMP 2011
San Francisco Bay	1995	March	1, 9	Santa Clara			Flooding - Severe Storm/Thunder Storm – Wind, "FLOOD RAIN WINDS". Damage $11,241,379 (3/1), $650,000 (3/9). In March 1995, severe flooding occurred when the Guadalupe River and Los Gatos Creek combined to produce the highest flow in 50 years. In the most extensive flooding of the City's core in four decades, streets turned into rivers, forcing residents from their homes and driving office workers from high-rise buildings. Approximately 300 homes and businesses were flooded by four separate breakouts along the river, with damage estimates of up to $10 million. **Source:** Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update.*	$11,241,379 (3/1), $650,000 (3/9)	Santa Clara County	1995			X	Flash	Santa Clara County HMP
San Francisco Bay	1995	March	7-15	Sonoma			March 7-15, 1995 $13.3 million. Over 100 roads closed. 45,000 residents without power. At least 3,000 residents displaced. Up to 30 containers of possible toxic materials identified in the flood zone. **Source:** Sonoma County, 2008 updated 2011, *Sonoma County Hazard Mitigation Plan.*	$13,300,000	Sonoma				X	Slow Rise	http://www.sonoma-county.org/prmd/docs/hmp_2011/chapters/full_chapters.pdf Sonoma County HMP 2006

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Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
San Francisco Bay	1996	December	10	Santa Clara			Urban/small Stream Flood, 5.67 inches of rain at Morgan Hill. Widespread street flooding and Trailer Court that had to evacuate. State Highway 17 was closed by mudslides. 113,000 people were out of power at some time during the storm. **Source:** Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update*.							Slow Rise, Debris Flow	Santa Clara County LHMP 2011
San Francisco Bay	1996-1997	December-January		Alameda, Contra Costa, Marin, Napa, San Francisco, Santa Clara, Solano, Sonoma, San Mateo	January 1997 Floods	San Francisco Bay Area, Guadalupe River, Llagas Creek, Coyote Creek	**Regionwide:** 300 square miles were flooded including the Yosemite Valley. Over 120,000 people had to be evacuated in northern California. Several levee breaks were reported across the Sacramento and San Joaquin Valleys. Over 23,000 homes and businesses, agricultural lands, bridges, and roads were damaged. **Santa Clara:** (12/31/1996-1/1/1997) Flooding and overbanking occurred in southern Santa Clara County. Preliminary estimate for damages was $150,000. (1/26-27/1997) flooding, mud and rock slides occurred in eastern and southern Santa Clara County. Preliminary estimate for damages was $6,000,000. **Napa:** (1/1997) Serious flood. Peak flow 26,700 cfs. 10-year flood. Estimated damages $120 million (2007). **Contra Costa:** (1/1997) DR1155: Severe storms and flooding. Sonoma: December 30, 1996-January 4, 1997. $31 million. Up to 200 roads were closed and/or damaged, some due to major slides. 12,000 residents without power. Over 1,200 victims evacuated their residences and 2 storm-related deaths occurred. Sewage and treatment plants overflowed. **Source:** Association of Bay Area Governments, 2010, Appendix D: "Disasters Affecting the San Francisco Bay Area 1950-2009," *Multi-Jurisdictional Local Hazard Mitigation Plan;* "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; Santa Clara Valley Water District, January 1998, *Report on Flooding and Flood Related Damages in Santa Clara County December 31, 1996 to January 27, 1997;* City of Napa, February 2004 updated October 2007, *Napa Operational Area Hazard Mitigation Plan;* Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan; Sonoma County, 2008 updated 2011, Sonoma County Hazard Mitigation. Plan.*	$1,800,000,000, $120,000,000, $6,000,000,31000000	Statewide, Napa, Santa Clara, Sonoma	1997, 2007	8	Statewide	X	Coastal, Debris Flow, Flash, Stormwater	http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf; http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf; Napa Operational Area 2004, Contra Costa County HMP 2011; Sonoma County HMP 2006.
San Francisco Bay	1997	January	25	Santa Clara, Sonoma		Arroyo Hondo Cr near San Jose, Saratoga Creek at Saratoga, Guadalupe River at San Jose, Matadero Creek at Palo Alto, and San Francisquito Creek at Stanford University; Sonoma County	**Santa Clara:** Flash Flood, Arroyo Hondo Creek near San Jose, Saratoga Creek at Saratoga, Guadalupe River at San Jose, Matadero Creek at Palo Alto, and San Francisquito Creek at Stanford University showed moderate increases in streamflow during the warning period. A new round of rainstorms brought more flooding problems to the North Bay area. **Sonoma:** Sonoma County received 1 to 1 1/2 inches of rain in 3 hours and rain rates continued at .3 to .5 per hour for 2 hours longer. The main front was expected to deliver moderate to heavy rain afterward. The Petaluma River flooded some or all of the Denman Flat, Lynch Creek, and Payran Floodplain areas with sheet flow. **Source:** Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update*; DWR, 2009, *California Water Plan Update 2009*.							Flash	Santa Clara County LHMP 2011
San Francisco Bay	1997	February	3, 7, 8	Santa Clara		Guadalupe River, Arroyo Mocha, Ross Creek, Coyote Creek	February 3: Flash Flood, Guadalupe River at Blossom Hill Boulevard. Levee breached along Arroyo Mocha (a dry creek) and caused damage to roads and property. February 7: Flash Flood, Ross Creek at Cherry Street. The levee breach along Arroyo Mocha caused additional damage to roads and property. February 8: Flash Flood, Coyote Creek at Edenvale. The levee Breached along Arroyo Mocha continued to cause damage to roads and property. **Source:** Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update*.	X	Santa Clara County					Flash, Engineered Structure Failure	Santa Clara County LHMP 2011
San Francisco Bay	1997			Napa		Napa River	Serious flash flood. **Source:** City of Napa, February 2004 updated October 2007, *Napa Operational Area Hazard Mitigation Plan.*							Flash	Napa Operational Area HMP 2004
San Francisco Bay	1998	January-March		Alameda, Contra Costa, Marin, San Mateo, Solano, Sonoma, Santa Clara	El Niño Floods	Alameda County, including Zone 7 Service Area, Pittsburg, Walnut Creek, Calabazas Creek, Guadalupe River, Coyote Creek, Upper Penitencia Creek, Saratoga Creek, San Francisquito Creek, Matadero Creek, Petaluma River, Napa Rive, San Francisco Creek, Palo Alto, East Palo Alto, Menlo Park	**Regionwide:** DR 1203 - Severe flooding and landslides. More than 11,000 people were evacuated because of 80-mph winds and floods. Record flooding in San Mateo and Santa Clara. Devastating flash flooding occurred along the Petaluma River in Sonoma County and the Tres Pinos Creek in San Benito County. Severe and widespread landslides triggered by intense rain all winter occurred in many counties, including Alameda, Contra Costa, Sonoma, San Mateo, San Francisco and the Cities of Richmond, San Bruno, Fremont, Oakland Hills, Mill Valley, Bodega Bay, La Honda, Sebastopol, Pacifica, Santa Rosa, San Leandro, Orinda, Napa and Vallejo. **Contra Costa:** DR 1203: Severe winter storms and flooding. **Sonoma:** The Petaluma River has caused significant flood problems historically. According to the USACE, floods in 1998 caused damage in the City of Petaluma, particularly in the Payran Ranch area. **Marin:** Winter storms of 1979 produced heavy rainfalls, and excessive water consistently triggered mudslides in the county causing significant damage. **Santa Clara** : Record flooding of San Francisco Creek inundated 11,000 acres in Palo Alto, East Palo Alto, and Menlo Park, damaging about 1,700 homes and businesses. Damages were estimated an $28 million. **Source:** Association of Bay Area Governments, 2010, Appendix D: "Disasters Affecting the San Francisco Bay Area 1950-2009," *Multi-Jurisdictional Local Hazard Mitigation Plan;* "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan;* Sonoma County, 2008 updated 2011, *Sonoma County Hazard Mitigation Plan*; Marin County Sheriff Office of Emergency Services, April 2006, *Marin County Operational Area Hazard Mitigation Plan*; DWR, 2009, *California Water Plan Update 2009*.	$28,000,000, $550,000,000	Palo Alto, East Palo Alto, Menlo Park; (Statewide)		17	Statewide		Flash, Engineered Structure Failure, Debris Flow	http://www.waterplan.water.ca.gov/docs/cwpu2009/1009prf/3-rr_sf_pre-final_app.a-c_pdf_13oct09.pdf; Marin County Operational Area HMP 2006; Sonoma County HMP 2006; http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf; Contra Costa County HMP 2011; http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf
San Francisco Bay	2000	February	13-14	Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, Sonoma		Russian River, Daly City, SFO	**Contra Costa:** Flash flood. $100,000 in property damages. **Santa Clara:** Flash flood caused power and transportation system disruption in Santa Clara County. Widespread rain with 24-hour accumulation of more than 5 inches occurred over the area on February 13 into February 14. Urban and small stream flooding occurred in most counties of the area. Many roads, including Highway 1 and Highway 116, were closed. 29 people were evacuated in Pescadero due to high waters. A number of houses in Daly City had to be abandoned and eventually destroyed due to mudslides, which were a result of the consecutive years of above-average rainfall. Winds of more than 50 mph were recorded in **Marin County** and a number of trees were downed, knocking out power to as many as 42,000 residents throughout the Bay area. A tree blew down into one residence, causing in excess of $250,000 damage. There were no deaths and only minor injuries. The Russian River in **Sonoma County** reached near flood stage, but damage was confined to low-lying areas near the river such as some trailers and camping areas near Forestville. Numerous traffic accidents and flight delays at San Francisco International Airport occurred during the storm. **Source:** Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan*; Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update*.	$100,000, $250,000	Contra Costa County, private residence - Marin County					Flash, Debris Flow	Contra Costa County HMP 2011, Santa Clara County HMP 2011
San Francisco Bay	2002	December	13-21	Napa, Solano, Santa Clara	The Mills Lane Flood	Napa River, Guadalupe River	Floodwaters from the Napa River invaded 100 structures and caused an estimated $1 million in damages. **Santa Clara** : Heavy rain; December was wettest on record at many locations. Three primary episodes of precipitation in December, culminating during December 13 through December 21 with wave after wave of locally heavy rain. Flooding became a serious issue. Urban and small stream flooding with mudslides. **Source:** DWR, 2009, *California Water Plan Update 2009*; Santa Clara County, 2013, *Local Hazard Mitigation Plan 2011 Update*.	$1 million	Napa	2002			X	Slow Rise, Flash, Debris Flow	http://www.waterplan.water.ca.gov/docs/cwpu2009/1208prd/vol3/appendices/3-RR_SF_PRDappA_flood.pdf Santa Clara County LHMP 2011
San Francisco Bay	2004	February		San Francisco	Flash Flood of February 2004		San Francisco and San Mateo: On 25 February 2004, torrential rain and extensive flash flooding occurred in portions of San Francisco and San Mateo counties, in association with a convective line embedded in a landfalling frontal band. Source: Blier et al., 2005, The Historic San Francisco Flash Flood Event of 25 February 2004.							Flash	https://ams.confex.com/ams/pdfpapers/84208.pdf.
San Francisco Bay	2005	January		Marin			**Marin:** Winter storms of 2005 produced heavy rainfalls; excessive water consistently triggered mudslides in the county causing significant damage. **Source:** Marin County Sheriff Office of Emergency Services, April 2006, *Marin County Operational Area Hazard Mitigation Plan.*	X	Marin					Flash, Debris Flow	Marin County Operational Area HMP 2006; http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
San Francisco Bay	2005-2006	December-January	December 17-January 12	Alameda, Contra Costa, Marin, Napa, San Mateo, Solano, Sonoma	05-'06 Winter Storms, New Year's Eve Flood of 2006	San Francisco Bay Area, Corte Madera, San Anselmo Creek, Napa River, Nathanson Creek, Sonoma Creek, Sonoma Creek, Petaluma River, Walnut Creek, Richmond, San Pablo, Martinez, Orinda	**Regionwide:** DR 1628 - Landslides. Damage estimates are over $100 million. Storms are blamed for two deaths from falling trees. The Town of San Anselmo's downtown was put 4 feet under water and left coated with mud. Around 50 businesses were damaged and 3 homes nearly wiped out by mudslides. **Sonoma:** December 30, 2005 – January 3, 2006. $104 million. Over 100 roads closed due to flooding and landslides. Approximately 50,000 county residents without power. More than 2,000 properties inundated, 67 declared uninhabitable Unknown number of self-evacuations. Laguna Wastewater Treatment Plant flooded with partially treated sewage spill into the Laguna. December 31, 2005, and continued to rise to a crest of 41.89 feet at about 4:30 am on New Year's Day. Continuing rainfall kept the river at flood stage until mid-day on January 3, 2006. The continuous, heavy rainfall caused most creeks and streams to rise rapidly, resulting in widespread localized flooding, including areas in Sonoma, Santa Rosa, Rohnert Park and Petaluma. Sonoma Creek flooded and damaged a mobile home park, bridge, and pipeline. Nathanson Creek flooded 27 classrooms at Sonoma Valley High School. **Marin:** Winter storms of 2006 heavy rainfalls, excessive water consistently triggers mudslides in the county caused significant damage. Corte Madera Creek has had a history of flooding with the largest recorded flow in the winter in December 2005 and January 2006, causing severe damage to the surrounding communities. Flooding on Corte Madera Creek caused more than $70 million in damages in the Corte Madera area. Disastrous flood. Widespread localized flooding occurred in almost all areas of Marin County. San Anselmo, Ross, Fairfax, and Mill Valley were the most heavily impacted. Power outages peaked at 10,000 customers in January. Two levees in the Novato area were damaged. Over 1,000 homes, apartments and businesses were damaged or destroyed. **Napa:** Losses estimated at $135 million were due to flood damage by the Napa River in Napa County. Major flood damages in the Napa Basin. Up to 9.57 inches of rain fell. Napa River crested higher than 1986 floods, and 1,000 homes were flooded in Napa city. Flooding of vineyards occurred. **Contra Costa:** DR 1628: The estimated damage in Contra Costa County from floods: $22,000,000 property and $8,710,359 crops. **Source:** Association of Bay Area Governments, 2010, Appendix D: "Disasters Affecting the San Francisco Bay Area 1950-2009," *Multi-Jurisdictional Local Hazard Mitigation Plan;* "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; Sonoma County, 2008 updated 2011, *Sonoma County Hazard Mitigation Plan*; DWR, 2009, *California Water Plan Updated 2009*; Marin County Sheriff Office of Emergency Services, April 2006, *Marin County Operational Area Hazard Mitigation Plan*; San Anselmo Historical Society, February 2013, San Anselmo Historical Museum "Chronological History of San Anselmo"; City of Belvedere, California, 2013, Storm Preparedness, "Winter Weather Storms and Flooding Preparedness"; USGS, 2006, *Storm and Flooding in California in December 2005 and January 2006 - a Preliminary Assessment; San Francisco Chronicle*, SFGate, January 1, 2006, "Storms Usher in the New Year / the Northern Region"; Contra Costa County, 2011,*Local Multi-Hazard Mitigation Plan.*	$22,000,000 property and $8,710,359 crops, $70,000,000, $135,000,000 104000000 - Sonoma County	Contra Costa, Corte Madera, Napa, Sonoma County		2	Regionwide	X	Flash, Debris Flow, Stormwater	http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf; Sonoma County HMP 2006; Marin County Operational Area HMP 2006; http://www.waterplan.water.ca.gov/docs/cwpu2009/1009prf/3-rr_sf_pre-final_app.a-c_pdf_13oct09.pdf; Contra Costa County HMP 2011; http://www.cityofbelvedere.org/index.aspx?NID=227; http://www.sfgate.com/news/article/STORMS-AND-FLOODS-USHER-IN-THE-NEW-YEAR-THE-2507516.php#photo-2681899
San Francisco Bay	2006	March-May	March 29-April 1	Alameda, Marin, Napa, San Mateo, Sonoma, Solano	2006 Spring Storms		**Regionwide:** DR 1646 - (3/29-4/1/2006) Severe storms, flooding, landslides, and mudslides. **Source:** Association of Bay Area Governments, 2010, Appendix D: "Disasters Affecting the San Francisco Bay Area 1950-2009," *Multi-Jurisdictional Local Hazard Mitigation Plan.*							Slow Rise, Debris Flow	http://www.fema.gov/disaster/1646
San Francisco Bay	2006	April		Alameda, Marin, Napa, San Mateo, Sonoma			Severe rainstorms and flooding. **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013.							Flash	http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf
San Francisco Bay	2006	May	10	Alameda, Contra Costa, Marin, San Mateo, Solano, Sonoma			Roadway damage. **Source:** Association of Bay Area Governments, 2010, Appendix D: "Disasters Affecting the San Francisco Bay Area 1950-2009," *Multi-Jurisdictional Local Hazard Mitigation Plan.*	X	Alameda, Contra Costa, Marin, San Mateo, Solano, Sonoma					Flash	http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf
San Francisco Bay	2006			Marin, Sonoma		Corte Madera Creek, Petaluma River	**Marin:** Corte Madera Creek has damaged San Anselmo, Ross, Kentfield, Larkspur, Fairfax, and vicinity numerous times, notably in 2006. **Sonoma:** The Petaluma River flooded some or all of the Denman Flat, Lynch Creek, and Payran Floodplain areas with sheet flow. **Source:** DWR, 2009, *California Water Plan Update 2009.*	X	San anselmo, Ross, Kentfield, Larkspur, and Fairfax					Slow Rise	http://www.waterplan.water.ca.gov/docs/cwpu2009/1009prf/3-rr_sf_pre-final_app.a-c_pdf_13oct09.pdf
San Francisco Bay	2008	January	5-14	Marin, Napa, San Francisco, San Mateo	2008 Winter Storms		Extreme winds and heavy rains flooded the region. Heavy rainfall resulted in a flood watch for the entire Bay Area, and the weather service issued an urban and small stream flood advisory for parts of San Mateo, San Francisco, Marin, Sonoma and Napa counties. In Petaluma (in Sonoma county), some residents were evacuated from their homes. There was also a mudslide that caused the closure of Highway 1 at Devil's Slide. **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; Association of Bay Area Governments, 2010, Appendix D: "Disasters Affecting the San Francisco Bay Area 1950-2009," *Multi-Jurisdictional Local Hazard Mitigation Plan.*							Flash, Debris Flow	http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf
San Francisco Bay	2009	October	13, 27	Marin, San Francisco, Santa Clara		Morgan Hill	**Santa Clara:** (10/13) A strong low pressure system made its way through Northern and Central California accompanied by deep tropical moisture and very strong winds. Heavy rain combined with the wind to cause numerous trees, tree limbs and pole/telephone powers to fall. Pacific Gas and Electric reported over 277,000 customers had lost power in the San Francisco and Monterey Bay areas with a cost of over $13 million dollars in damages. The record-breaking heavy rain also led to flooding and debris flows. **San Francisco and Marin:** (10/27) Thunderstorms developed over San Francisco and Marin Counties causing minor flooding. **Source:** Santa Clara County, 2013, L*ocal Hazard Mitigation Plan 2011 Update.*	$13 million	Regionwide	2009			X	Flash, Debris Flow	Santa Clara County LHMP 2011
San Francisco Bay	2010	January	10	San Mateo			High winds, heavy rains, thunderstorms, and large ocean waves triggered the activation of Emergency Operation Centers and resulted in minor flooding and landslide damage. **Source:** County of San Mateo, March 1, 2012, *Annex to 2010 Association of Bay Area Governments Local Hazard Mitigation Plan Taming Natural Disasters.*	X	San Mateo County					Flash	San Mateo County HMP
San Francisco Bay	2010	January	17-21	San Francisco	Winter Storms		**Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013.							Flash	http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf
San Francisco Bay	2011	March	11	Alameda, Marin, San Francisco, San Mateo		Point Reyes, Sausalito, Berkeley, San Francisco	**Marin:** A tsunami of 4.4-foot amplitude at Point Reyes struck coastal areas of the region. The tsunami wave crossed Richardson Bay in Sausalito. **Alameda:** Minor damage to boats and infrastructure, particularly at Berkeley Marina. Damages at Berkeley $125,000. **San Mateo:** Waves from a tsunami created by the major earthquake in Japan resulted in tsunami warnings for the entire western coast of the United States and Canada, the evacuation of low-lying areas in Princeton-by-the Sea, and minor damages to vessels and an abalone farm in Pillar Point Harbor. **Source:** KCRA Live Wire, March 11, 2011, "Tsunami Surge Results in West Coast Damage"; Humboldt State University et al., March 2011, "*How to Survive a Tsunami in Sausalito, California, a Component of Living on Shaky Ground*"; *San Jose Mercury News, SARATOGA*, March 11, 2011, "Bay Area Feels the Impact of the Japan Tsunami"; California Coastal Commission, April 2011, *The Tohoku Tsunami of March 11, 2011: A Preliminary Report on Effects to the California Coast and Planning Implications*; County of San Mateo, March 1, 2012, *Annex to 2010 Association of Bay Area Governments Local Hazard Mitigation Plan Taming Natural Disasters*; "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013.	$ 125,000	Berkeley					Tsunami	THE TOHOKU TSUNAMI OF MARCH 11, 2011: A PRELIMINARY REPORT ON EFFECTS TO THE CALIFORNIA COAST and PLANNING IMPLICATIONS April 18, 2011, http://ci.sausalito.ca.us/Modules/ShowDocument.aspx?documentid=11096 http://www.coastal.ca.gov/energy/tsunami/CCC_Tohoku_Tsunami_Report.pdf San Mateo County HMP
San Francisco Bay	2011	March		Alameda, Contra Costa, Marin			Rainstorms. **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013.							Flash	http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf
San Francisco Bay	2012	December		San Mateo		San Francisquito	**San Mateo** : Rainstorms caused the temporary evacuation of about 36 people. Dozens return home after East Palo Alto flooding. Floodwater impacted Northbound Highway 101. A levee was breached on the San Mateo side of San Francisquito Creek and caused localized flooding in Palo Alto. **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; *Palo Alto Online News*, December 25, 2012, "Dozens Return Home after East Palo Alto Flooding"; *Palo Alto Online News*, March 1, 2013, "State of Emergency Declared for East Palo Alto Levees."	X	San Mateo County					Slow Rise, Flash, Engineered Structure Failure, Stormwater	http://photos.mercurynews.com/2012/12/26/officials-volunteers-work-to-stop-flooding-along-san-francisquito-creek/ http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf; http://www.paloaltoonline.com/news/show_story.php?id=28789; http://www.paloaltoonline.com/news/show_story.php?id=28019
San Joaquin River	1776			San Joaquin		Mokelumne River	Native American legends and journals of Spanish explorers and early settlers record widespread flooding in the county. **Source:** San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan*; FEMA, 2009, *Flood Insurance Study, San Joaquin County and Incorporated Areas, California.*							Slow Rise	http://sjcrcd.org/articles/MokP.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
San Joaquin River	1805			San Joaquin		Mokelumne River	Native American legends and journals of Spanish explorers and early settlers record widespread flooding in the county. **Source:** San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan*; FEMA, 2009, *Flood Insurance Study, San Joaquin County and Incorporated Areas, California.*						X	Slow Rise	http://sjcrcd.org/articles/MokP.pdf
San Joaquin River	1826			Sacramento, San Joaquin		Mokelumne River	Native American legends and journals of Spanish explorers and early settlers record widespread flooding in the county. **Source:** San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan*; FEMA, 2009, Flood Insurance Study, *San Joaquin County and Incorporated Areas, California.*							Slow Rise	http://sjcrcd.org/articles/MokP.pdf
San Joaquin River	1828			San Joaquin		Mokelumne River	Native American legends and journals of Spanish explorers and early settlers record widespread flooding in the county. **Source:** San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan*; FEMA, 2009, Flood Insurance Study, *San Joaquin County and Incorporated Areas, California.*							Slow Rise	http://sjcrcd.org/articles/MokP.pdf
San Joaquin River	1830			San Joaquin		Mokelumne River	Native American legends and journals of Spanish explorers and early settlers record widespread flooding in the county. **Source:** San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan*; FEMA, 2009, *Flood Insurance Study, San Joaquin County and Incorporated Areas, California.*							Slow Rise	http://sjcrcd.org/articles/MokP.pdf
San Joaquin River	1846			Sacramento		Sacramento	A New York *Times* article in 1862 noted that in Sacramento "in 1846, the water was seven feet deep for sixty days." **Source:** *New York Times,* January 21, 1862, "The Great Flood in California, Great Destruction of Property Damage $10,000,000."						X	Slow Rise	http://www.nytimes.com/1862/01/21/news/the-great-flood-in-california-great-destruction-of-property-damage-10000000.html
San Joaquin River	1847			Sacramento		Sacramento	Native American legends and journals of Spanish explorers and early settlers record widespread flooding in the county. The first flood mentioned in historical accounts of the Stockton area occurred in 1847. **Source:** San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan*; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California;* FEMA, 2009, *Flood Insurance Study, San Joaquin County and Incorporated Areas, California.*							Slow Rise	http://sjcrcd.org/articles/MokP.pdf
San Joaquin River	1849-1850			Amador, Contra Costa, Sacramento			**Source:** Amador County, August 2006, *Amador County, California, Multi-Hazard Mitigation Plan*; Contra Costa County, May 2011, *Hazard Mitigation Plan Update*; *Rivers and Floods of Sacramento and San Joaquin Watershed 1913*						X	Slow Rise	http://hazardmitigation.calema.ca.gov/docs/lhmp/Amador_County.pdf http://www.contracosta.ca.gov/index.aspx?NID=2302 http://books.google.com/books?id=ILIGAQAAIAAJ&pg=PA60&lpg=PA60&dq=december+1849+flood+sacramento&source=bl&ots=TDlFXRtho8&sig=HBNEFFlWHvQer3WPvkauqX3LqOQ&hl=en&sa=X&ei=XRvKUcu4CKjcyQHn7YGAAg&ved=0CGAQ6AEwCA#v=onepage&q=1849%20flood&f=false http://archive.org/details/riversfloodsofsa00tayl
San Joaquin River	1852	January	10-11	Amador		Mokelumne River, Sacramento River	At Old Fort Miller on headwaters of San Joaquin River, Dr. W. T. Edgar, surgeon of the post, observed a rainfall of 46 inches during January and February 1852. On January 10, the Mokelumne River rose 44 feet above low water and the tempest swept the river clean of flumes, dams, bridges, ferries, hovels, and homes. Roads were impassable. Travel and communication between the mountains and valley ceased. Stockton, Sacramento and Lone Valley were flooded. Big buildings in Jackson were lifted off foundations and floated into the rampaging middle fork. **Source:** Amador County, August 2006, *Amador County, California, Multi-Hazard Mitigation Plan*; USGS, 1918, *Water Supply Paper 426: Southern California Floods of January 1916.*						X	Slow Rise	http://hazardmitigation.calema.ca.gov/docs/lhmp/Amador_County.pdf http://pubs.usgs.gov/wsp/0426/report.pdf
San Joaquin River	1852	March	4-10	Amador	The great flood of 1852	San Joaquin River Basin	On March 4 or 5, unceasingly through March 8, torrents fell. By March 10, the Sacramento river was a half foot above its high water mark during the 1850 flood. Raging creeks and rivers roared down their channels and beds to sweep scores of bridges downstream to destruction. On the Mokelumne River, the loss cannot fall short of $50,000. Palmer and Co.'s bridge (worth $10,000) at Oregon Bar was carried away. At Middle Bar, the massive bridge of McKinney and Co. (worth $12,000) was swept away with a large ferry boat worth $15,000. All the homes on the north bank of the river at this bar were torn from foundations and carried down the fierce torrent and smashed to pieces against the rocks. All the stores and tents along the south bank to Big Bar were overloaded. At least one minor drowned trying to cross the bridgeless torrent in a canoe. The Chronicle reported the Mokelumne had risen at least 18 feet during the flood, being 4 to 6 feet higher than the winter of 1849-50. It may have gone even higher. The Middle Bar bridge was 20 feet above normal water level and it still did not survive. **Source:** Amador County, August 2006, *Amador County, California, Multi-Hazard Mitigation Plan*; USACE, 1999, *History of Flooding and Flood Protection.*	$ 87,000	Amador County	1852	1	Amador County		Slow Rise	http://hazardmitigation.calema.ca.gov/docs/lhmp/Amador_County.pdf
San Joaquin River	1852	December		Alpine, Contra Costa			**Alpine:** Earliest flood of record in Alpine County. The storms began "with a heavy wet snow, which lasted for two days and left a three-foot snow depth across Carson Valley. Beginning with the storm's third day, the snow typically turned to a relatively warm rain, which lasted another four days, until December 30. By that time, the snow accumulation had completely melted and run off, along with great quantities of rainwater." **Source:** Alpine County, September 2004, *Alpine County Natural Hazard Mitigation Plan*; Contra Costa County, May 2011, *Hazard Mitigation Plan Update*.							Slow Rise	Alpine County MHMP; Contra Costa HMP 2011.
San Joaquin River	1861-1862	December-January		Alameda, Alpine, Amador, Calaveras, Contra Costa, El Dorado, Fresno, Madera, Mariposa, Merced, Sacramento, San Joaquin, Stanislaus, Tuolumne	The Great Flood	Regionwide	The "Great Flood" was remarkable for the exceptionally high stages reached on most streams, repeated large floods, and prolonged and widespread inundation throughout the San Joaquin Valley. The flood of 1861-62 is the largest flood event recorded in the county with flood stages of 6 to 15 feet higher than those of earlier reported floods. In the San Joaquin River Basin, the city of Stockton and the surrounding country were inundated for many miles. Also in this basin, the Merced River, downstream from the mouth of its canyon, flooded the town of Snelling. The flood widened and changed the course of the Merced River channel. Reports state that the whole country surrounding lower Mariposa Creek and the Fresno and Chowchilla rivers, as seen from the foothills, was one vast sheet of water. The Stanislaus River at Knights Ferry flooded that city twice during the winter season. During the second flood, the city was destroyed. The floods destroyed nearly all the bridges, mills, and other structures along the channels of the San Joaquin River and the major tributaries. in Snelling, the flood washed away the hotel and several other buildings including Judge Fitzhugh's house, as well as the bridges located nearby at Merced Falls. It also changed the course of the river. **Source:** San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan*; City of Merced, 2013, *Local Hazard Mitigation Plan*; Stanislaus County OES, 2005 and 2010 Update, *Multi-Jurisdictional Hazard Mitigation Plan*; Contra Costa County, May 2011, *Hazard Mitigation Plan Update*; USACE, 1999, *History of Flooding and Flood Protection*.						X	Slow Rise	Lower Mokelumne River Watershed Stewardship Plan; City of Merced 2013; Stanislaus HMP 2005; Stanislaus HMP 2010; Contra Costa HMP 2011; USACE History of Flooding and Flood Protection 1999
San Joaquin River	1867-1868	December-March		Madera, Mariposa, Merced, Sacramento, San Joaquin, Stanislaus, Tuolumne		Fresno River	The flood of 1867 was one of major importance throughout the San Joaquin River Basin. Floods of great magnitude occurred on the main tributaries of the Lower San Joaquin River. The San Joaquin River at Friant exceeded the flood of 1862 and caused many buildings to be washed away. The Mokelumne River overflowed its banks near Woodbridge and reached a stage near that of 1862. In the foothills, the flood on the San Joaquin River considerably exceeded any other known flood and was probably higher than any known flood at all points upstream from the mouth of the Merced River. **Source:** Madera County, Boyle Engineering Corporation, Kenneth D. Schmidt and Associates, April 2008, *Integrated Regional Water Management Plan, Madera County*; USGS, 1953, *Water Supply Paper 1137-F: Floods of November – December 1950 in the Central Valley Basin California*; Madera County, February 2011, *Local Hazard Mitigation Plan*; USACE, 1999, *History of Flooding and Flood Protection*; DWR, 2009, *California Water Plan Update 2009.*						X	Slow Rise	Source: Madera County Integrated Regional Water Management (IRWM) Plan Vol 1 2008; Geological Survey Water-supply Paper, Issue 1137-Floods of November-December 1950 in the Central Valley Basin California 1953 ; Madera HMP 2011; and USACE History of Flooding and Flood Protection 1999 ; California Water Plan 2009
San Joaquin River	1869			San Joaquin		San Joaquin Basin	**Source:** USACE, 1999, *History of Flooding and Flood Protection.*							Slow Rise	Source: USACE History of Flooding and Flood Protection 1999

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
San Joaquin River	1871-1872	December-January		Amador, Calaveras, Contra Costa, Mariposa, Sacramento, Stanislaus, Tuolumne		Sacramento, San Joaquin River Basins	Historical writings mention a flood on the Mokelumne, Stanislaus, and Tuolumne Rivers in the winter of 1871-72. The accounts state that there was comparatively little damage. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; Contra Costa County, May 2011, *Hazard Mitigation Plan Update*; USACE, 1999, *History of Flooding and Flood Protection.*							Slow Rise	Source: USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California; Contra Costa HMP 2011; USACE History of Flooding and Flood Protection 1999
San Joaquin River	1875			Contra Costa			**Source:** Contra Costa County, May 2011, *Hazard Mitigation Plan Update.*							Slow Rise	Source: Contra Costa County HMP 2011
San Joaquin River	1878	February		Amador, Contra Costa, El Dorado, Sacramento, San Joaquin		Sacramento, San Joaquin River Basins, Jackson Creek	A flood that occurred in February 1878 was notable in that it was the last time that Tulare Lake Basin floodwater discharged into the San Joaquin River Basin. Sudden Deluge. Rainburst was confined to Jackson and the watershed of the three forks of Jackson Creek. Within an hour the north fork topped its banks and swept away or damaged most of the creekside dwellings down to the fork's confluence with the other branches. Chinatown on the west side of Main and hugging the creek was struck worst. Chinese stores floated off foundations and headed downstream, some with occupants inside or clinging to the remains. Rest of the town was flooded when a wall of water appeared racing down the middle fork. The middle fork is much longer and has more tributaries and capacity than the north fork and the breaking of the New York Ranch reservoir released its storage into the middle forks surge. That water careened into New York Gulch, struck the middle fork near French Garden, severely damaging that vegetable basket, and merged madly with the high water coming from upstream. A wave or wall of water rushed into Jackson. All the driftwood, flotsam and debris it carried soon dammed up against the Broadway bridge. Almost instantly the water engulfed the north bank and Water streets, flooding all yards on the south side of the street and wreaking much chaos. There was more long-lasting damage, particularly in Jackson Valley, where bodies, buildings, driftwood, and all debarked—including a plague of rattlesnakes from foothill pits. **Source:** Amador County, August 2006, *Amador County, California, Multi-Hazard Mitigation Plan*; FEMA, 2009, *Flood Insurance Study, San Joaquin County and Incorporated Areas, California*; Contra Costa County, May 2011, *Hazard Mitigation Plan Update*; USACE, 1999, *History of Flooding and Flood Protection.*				X	Jackson Valley		Slow Rise, Flash, Engineered Structure Failure, Debris Flow	Source: Amador County MHMP 2006; San Joaquin County FIS 2009; Contra Costa HMP 2011; USACE History of Flooding and Flood Protection 1999
San Joaquin River	1879			Contra Costa			**Source:** Contra Costa County, May 2011, *Hazard Mitigation Plan Update.*							Slow Rise	Source: Contra Costa County HMP 2011
San Joaquin River	1881	January		Contra Costa, Fresno, San Joaquin		San Joaquin Valley	Floods were notable in the San Joaquin River Basin. One of the four largest floods between 1850 and 1900. **Source:** Contra Costa County, May 2011, *Hazard Mitigation Plan Update*; USACE, 1999, *History of Flooding and Flood Protection.*							Slow Rise	Source: Contra Costa HMP 2011; USACE History of Flooding and Flood Protection 1999
San Joaquin River	1884	March		San Joaquin		San Joaquin River	**Source:** USACE, 1999, *History of Flooding and Flood Protection* .							Slow Rise	Source: USACE History of Flooding and Flood Protection 1999
San Joaquin River	1886	January		El Dorado, Sacramento, San Joaquin		Sacramento, San Joaquin River Basins	**Source:** DWR, 2009, *California Water Plan Update 2009*; USACE, 1999, *History of Flooding and Flood Protection.*							Slow Rise	Source: California Water Plan 2009; USACE History of Flooding and Flood Protection 1999
San Joaquin River	1889	December		El Dorado, San Joaquin		San Joaquin River	Moderate flooding. **Source:** DWR, 2009, *California Water Plan Update 2009*; USACE, 1999, *History of Flooding and Flood Protection.*							Slow Rise	Source: California Water Plan 2009; USACE History of Flooding and Flood Protection 1999
San Joaquin River	1890	January-May		El Dorado, Merced, Stanislaus, San Joaquin, Tuolumne		Merced, Stanislaus, Tuolumne, Mokelumne, San Joaquin Rivers	One of the four largest floods between 1850 and 1900. Large floods occurred throughout the San Joaquin River Basin during the latter part of January 1890. The upper San Joaquin River possibly reached an extremely high stage. The Merced, Stanislaus, Tuolumne, and Mokelumne rivers were at dangerously high stages, and some of the foothill tributaries of these rivers were said to have been the highest known. Several towns were flooded, and railroad and highway structures washed out. The maximum stage of the season, however, was reached, at least on the lower San Joaquin, during the snow runoff period in May 1890. **Stanislaus:** The lower part of Empire (Stanislaus County) was flooded on February 6, and mills along the river were put out of operation by the high water. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; USACE, 1999, *History of Flooding and Flood Protection*; DWR, 2009, *California Water Plan Update 2009.*							Slow Rise	Source: USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California; USACE History of Flooding and Flood Protection 1999; California Water Plan 2009
San Joaquin River	1892	December		San Joaquin		San Joaquin River Basin	**Source:** USACE, 1999, *History of Flooding and Flood Protection.*							Slow Rise	Source: USACE History of Flooding and Flood Protection 1999
San Joaquin River	1893	January		San Joaquin		San Joaquin River Basin	**Source:** USACE, 1999, *History of Flooding and Flood Protection.*							Slow Rise	Source: USACE History of Flooding and Flood Protection 1999
San Joaquin River	1895			Calaveras			In 1895, the Angels Dam collapsed, resulting in one fatality. The cause cited for the failure was flooding that undermined the poorly constructed dam foundation. **Source:** Calaveras County, October 2006, *Calaveras County Water District Multi-Hazard Mitigation Plan;* Calaveras County Water District, August 2012, *Local Hazard Mitigation Plan Update*.				1	Angels Dam		Engineered Structure Failure	Source: Calaveras HMP 2006, CCWD HMP 2012.
San Joaquin River	1902			Contra Costa			**Source:** Contra Costa County, May 2011, *Hazard Mitigation Plan Update.*							Slow Rise	Source: Contra Costa HMP 2011
San Joaquin River	1904	Winter		Contra Costa, El Dorado, Sacramento			In the winter of 1904, the Edwards levee break occurred 1.5 miles south of Y Street, flooding farmlands 35 miles south of Sacramento. As a result, in October 1905, Sacramento approved $165,000 for levee improvements. **Source:** Sacramento City and County, December 2004, *Sacramento County Multi-Hazard Mitigation Plan*; DWR, 2009, *California Water Plan Update 2009*; Contra Costa County, May 2011, *Hazard Mitigation Plan Update.*	$ 165,000	Sacramento County	1905				Slow Rise, Engineered Structure Failure	Source: Sacramento County HMP 2004; California Water Plan 2009; Contra Costa HMP 2011
San Joaquin River	1906			Contra Costa. San Joaquin		Mokelumne River	A major storm caused flooding in the county. **Source:** San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan*; Contra Costa County, May 2011, *Hazard Mitigation Plan Update.*							Slow Rise	Source: Lower Mokelumne River Watershed Stewardship Plan; Contra Costa HMP 2011
San Joaquin River	1907	March		Amador, Contra Costa, Sacramento, San Joaquin	The Great Ione Flood	Jackson Creek, Stockton, Feather River, Sacramento River, Yuba River, San Joaquin River, tributaries to Lower San Joaquin River; Mokelumne River	Central Valley floods of 1907 and 1909 revised flood control plans of the time and led to development of the San Joaquin River flood control system. The San Joaquin River Hydrologic Region experienced urban and small-stream flooding in every large storm. Highest water levels in 25 years were reached. Only a moderate rise on the upper San Joaquin River was observed during this flood, but there were exceptionally high stages on the large tributaries in the lower part of the basin. From the Merced River to the Mokelumne River, stages peaked on March 19, 1907, and were followed by high stages for several days. The San Joaquin River downstream from Mendota was at or above flood stage from the middle to the end of March. **Amador:** The Great Ione Flood: According to the March 22, 1907, *Dispatch,* a storm began that Monday early in the afternoon and beat down in copious sheets until dawn the next day. By 2:30 pm on Monday, Jackson Creek was a raging torrent judged to be higher than any time in 25 years. The south fork washed the Zeile mine footbridge out, and there was not a bridge left spanning the Mokelumne below Middle Bar nor was there any bridge left between Lanch Plana and Lodi. The peak of the foothill runoff hit Stockton in the valley later on Tuesday, and by midnight Stockton had its greatest flood since 1862.**San Joaquin** : A major storm caused flooding in the county. **Source:** San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan*; Amador County, August 2006, *Amador County, California, Multi-Hazard Mitigation Plan*; DWR, 2009, *California Water Plan Update 2009*; Contra Costa County, May 2011, *Hazard Mitigation Plan Update*; FEMA, 2009, *Flood Insurance Study, San Joaquin County and Incorporated Areas, California*; USACE, 1999, *History of Flooding and Flood Protection.*						X	Slow Rise	Source: Lower Mokelumne River Watershed Stewardship Plan; Amador County MHMP 2006; California Water Plan 2009; Contra Costa HMP 2011; San Joaquin FIS 2009; USACE History of Flooding and Flood Protection 1999
San Joaquin River	1909			Alpine, Amador, Calaveras, Contra Costa, El Dorado, Fresno, Madera, Mariposa, Merced, Sacramento, San Joaquin, Stanislaus, Tuolumne		Mokelumne River	Central Valley floods of 1907 and 1909 revised flood control plans of the time and led to development of the San Joaquin River flood control system. The San Joaquin River Hydrologic Region experienced urban and small-stream flooding. **Source:** DWR, 2009, *California Water Plan Update 2009*; San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan*; Contra Costa County, 2011, *Local Hazard Mitigation Plan*; FEMA, 2009, *Flood Insurance Study, San Joaquin County and Incorporated Areas, California.*						X	Slow Rise	Source: California Water Plan 2009; Lower Mokelumne River Watershed Stewardship Plan; Contra Costa HMP 2011; San Joaquin FIS 2009

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
San Joaquin River	1911	January		Mariposa, Madera, Merced, Sacramento, San Joaquin, Stanislaus, Tuolumne	Mokelumne River Flood	Lower San Joaquin Valley; Bear Creek, Fresno River, Mokelumne River	The flood of 1911 was the greatest that has occurred in the lower San Joaquin Valley at the time. During this flood the upper San Joaquin River near Friant reached high stages on January 30 and 31. The flood was relatively higher downstream, and near Newraan at the mouth of the Merced River the peak stage of 1911 has not been equaled since. High stages were reached on January 30 and 31 on the Calaveras, Mokelumne, Stanislaus, Tuolumne, and Merced rivers. The floods on these tributaries combined to raise the San Joaquin River at Lathrop to a record-breaking stage of 22 feet on February 1. It was estimated that 75,000 acres of land were flooded from the overflow of the San Joaquin, Mokelumne, and Calaveras rivers. Extensive reclamation works and other improvements affecting the capacity of the channel make it impossible to estimate from the flood heights the relative magnitude of the flood flows in the lower San Joaquin Basin. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; DWR, 2009, *California Water Plan Update 2009*; City of Merced, 2013, *Local Hazard Mitigation Plan*; San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan*; FEMA, 2009, *Flood Insurance Study, San Joaquin County and Incorporated Areas, California*; USACE, 1999, *History of Flooding and Flood Protection.*						X	Slow Rise	Source: USGS, 1939, Water Supply Paper 843: Floods of December 1937 in Northern California; California Water Plan 2009; City of Merced 2013; Lower Mokelumne River Watershed Stewardship Plan; San Joaquin FIS 2009; USACE History of Flooding and Flood Protection 1999
San Joaquin River	1914			Madera, San Joaquin		Fresno River	A major rain flood in the county occurred. **Source:** San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan*; Madera County et al., April 2008, *Integrated Regional Water Management Plan, Madera County*; FEMA, 2009, *Flood Insurance Study, San Joaquin County and Incorporated Areas, California.*							Slow Rise	Source: Lower Mokelumne River Watershed Stewardship PlanMadera County IRWM Plan Vol 1; Madera HMP 2011; San Joaquin County FIS 2009
San Joaquin River	1921			San Joaquin		Mokelumne River	A major rain flood in the county occurred. **Source:** San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan*; FEMA, 2009, *Flood Insurance Study, San Joaquin County and Incorporated Areas, California.*							Slow Rise	Source: Lower Mokelumne River Watershed Stewardship Plan; San Joaquin County FIS 2009
San Joaquin River	1925			Merced, San Joaquin		Mokelumne River	A major storm caused flooding in the county. **Source:** San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan*; FEMA, 2009, *Flood Insurance Study, San Joaquin County and Incorporated Areas, California;* City of Merced, 2013, *Local Hazard Mitigation Plan.*							Slow Rise	Source: Lower Mokelumne River Watershed Stewardship Plan; San Joaquin County FIS 2009
San Joaquin River	1928			El Dorado, San Joaquin, Sacramento		Mokelumne River	A major storm flooding in the county. **Source:** San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan*; FEMA, 2009, *Flood Insurance Study, San Joaquin County and Incorporated Areas, California.*							Slow Rise	Source: Lower Mokelumne River Watershed Stewardship Plan; San Joaquin County FIS 2009
San Joaquin River	1932			San Joaquin		Delta: Venice Island	Levees on Venice Island in the Delta breached, flooding 3,220 acres. **Source:** DWR, December 1982, *Bulletin 192-82: Delta Levees Investigation.*							Engineered Structure Failure	Source: Bulletin 192-82: Delta Levees Investigation 1982
San Joaquin River	1935	April	6	Merced			On April 6, 1935, Bear Creek overflowed its banks and inundated Merced streets, flooding homes and businesses. Due to the severity of this storm, the Merced Streams Group was created by an Act of Congress. **Source:** City of Merced, 2013, *Local Hazard Mitigation Plan.*							Slow Rise	Source: Draft Merced Local Hazard Mitigation Plan, 2013
San Joaquin River	1936			Contra Costa, San Joaquin		Delta: Medford, Quimby Island	In 1936, Delta levees breached on Medford and Quimby Islands, inundating 1,988 acres. **Source:** DWR, December 1982, *Bulletin 192-82: Delta Levees Investigation.*							Engineered Structure Failure	Source: Bulletin 192-82: Delta Levees Investigation 1982
San Joaquin River	1937	December		Mariposa, San Joaquin		Mokelumne River, Yosemite Valley	The Merced River flooded the lower portions of the valley. The highway and the Yosemite Valley Railroad were materially damaged. Other damages occurred in low-lying areas of the San Joaquin River. A major storm caused flooding in the county. **Source:** San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan*; FEMA, 2009, *Flood Insurance Study, San Joaquin County and Incorporated Areas, California*; *Merced Sun-Star*, December 20, 1937, "Flood Damage Lower than First Feared."						X	Slow Rise	Source: Lower Mokelumne River Watershed Stewardship Plan; San Joaquin County FIS 2009; Merced Sun-Star 12-20-37
San Joaquin River	1938	February-March		Contra Costa, Madera, Stanislaus, San Joaquin		Fresno River, Mokelumne River, Delta: Mandeville, Quimby, Rhode, Venice Island, Pescadero, Stewart Tracts	A major snowmelt flood occurred. Delta levees breached on Mandeville, Quimby, Rhode, and Venice Islands and on Pescadero and Stewart Tracts, flooding a total of about 21,000 acres. The 100-acre Rhode Island Tract was never reclaimed. **Source:** DWR, December 1982, *Bulletin 192-82: Delta Levees Investigation*; San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan;* Madera County et al., April 2008, *Integrated Regional Water Management Plan, Madera County*; Stanislaus County OES, 2005 and 2010 Update, *Multi-Jurisdictional Hazard Mitigation Plan.*							Slow Rise, Engineered Structure Failure	Source: Bulletin 192-82: Delta Levees Investigation 1982; Lower Mokelumne River Watershed Stewardship Plan Madera County IRWM Plan, Vol 1; Madera HMP 2011; Stanislaus County HMP 2005; Stanislaus County HMP 2010
San Joaquin River	1943			Madera		Fresno River	**Source:** Stanislaus County OES, 2005 and 2010 Update, *Multi-Jurisdictional Hazard Mitigation Plan.*							Slow Rise	Source: Madera County IRWM Plan, Vol 1; Madera HMP 2011
San Joaquin River	1945			Madera		Fresno River	**Source:** Stanislaus County OES, 2005 and 2010 Update, *Multi-Jurisdictional Hazard Mitigation Plan.*							Slow Rise	Source: Madera County IRWM Plan, Vol 1; Madera HMP 2011
San Joaquin River	1950	November	21	Alpine, Placer			Declared Flood Disaster # CDO 50-01. State Declaration 11/21/50. Location: Placer County (statewide). Damage: 9 deaths and $32,183,000. **Alpine:** Power poles went down. A bridge between Woodfords and Markleeville was carried away. The Woodfords-Markleeville area was flooded. **Regionwide Damage:** Sacramento River Basin above Delta $4,983,000; Sacramento-San Joaquin Delta $4,550,000; San Joaquin River Basin-Consumes River to Upper San Joaquin River $11,460,000; Upper San Joaquin River Basin-Kings River to Kern River $11,190,000; TOTAL-$32,183,000. **Source:** Placer County, April 2010, *Local Hazard Mitigation Plan*; Alpine County Museum, February 1997, *The History of Flooding in Eastern Alpine County and Carson Valley*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D.*	$ 32,183,000	Statewide	1950	9	Statewide	X	Flash	Placer County LHMP 2010; The History of Flooding in Eastern Alpine County and Carson Valley, 1997; Taming Natural Disasters Appendix D
San Joaquin River	1950	November		Alpine, Placer			Declared Flood Disaster # CDO 50-01. State Declaration 11/21/50. Location: Placer County (statewide). Damage: 9 deaths and $32,183,000. **Alpine:** Power poles went down. A bridge between Woodfords and Markleeville was carried away. The Woodfords-Markleeville area was flooded. **Regionwide Damage:** Sacramento River Basin above Delta $4,983,000; Sacramento-San Joaquin Delta $4,550,000; San Joaquin River Basin-Consumes River to Upper San Joaquin River $11,460,000; Upper San Joaquin River Basin-Kings River to Kern River $11,190,000; TOTAL-$32,183,000. **Source:** Placer County, April 2010, *Local Hazard Mitigation Plan*; Alpine County Museum, February 1997, *The History of Flooding in Eastern Alpine County and Carson Valley*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D.*	$ 32,183,000	Statewide	1950	9	Statewide	X	Flash	Placer County LHMP 2010; The History of Flooding in Eastern Alpine County and Carson Valley, 1997; Taming Natural Disasters Appendix D
San Joaquin River	1950	November-December		Alpine, Amador, Calaveras, Contra Costa, Fresno, Madera, Merced, San Joaquin, Stanislaus, Tuolumne		Carson River Basin, Fresno River, San Joaquin Valley, Stockton, Merced, Chowchilla. Delta: Mossdale, Pescadero, Stewart Tracts, Delta: Venice Island, Webb Tract: Mokelumne River; Stanislaus River	The west levee of Paradise Cut breached, causing Delta flooding on the Pescadero Tract and the Stewart Tract. Flooding washed out the Southern Pacific Railway tracks and State Highway 50 west of Stockton. Levees breached and flooded 3,220 acres on Venice Island and 5,490 acres on Webb Tract. **Merced:** A 3-day heavy rain event from November 17 through November 19 in the Sierra brought more than 15 inches of rain to some areas as high as 5,500 feet and heavy rain as high as 10,000 feet, which melted snowpack and resulted in historic flooding. Hardest hit were Merced, Chowchilla, Centerville, Visalia, Porterville, Oildale, Isabella, and Kernville. Damage was estimated at $12 million at the time and a few lives were lost. **San Joaquin** : Snowmelt flood was documented, with the most damaging, countywide, occurring in November and December of 1950. The most destructive flood along the Mokelumne was the November 1950 flood, which resulted in approximately $1.1 million in damage. State-declared disaster - CA OCD 50-01. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area , "Appendix D"*; FEMA, September 2010, *Flood Insurance Study, Merced County, California, and Incorporated Areas;* Amador County, 2006, *Amador County, California, Multi-Hazard Mitigation Plan;* San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan*; City of Merced, 2013, *Local Hazard Mitigation Plan*; Stanislaus County OES, 2005 and 2010 Update, *Multi-Jurisdictional Hazard Mitigation Plan*; Calaveras County, October 2006, *Calaveras County Water District Multi-Hazard Mitigation Plan*; Calaveras County Water District, August 2012, *Local Hazard Mitigation Plan Update*; San Joaquin County, September 2009, *San Joaquin Operational Area: Local Hazard Mitigation Plan*; FEMA, 2009, *Flood Insurance Study, San Joaquin County and Incorporated Areas, California.*	$ 32,200,000			9		X	Slow Rise, Stormwater, Engineered Structure Failure	

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
San Joaquin River	1952			Madera, San Joaquin		Fresno River, Mokelumne River	A major snowmelt flood in the county occurred. **Source:** San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan*; Madera County, Boyle Engineering Corporation, Kenneth D. Schmidt and Associates, April 2008, *Integrated Regional Water Management Plan;* Madera County, February 2011, *Local Hazard Mitigation Plan.*							Slow Rise	
San Joaquin River	1955	December	21-24	Alpine, El Dorado	1955 Christmas Flood	Regionwide	**San Joaquin River:** Preceding the December 1955 flood, heavy rainfall and snowmelt occurred in the upper watersheds of the eastside tributaries to the San Joaquin River. This caused extensive slow-rise flooding along the San Joaquin River and all its major eastside tributaries and flooding on the larger west-side tributaries. This flood caused extensive damage to agriculture, homes, and public facilities. Thousands of people were evacuated from their homes during the Christmas holiday season, and several people died of heart attacks during the flood. Unusually high tides aggravated the situation by impeding the passage of floodwater through the Sacramento-San Joaquin River Delta. **Source:** DWR, 2009, *California Water Plan Update 2009.*	X	Regionwide		X		X	Slow Rise	California Water Plan 2009
San Joaquin River	1955-1956	December-January		Alameda, Alpine, Amador, Calaveras, Contra Costa, El Dorado, Fresno, Madera, Mariposa, Merced, Sacramento, San Joaquin, Stanislaus, Tuolumne	1955 Christmas Flood	Regionwide; Delta: Quimby Island, Empire, New Hope Tracts	Preceding the December 1955 flood, heavy rainfall and snowmelt occurred in the upper watersheds of the eastside tributaries to the San Joaquin River. This caused extensive flooding along the San Joaquin River and all its major east side tributaries, as well as flooding on the larger west-side tributaries. This flood caused extensive damage to agriculture, homes, and public facilities. Thousands of people were evacuated from their homes during the Christmas holiday season, and several people died of heart attacks during the flood. Unusually high tides aggravated the situation by impeding the passage of floodwater through the Sacramento-San Joaquin River Delta. Disaster # DR-47, State disaster declared on 12/22/55, Federal disaster declared on 12/23/55.. Calculated Damages: 74 deaths, $200 million economic losses. Levees breached and flooded 769 acres on Quimby Island, 3,430 acres on Empire Tract, and 9,300 acres on New Hope Tract. Merced: Extensive flooding occurred a few days before Christmas throughout central and northern California. Close to record floods occurred on most of the major Central Valley rivers. Statewide disaster declared. San Joaquin: Snowmelt floods were documented with the most damaging, countywide, occurring in December of 1955. The December 1955-January 1956 created nearly $750,000 in damage. In December of 1955, approximately 1,500 acres along Mormon Channel were inundated by floodwaters breaking out of Mormon Slough. Residential and commercial damage in Stockton amounted to $1,500,000. Damage to utilities and public facilities such as roads and streets totaled about $370,000. During the flood, 3,000 to 3,500 residents of Stockton were evacuated from their homes, traffic was severely interrupted and telephone service was disrupted. About $250,000 was spent to aid flood victims. The floodwaters remained in the city for as long as 8 days and reached a depth of 6 feet in some areas. In total, 125 city blocks were flooded; the most severely damaged area was south of Charter Way and east of French Camp Turnpike. Some areas flooded in 1950 were inundated again in 1955. Intensive flood fighting at many critical locations prevented greater inundation in the city. Flood fighting involved extensive sandbagging and the cutting of numerous fills built for street crossings of Mormon Channel. Source: Calaveras County, October 2006, Calaveras County Water District Multi-Hazard Mitigation Plan; USGS, Geological Survey Water-Supply Paper 1866-A, Floods of December 1964 and January 1965 in the Far Western States; San Joaquin County Resource Conservation District, 2002, Lower Mokelumne River Watershed Stewardship Plan; Mariposa County OES, January 2013, Mariposa County Local Hazard Mitigation Plan; City of Merced, 2013, Local Hazard Mitigation Plan; Stanislaus County OES, 2005 and 2010 Update, Multi-Jurisdictional Hazard Mitigation Plan; Calaveras County Water District, August 2012, Local Hazard Mitigation Plan Update; San Joaquin County, September 2009, San Joaquin Operational Area: Local Hazard Mitigation Plan; FEMA, 2009, Flood Insurance Study, San Joaquin County and Incorporated Areas, California; Contra Costa County, May 2011, Hazard Mitigation Plan Update; Flood of December 1964 and January 165 in the Far Western States.	$ 200,000,000	Statewide		74		X	Slow Rise, Engineered Structure Failure	http://pubs.usgs.gov/wsp/1866a/report.pdf
San Joaquin River	1958	February-April		Alpine, Amador, Calaveras, Contra Costa, El Dorado, Fresno, Madera, Mariposa, Merced, Sacramento, San Joaquin, Stanislaus, Tuolumne		Coyote Creek, Fresno River, San Joaquin River Friant Dam-Merced River, Stockton - Bear Creek, Calaveras River, Mormon Slough, overtopped levees from Stockton to Fresno, San Joaquin River from Friant Dam to Merced River; Delta: Canal Ranch, Shin Kee, Terminous Tracts	The Cosumnes River and Deer Creek overflowed, damaging lands and buildings scattered from Sloughhouse to the Mokelumne River. State declared disaster - CD 82-DR-CA and CD 82-DR-CA. Levees breached and flooded 13,499 acres on Canal Ranch Tract, Shin Kee Tract, and Terminous Tract. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, "Appendix D";* Stanislaus County OES, 2005 and 2010 Update, *Multi-Jurisdictional Hazard Mitigation Plan;* San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan;* Calaveras County, October 2006, *Calaveras County Water District Multi-Hazard Mitigation Plan;* Calaveras County Water District, August 2012, *Local Hazard Mitigation Plan Update*; USACE, San Francisco, California, 1959, *Floods of February-April 1958 in Northern California Coastal Stream; Report on Floods of February-April 1958 in Northern California Coastal Stream, USACE 1959.*	$ 24,000,000	Statewide		13		X	Slow Rise	http://books.google.com/books/about/Report_on_Floods_of_February_April_1958.html?id=jELrlgEACAAJ
San Joaquin River	1959	February-April		Fresno, Madera, Merced		Fresno River, San Joaquin River Friant Dam-Merced River, Bear Creek	Debris flows destroyed a bridge west of Mendota in March 1958, and one life was lost as a result. Flooding in Firebaugh was reported. **Source:** DWR, 2009, *California Water Plan Update 2009*; City of Firebaugh, 2013, *2030 Firebaugh General Plan*.				1	Mendota		Debris Flow, Flash	
San Joaquin River	1959	August		Amador			Severe Storm, Unseasonal and Heavy Rainfall. 2 deaths. **Source:** Amador County, August 2006, *Amador County, California, Multi-Hazard Mitigation Plan.*	$ 100,000			2	Amador County		Slow Rise	
San Joaquin River	1962-1963	December-February		Alpine, Amador, Calaveras, Contra Costa, El Dorado, Fresno, Madera, Mariposa, Merced, Sacramento, San Joaquin, Stanislaus, Tuolumne		Regionwide; Mokelumne River	Flood damage to agricultural and public facilities was particularly serious along the streams flowing from west-side tributaries. A major storm caused flooding in the county. Flooding, Flood and Rainstorms, Declared: Alpine, Amador, El Dorado (2/26/63), Federal: 145 (2/25/63). **Source:** San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan*; DWR, 2009, *California Water Plan Update 2009*; FEMA, 2009, *Flood Insurance Study, San Joaquin County and Incorporated Areas, California.*						X	Slow Rise	
San Joaquin River	1962-1963			San Joaquin		San Joaquin Valley	Flood damage to agricultural and public facilities during the 1962-63 flood was particularly serious along the streams flowing from west-side tributaries. **Source:** DWR, 2009, *California Water Plan Update 2009.*	X	San Joaquin Valley					Slow Rise	California Water Plan 2009
San Joaquin River	1964-1965	December-January		Alpine, Amador, Calaveras, Contra Costa, El Dorado, Fresno, Madera, Mariposa, Merced, Sacramento, San Joaquin, Stanislaus, Tuolumne		Regionwide	Major flooding and substantial damages occurred along the Stanislaus River, Cosumnes River, Deer Creek, and Dry Creek. The flood of December 1964 is the largest recorded flood along the Mokelumne River. However, due to the completion of Camanche Dam in early 1964, damage was limited to several thousand dollars. OEP 183-DR-CA, 1964 Late Winter Storms. **Source:** San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan*; Stanislaus County OES, 2005 and 2010 Update, *Multi-Jurisdictional Hazard Mitigation Plan*; San Joaquin County, September 2009, *San Joaquin Operational Area: Local Hazard Mitigation Plan.*							Slow Rise	

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
San Joaquin River	1966-1967	December-March		Alpine, Amador, Calaveras, Contra Costa, El Dorado, Fresno, Madera, Mariposa, Merced, Sacramento, San Joaquin, Stanislaus, Tuolumne		Regionwide	Continuously above normal precipitation from December 1966 through March 1967 resulted in the flooding of 35,000 acres of the San Joaquin River Basin. A record-breaking storm in early December 1966 resulted in very high runoff from the San Joaquin River. The San Joaquin River above Millerton Lake experienced high runoff during early December. A maximum mean daily inflow of 18,450 cfs was recorded at Friant Dam. However, releases of only 52 cfs were made to the San Joaquin River. A vast amount of snowmelt from April to July compounded the flood damage. The San Joaquin River Basin experienced a snowmelt volume of 7,800,000 acre-feet to the valley floor. Significant flooding also occurred along the Cosumnes River, in the Morrison Creek and Beach-Stone Lake areas, and in Madera County streams in the lower portions of the Fresno and Chowchilla rivers. Nearly all of the flooded areas were cropland, improved pasture, or grazing land. USACE estimated about $1,300,000 in flood damages. Flooding was characterized by extremely large flows, including record flows at some locations. Fresno-Kings River: Flooding along the Kings River near Fresno took three lives and drowned 142,000 acres of agricultural land. **Source:** DWR, 2009, *California Water Plan Update 2009*; FEMA, 2009, *Flood Insurance Study, San Joaquin County and Incorporated Areas, California*; USACE, 1999, *Post-Flood Assessment for 1983, 1986, 1995, and 1997 Central Valley, California* .	$1.3 million	Regionwide	1967	3		X	Slow Rise	California Water Plan Update 2009; FEMA, 2009, Flood Insurance Study, San Joaquin County and Incorporated Areas, California; USACE, 1999, History of Flooding and Flood Protection.
San Joaquin River	1967	April-July		Calaveras, Madera, San Joaquin, Stanislaus, Tuolumne		Stanislaus River, San Joaquin River, Fresno River, Mokelumne River	Prolonged high flows in leveed channels led to extensive seepage damage, about 90 percent to agricultural lands, as well as a few commercial, residential, and other areas, including public campgrounds, a sewage disposal plant, a country club, settling ponds, roads and private levees. USACE estimated 44,340 acres flooded with damages of $4.8 million. Two private levees breached on the Fresno River, flooding 1,800 acres of croplands. A major storm caused flooding in the county. **Source:** San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan*; DWR, June 1968, *Bulletin 69-67: California High Water 1966-1967.*	$4.8 million	Regionwide	1967			X	Slow Rise, Engineered Structure Failure	
San Joaquin River	1968-1969	December-February		Alpine, Amador, Calaveras, Contra Costa, El Dorado, Fresno, Madera, Mariposa, Merced, Sacramento, San Joaquin, Stanislaus, Tuolumne	Winter '69 Storms	Regionwide	Severe rain caused floods that struck the northern part of the region, and both rain and snowmelt floods occurred in the southern part of the region. State declared disaster. **Merced:** Significant flooding on Central Valley rivers and reformation of Tulare Lake in the San Joaquin Valley occurred as extended precipitation fell across the state. Heavy snow fell in all mountain ranges and the monthly rainfall record was set in Sacramento. Forty counties were disaster-declared. Calculated Damages: 47 dead, 161 injured, $300 million economic losses. Disaster # DR-253, State disaster declared on 2/8/69, Federal disaster declared on 1/26/69. **Source:** Calaveras County Water District, August 2012, *Local Hazard Mitigation Plan Update*; Madera County, February 2011, *Local Hazard Mitigation Plan* ; City of Merced, 2013, *Local Hazard Mitigation Plan* ; Calaveras County Water District, August 2012, *Local Hazard Mitigation Plan Update;* FEMA, 2009, *Flood Insurance Study, San Joaquin County and Incorporated Areas, California*; Contra Costa County, May 2011, *Hazard Mitigation Plan Update* ; DWR, 2009, *California Water Plan Update 2009.*	$300 million	Statewide		47		X	Slow Rise	Calaveras County Water District, August 2012, Local Hazard Mitigation Plan Update; Madera County, February 2011, Local Hazard Mitigation Plan; City of Merced, 2013, Local Hazard Mitigation Plan; Calaveras County Water District, August 2012, Local Hazard Mitigation Plan Update; FEMA, 2009, Flood Insurance Study, San Joaquin County and Incorporated Areas, California; Contra Costa County, May 2011, Hazard Mitigation Plan Update; DWR, 2009, California Water Plan Update 2009.
San Joaquin River	1969-1970	December-March	Winter	Contra Costa, El Dorado, Sacramento, Stanislaus, San Joaquin	Northern California Flooding	Sacramento River, Mokelumne River, Delta: Mildred Island	The flood season was climaxed by near-record snowmelt floods. The flood brought inundation to approximately 550,000 acres, including portions of several small towns. Declared Federal 2/16/1970. Mildred Island's levees breached, flooding 998 acres. Declared 4/10/70 (Tax Relief). **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, "Appendix D"*; DWR, 2009, *California Water Plan Update 2009*; Stanislaus County OES, 2005 and 2010 Update, *Multi-Jurisdictional Hazard Mitigation Plan* ; San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan*; FEMA, 2009, *Flood Insurance Study, San Joaquin County and Incorporated Areas, California.*						X	Slow Rise, Engineered Structure Failure	
San Joaquin River	1973	January		Calaveras, Contra Costa			Flooding -Severe Storm/Thunderstorm caused flooding on January 16. **Source:** Contra Costa County, May 2011, *Hazard Mitigation Plan Update* ; Calaveras County Water District, August 2012, *Local Hazard Mitigation Plan Update.*							Flash, Slow Rise	
San Joaquin River	1978	January		Contra Costa			**Source:** Contra Costa County, May 2011, *Hazard Mitigation Plan Update.*							Slow Rise	
San Joaquin River	1980	January-February		Alpine, Amador, Calaveras, Contra Costa, El Dorado, Fresno, Madera, Mariposa, Merced, Sacramento, San Joaquin, Stanislaus, Tuolumne	Delta Levee Break	Regionwide—Sacramento-San Joaquin River Delta, Little Mandeville Island, Holland and Webb Tracts	A 350-foot section of a dirt levee gave way, flooding crops and more than 20 houses and 50 barns, forcing the evacuation of 270 people. The salt water threatened the freshwater fish and water supplies. Rain, high tides, strong winds, and flooding (Holland and Webb levee breaches) FEMA 3078-EM-CA Contra Costa, San Joaquin (1/23/80). High releases from New Melones Lake flooded industrial waste ponds in Ripon and inundated 1,500 acres of farmland. Mobile homes were flooded in the San Joaquin River floodplain south of Stockton. In the Delta, levees on Webb Tract, Holland Tract, and Little Mandeville Island breached, inundating about 9,900 acres of farmland. DC Heavy Rains 4-80(80-01 through 80-25) not included. Flood: Federal Disaster Declaration, FEMA 3078-EM (80-15), Delta Levee Breaks, 01/23/80. **Amador:** Lake Amador, located in the Jackson Valley Irrigation District, experienced a large spill event, (i.e., 4-foot overspill). Damaged infrastructure included Jackson Valley Irrigation District Sacrificial Road and structures. There was additional levee and Jackson Creek damage to private parties. **Source:** Amador County, August 2006, *Amador County, California, Multi-Hazard Mitigation Plan* , Sacramento City and County, December 2004, *Sacramento County Multi-Hazard Mitigation Plan*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, "Appendix D"*; Stanislaus County OES, 2005 and 2010 Update, *Multi-Jurisdictional Hazard Mitigation Plan* ; Calaveras County Water District, August 2012, *Local Hazard Mitigation Plan Update*; San Joaquin County, September 2009, *San Joaquin Operational Area: Local Hazard Mitigation Plan*; Contra Costa County, May 2011, *Hazard Mitigation Plan Update.*						X	Engineered Structure Failure, Slow Rise	
San Joaquin River	1980	September		San Joaquin		Delta: Lower, Upper Jones Tracts, SW of Galt; Mokelumne River	**San Joaquin** : Recent flood event. Levees breached in the Delta and flooded 17,354 acres on Lower Jones Tract, Upper Jones Tract, and an area between the Mokelumne River and Dry Creek southwest of Galt. **Source:** San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan*; San Joaquin County, September 2009, *San Joaquin Operational Area: Local Hazard Mitigation Plan.*							Engineered Structure Failure	
San Joaquin River	1981	January		Contra Costa		Contra Costa County	In Brentwood, streets and undercrossings were flooded, and mudslides damaged structures. Marsh, Deer, Dry, and Kellogg creeks overflowed, damaging residences and businesses. **Source:** Contra Costa County, May 2011, *Hazard Mitigation Plan Update.*							Debris Flow, Slow Rise	
San Joaquin River	1981	December		Contra Costa		Delta: Little Frank's Tract	The Little Frank's Tract levee breached, and the 460-acre island was flooded. **Source:** Contra Costa County, May 2011, *Hazard Mitigation Plan Update.*							Engineered Structure Failure	
San Joaquin River	1982	January-February		Calaveras, Contra Costa, Madera, San Joaquin, Sacramento	Winter Storms	Countywide	Local flooding damaged streets in Jackson, Sutter Creek, Columbia, and Sonora.**San Joaquin** : Recent flood event. Declared Federal 1/7/82, declared San Joaquin 1/9/82. **Sacramento:** High water on the Cosumnes River in January breached private levees, flooding farmland and damaging roads and bridges. These areas flooded again when the Cosumnes rose in February. **Source:** Sacramento City and County, December 2004, *Sacramento County Multi-Hazard Mitigation Plan* ; San Joaquin County, September 2009, *San Joaquin Operational Area: Local Hazard Mitigation Plan*; San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, "Appendix D" ;* Madera County, February 2011, *Local Hazard Mitigation Plan;* Calaveras County Water District, August 2012, *Local Hazard Mitigation Plan Update;* Contra Costa County, May 2011, *Hazard Mitigation Plan Update.*							Slow Rise; Engineered Structure Failure	
San Joaquin River	1982	March		Amador, Contra Costa, Calaveras, Mariposa, Tuolumne		Southern Sierra foothills	Local flooding damaged streets in Jackson, Sutter Creek, Columbia, and Sonora. **Source:** Contra Costa County, May 2011, *Hazard Mitigation Plan Update.*							Slow Rise	

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
San Joaquin River	1982	August-September		San Joaquin		McDonald Island, Venice Island	The McDonald Island levee failed, inundating 5,800 acres of farmland. High tides and winds contributed to the failure of Venice Island. **Source:** DWR, 2009, *California Water Plan Update 2009*; San Joaquin County, September 2009, *San Joaquin Operational Area: Local Hazard Mitigation Plan*; DWR, December 1982, *Bulletin 192-82: Delta Levees Investigation.*							Engineered Structure Failure	
San Joaquin River	1982-1983	October-March		Alameda, Alpine, Amador, Calaveras, Contra Costa, El Dorado, Fresno, Madera, Mariposa, Merced, San Joaquin, Stanislaus, Tuolumne	Winter Storms	Regionwide, Delta: Fay Island, Mildred Island, Little Frank's Tract, Shima Tract, Delta: southwest of Galt; Mokelumne River	Multiple strong storms brought high wind, heavy rain, and heavy snowfall across all of California. This led to direct wind damage, higher tides, immediate flooding to coastal and valley locations, mudslides in coastal mountain areas, record snowfall in the Sierra Mountains, and resulting spring snowmelt river flooding. In one 36-hour period, 25 inches of rain fell in the Santa Cruz (coastal) mountains, and 8.5 feet of snow fell in the Lake Tahoe region. Forty-six counties were declared disaster areas. In January, Orestimba, Crow, Salado, and Del Puerto creeks overflowed and flooded small communities. Declared Federal 2/9/83. A levee breached and flooded about 1,200 acres in an area between the Mokelumne River and Dry Creek southwest of Galt. **San Joaquin** : Heavy inflow and strong winds caused by a major storm over California in late November 1982, in combination with high tides, resulted in widespread levee erosion and overtopping in the Delta, as well as flooding of an island and a tract. The levee at Venice Island breached and flooded 3,220 acres of farmland. A succession of intense storms continued to batter the state until March 1983, establishing rainfall records for the Delta and tributary regions. Upstream reservoir releases were larger and sooner than anticipated as a result of the heavy rainfall and a deep snowpack, worsening an already critical levee situation. Concurrently, extremely high tides prevailed in the Delta, along with wind-driven waves. Several levee failures occurred, and eight islands/tracts were under water by late March 1983. More than 16,000 acres were flooded, and the estimated associated damages amounted to more than $20 million. A levee breached and flooded about 1,200 acres in an area between the Mokelumne River and Dry Creek southwest of Galt. Sacramento: Flood: Federal Disaster Declaration, FEMA 677-DR-CA, 02/09/83. **Source:** Sacramento City and County, December 2004, *Sacramento County Multi-Hazard Mitigation Plan*; DWR, December 1982, *Bulletin 192-82: Delta Levees Investigation*; FEMA, 2009, *Flood Insurance Study, San Joaquin County and Incorporated Areas, California*; San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, "Appendix D"*; City of Merced, 2013, *Local Hazard Mitigation Plan;* Stanislaus County OES, 2005 and 2010 Update, *Multi-Jurisdictional Hazard Mitigation Plan* ; South Tahoe Public Utility District, 2013, *Draft South Tahoe Public Utility District Local Hazard Mitigation Plan* ; Contra Costa County, May 2011; *Hazard Mitigation Plan Update.*	X	Statewide	1983			X	Slow Rise, Stormwater, Engineered Structure Failure, Debris Flow	
San Joaquin River	1983	March		San Joaquin, Tuolumne		San Joaquin Valley	San Joaquin: Recent flood event. In March 1983, a levee failed on the San Joaquin River near Vernalis, resulting in the flooding of a large area of agricultural land. **Source:** San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan*; San Joaquin County, 2009, *San Joaquin Operational Area: Local Hazard Mitigation Plan.*							Slow Rise	
San Joaquin River	1983	December		Contra Costa, San Joaquin		Sacramento-San Joaquin Delta, Bradford Island,	High tides and high winds breached the Bradford Island levee and flooded the island; 2,051 acres of farmland were inundated and a few livestock were lost. Levees failed at Mildred Island, Shima Tract, Fay Island, Little Frank's Tract, and Prospect Island. Bradford Island failed in December 1983. **Source:** Contra Costa County, May 2011, *Hazard Mitigation Plan Update*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, "Appendix D."*							Coastal, Engineered Structure Failure	
San Joaquin River	1986	January-March		Alpine, Amador, Calaveras, Contra Costa, El Dorado, Fresno, Madera, Mariposa, Merced, Sacramento, San Joaquin, Stanislaus, Tuolumne	St. Valentine's Day Storm	Regionwide—Sutter Creek. Northern, Central California (including Bay Area), Delta: Little Mandeville Island, southwest of Galt	Flash flooding damaged roads and some structures in scattered places. **San Joaquin:** A levee on the Mokelumne River failed, inundating the town of Thornton and the 9,300-acre New Hope Tract. Rains, winds, flooding and mudslides were prevalent. Three major flood events in the Central Valley caused little damage in the San Joaquin River region, although urban and small-stream flooding was widespread. Disaster # DR-758, State disaster declared on 2/20/86, Federal disaster declared on 2/18/86. Damage estimated statewide at $407.5, 13 people died, and 67 people were injured. **Amador:** Heavy rains caused Sutter Creek to swell and exceed its banks, causing low-level flooding to adjacent structures located on Main Street (Highway 49), Eureka Street, Badger Street, and Spanish Street. Damage to property occurred; amounts are unknown. **Calaveras:** $50,000 in damages from flash flooding on 2/18/86. **Fresno:** In 1986, Friant Dam experienced a small, uncontrolled release. The lock on a drum gate opened, releasing 3,000 cfs. The February 1986 flood caused widespread damage in most of the Dry Creek watershed. Nearly all bridges and culverts were overtopped, with 30 sustaining embankment damages and one crossing washing out; two bridges over Dry Creek were damaged, street cave-ins occurred at a number of locations, and over 125 homes flooded. **Source:** Fresno County OES. 2005, and 2008 Update, *Fresno County Multi-Hazard Mitigation Plan*; Calaveras County, October 2006, *Calaveras County Water District Multi-Hazard Mitigation Plan* ; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, "Appendix D"*; Amador County, August 2006, *Amador County, California, Multi-Hazard Mitigation Plan*; DWR, 2009, *California Water Plan Update 2009*; Madera County, February 2011, *Local Hazard Mitigation Plan*; Calaveras County Water District, August 2012, *Local Hazard Mitigation Plan Update*; *South Tahoe Public Utility District Local Hazard Mitigation Plan* ; San Joaquin County, September 2009, *San Joaquin Operational Area: Local Hazard Mitigation Plan*; Contra Costa County, May 2011, *Hazard Mitigation Plan Update.*	$407.5 million	Statewide	1986	13	Statewide	X	Engineered Structure Failure, Debris Flow, Slow Rise, Flash	Calaveras County HMP http://www.stpud.us/plan_doc_Local_Hazard_Mitigation_Plan.pdf
San Joaquin River	1990	January-February		Contra Costa			**Source:** Contra Costa County, May 2011, *Hazard Mitigation Plan Update.*							Slow Rise	
San Joaquin River	1990	May		Contra Costa			Flash flood. **Source:** Contra Costa County, 2011, *Local Multi-Hazard Mitigation Plan.*	$ 500,000	Property Damage					Flash	http://www.contracosta.ca.gov/DocumentCenter/Home/View/6024
San Joaquin River	1992	January-February		Contra Costa, Madera			**Source:** Madera County, Boyle Engineering Corporation, Kenneth D. Schmidt and Associates, April 2008, *Integrated Regional Water Management Plan, Madera County;* Contra Costa County, May 2011, *Hazard Mitigation Plan Update.*							Slow Rise	
San Joaquin River	1992-1993	December-February		Alpine, Calaveras, Contra Costa, Fresno, Madera	Late Winter Storms	Fresno River	Winter Storm, High Wind, Flash Flood. FEMA 979-DR-CA Alpine, Contra Costa, Fresno, Madera. Statewide: 20 deaths, 10 injuries and damage of public property-$32,215, $600 Million. **Source:** Calaveras County Water District, August 2012, *Local Hazard Mitigation Plan Update*; Contra Costa County, May 2011, *Hazard Mitigation Plan Update.*	$ 600,000,000	Statewide		20	Statewide		Stormwater, Flash	
San Joaquin River	1994	August	2	San Joaquin		Mandeville Island	On August 2, 1994, a levee failure resulted in flooding Little Mandeville Island with about 1,500 acre-feet of river water. The island, located near Frank's Tract in the central Delta, has an area of 376 acres and is unpopulated. Water monitoring showed no change in Delta water quality due to the island flooding. **Source:** DWR, 1995, *Bulletin 132-95: Management of the California State Water Project.*							Engineered Structure Failure	

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Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
San Joaquin River	1995	January-April		Amador, Calaveras, Contra Costa, Fresno, Madera, Mariposa, Merced, Sacramento, San Joaquin, Stanislaus, Tuolumne	1995 Christmas Floods	Regionwide	Beginning in January and continuing through the end of March 1995, a series of strong storms caused flooding that resulted in multiple road closures, destroyed a bridge on Interstate 5, displaced 300 to 400 people, damaged crops, and caused the deaths of seven people. Urban stormwater and small-stream flooding was widespread. Severe winter storms, flooding, landslides, mudflows were prevalent. Three major flood events in the Central Valley caused little damage in the San Joaquin River region, although urban and small-stream flooding was widespread. The Mokelumne River inundated Interstate 5 near Thornton and flooded agricultural lands. Disaster # DR-1044, Federal disaster declared on 1/10/95. Damage estimate at $1.1 billion and 17 people died. **Amador:** In January, DR 1044. Flooding occurred on Jackson Valley Irrigation District Jimenez property. Damages included eroded embankment/levee and damage to distribution pipeline. Total damages estimated at $1,999; relief funding estimated at $1,514. Heavy rains also caused Sutter Creek to swell and exceed its banks, which led to low-level flooding to adjacent structures located on Main Street (Highway 49), Eureka Street, Badger Street, and Spanish Street. Damage to property occurred. In March (DR-1026), A rainstorm wreaked havoc from one end of the county to the other as gusty winds wiped out power lines, felled trees, and damaged property. Downed power lines left approximately 7,000 households without power. An uprooted cedar tree crashed into the roof of Amador High School and ripped up roof sheeting at Ione Elementary School. Highway 88 flooded with 3 feet of water at the Carson Spur west of Kirkwood. A tornado was spotted in western Amador County. There were no damages reported. Flooded basements and sewer backups were reported in Sutter Creek. Trees toppled throughout the county including one that crashed into a Pine Grove Home. Water went over the spillway at Pardee Reservoir for the first time since 1986. Damage estimates to roads and public buildings came in at approximately $240,140. **Fresno:** Most flooding occurred in the western portion of the County. A local, State, and Federal disaster was declared for the County. Twenty homes were damaged; 150 acres submerged. Losses to public facilities were estimated at $5 million. Agricultural damage and crop losses exceeded $8.6 million. There was an estimated $9 million in economic loss and other damage to businesses. Additionally, Huntington Lake Road and Highway 168 were closed due to snowfall; Highway 180 was closed due to a rock slide; Interstate 5 bridge over Arroyo Pasajero drainage was washed out (causing the seven deaths); 15 to 20 other County roads were closed at least temporarily; 20 to 40 water systems were unable to serve potable water for various periods of time; and an estimated 300 to 400 people were displaced by flooding (the American Red Cross shelter was open from March 11-18, providing shelter for 57 to 70 people). **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, "Appendix D"*; Amador County, August 2006, *Amador County, California, Multi-Hazard Mitigation Plan*; Fresno County OES, January 2009, *Fresno County Multi-Hazard Mitigation Plan*; Calaveras County, October 2006, *Calaveras County Water District Multi-Hazard Mitigation Plan*, Madera County et al., April 2008, *Integrated Regional Water Management Plan, Madera County*; Madera County, February 2011, *Local Hazard Mitigation Plan*; Stanislaus County OES, 2005 and 2010 Update, *Multi-Jurisdictional Hazard Mitigation Plan*; Calaveras County Water District, August 2012, *Local Hazard Mitigation Plan Update*; Contra Costa County, May 2011, *Hazard Mitigation Plan Update.*	$ 1,100,000,000	Statewide		17	Statewide	X	Slow Rise, Debris Flow, Flash, Stormwater	
San Joaquin River	1996-1997	December-January		Alpine, Amador, Calaveras, Contra Costa, El Dorado, Fresno, Madera, Mariposa, Merced, Sacramento, San Joaquin, Stanislaus, Tuolumne	January 1997 Floods	Regionwide—Sutter Creek in cities of Ione, Sutter Creek Jackson Creek in Jackson, High elevations, valley region, Kings River, Fresno River, Bear Creek, Central Valley, San Joaquin Valley, Delta: Stewart Tract, Pescadero District, Mossdale; Carson River; Stanislaus River	Levee failures flooded Olivehurst, Arboga, Wilton, Manteca, and Modesto. Reportedly, this relatively short-duration, high intensity storm showed the 24-hour rainfall across northern California with several regions exceeding 8 inches for the period. Several more comparable days, with the addition of significant snowmelt in the Sierras led to widespread flooding in the Sacramento and San Joaquin Valleys. Several levee breaches were reported across the Sacramento and San Joaquin Valleys. Fifteen levee breaches occurred on the San Joaquin River between Fresno and the Chowchilla Bypass, inundating agricultural lands, including many vineyards north of the river. **Alpine:** In January 1997, storms produced record level flood flows on both the West Fork Carson River at Woodfords and the East Fork Carson River near Markleeville. The flow on the west fork at Woodfords peaked at 8100 cfs on January 2, a rate greater than ever recorded before. Similarly, the flow on the east fork at Markleeville was measured at 21,500 cfs, again a record level. Area creeks also exceeded historic flood levels. Flood related damage was sustained throughout the County. Most notable was damage to the roads of the County. Virtually no road was left without some degree of damage. Substantial damage occurred on State Routes 4, 88, and 89, including whole sections of roadway being washed away in the East Fork Carson River canyon. In total, damage caused by the January 1997 reached nearly $8.4 million. **Amador:** Amador County was seriously impacted by heavy rain, heavy snow, utility disruption and related storm damage that began on December 20, 1996. The County declared a local emergency on December 23, 1996. The storm caused flooding in the lower elevations and major damage due to 4-5 feet of heavy, wet snow in the higher elevations. Emergency fire and medical services could not be provided to the affected areas due to the magnitude of the storm, along with the hazardous conditions of downed power lines, power poles and trees. Power was out for over a week to many homes in the affected area, and only medical evacuations were possible for much of that time. Emergency snow removal equipment and operators were brought in by both Amador County and PG&E in an attempt to restore emergency access for fire, law, and medical services, as well as for PG&E to restore electrical service. In the City of Ione, Sutter Creek overflowed its banks causing evacuations in flooded areas. In Jackson, Jackson Creek flooded causing water to go over the Pit Street and Broadway Street bridges, propane tanks broke loose and floated down the creek, evacuations of homes and businesses along the creek were ordered. The parking garage in downtown Jackson was under water. In the City of Sutter Creek, the heavy rains caused Sutter Creek to swell and exceed its banks causing low level flooding to adjacent structures located on Main Street (Highway 49), Eureka Street, Badger Street, and Spanish Street. Mandatory water conservation orders were issued upcountry due to turbidity issues at Tiger Creek Reservoir. In River Pines, the sewer and water treatment plant flooded. Evacuation centers were established throughout the county for county residents that were evacuated from their homes, in addition to evacuation centers for residents evacuated from neighboring Sacramento and El Dorado counties. Damage estimates for private property exceeded $2 million dollars and damages to roadways and utilities exceeded $5.18 million dollars. **Calaveras:** Three hundred square miles of land flooded and caused mudslides, as well as damaging or destroying 23,000 homes and 2,000 businesses. Don Pedro Dam overtopped. This was the largest flood event on record. Federal disaster declared. **Mariposa:** In January 1997, the Merced River ran over its banks and inundated most of Yosemite Valley and areas downstream to the Merced County line. In Mariposa, the 8 inches of rain was combined with heavy snowfall. Falling on ground already soaked, the precipitation choked swollen streams and flowed into dams that threatened to overflow. All roads in Yosemite Valley were under several feet of water. In Hornitos, water levels exceed 8 feet above the roadways. All bridges on the Merced River became swamped with water and debris. Twenty-one hundred visitors and local residences became stranded in the Merced Canyon and Yosemite National Park. The cost for damage due to this flood was in access of $194 million dollars. **Merced:** The Flood of January '97 caused flooding in the San Joaquin Valley, as well as the adjacent foothills. Numerous houses adjacent to the San Joaquin River flooded, while agricultural lands near the Merced River were inundated. Statewide Damage estimates $1.8 billion and 8 fatalities. **Source:** Calaveras County, October 2006, *Calaveras County Water District Multi-Hazard Mitigation Plan* ; Calaveras County Water District, August 2012, *Local Hazard Mitigation Plan Update* ; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area;* Amador County, August 2006, *Amador County Multi-hazard Mitigation Plan; DWR, 2009, California Water Plan Update 2009*; Madera County, February 2011, *Local Hazard Mitigation Plan* ; Mariposa County OES, January 2013, *Mariposa County Local Hazard Mitigation Plan*; City of Merced, 2013, *Local Hazard Mitigation Plan* ; Stanislaus County OES; 2005 and 2010 update, *Multi-Jurisdictional Hazard Mitigation Plan* ; Alpine County, September 2013, *Alpine County Natural Hazard Mitigation Plan* ; South Tahoe Public Utility District, 2013, *Draft South Tahoe Public Utility District Local Hazard Mitigation Plan* ; San Joaquin County, September 2009, *San Joaquin Operational Area: Local Hazard Mitigation Plan* ; Sacramento City and County, December 2004, *Sacramento County Multi-Hazard Mitigation Plan;* El Dorado County, November 2004, *Multi-Jurisdiction Hazard Mitigation Plan* .	$1.8 billion	Statewide	1997	8	Statewide	X	Slow Rise, Engineered Structure Failure	
San Joaquin River	1997-1998	December-April		Madera, Merced, Sacramento, San Joaquin, Stanislaus	El Niño Floods	Mokelumne River; San Joaquin River; JVID Creek; Stanislaus River; Jackson Valley Irrigation District Creek, Sutter Creek, Cities of Amador, Ione, Pittsburg, Walnut Creek	**Amador:** Major flooding occurred below the dam on Jackson Valley Irrigation District property and on the creek toward the western end of District. Heavy rains also caused Sutter Creek to exceed its banks, causing low-level flooding to adjacent structures located on Main Street (Highway 49), Eureka Street, Badger Street, and Spanish Street. Damages were also reported throughout the county, in Amador city, the City of Ione, and to the Amador County Unified School District. **Merced:** In January, rainfall of up to 3 inches in the Sierra foothills led to streams in Merced County reaching bankfull. Bear Creek overflowed into the City of Merced where it flooded 180 homes and up to 5,000 acres of farmland to the southwest. This was the first flood of this creek since 1955. In February, there was severe flooding that cost Merced County $1.4 million in agriculture damage and $2 million in damage. In March, Chief Mitten identified that the March 1998 flood lasted for 3 days and caused extensive evacuations and property damage. In certain locations of the city, the water was 3 to 4 feet deep. One gauge in the northern part of the city of Merced had 6.80 inches in the 48-hour period from March 23 to March 25. The Merced Airport recorded 3.25 inches of rain alone on March 24. Bear Creek, at the west edge of town just west of Massasso Street, jumped its banks due to variable bank height and gopher holes. Farmlands, a few houses north of State Highway 140, and many more houses south and along Thornton Road, received flood damage, as did a city storm pump facility. This event was the second 100-year event to occur in Merced County in 2 months. The city of Merced received heavy rainfall that totaled from 3.5 inches to 5.9 inches. Bear Creek reached a crest of 19.3 feet on the morning of March 25, resulting in the 1,000 people being evacuated. A total of 65 homes and 19 apartments were flooded. The total damage to Merced County was $9.6 million, with agriculture suffering a $1.5 million loss. **San Joaquin:** Recent flood event. Portions of the towns of Ripon, Riverbank, and Oakdale were flooded. Federal Disaster Declaration, FEMA 1203-DR-CA El Nino, 02/06/1998. Statewide damage estimates $550 million with 17 fatalities. Heavy rains caused low-level flooding, although there was a flash flood when a levee breached along Arroyo Mocha. **Sources:** Contra Costa County, 2011, *Local Hazard Mitigation Plan*; DWR, 2009, *California Water Plan Update 2009;* Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area;* San Joaquin County Resource Conservation District, 2002, *Lower Mokelumne River Watershed Stewardship Plan;* City of Merced, 2013, *Local Hazard Mitigation Plan;* Madera County, 2008, *Madera County Integrated Regional Water Management Plan;* Madera County, February 2011, *Local Hazard Mitigation Plan;* Stanislaus County Office of OES, 2005 and 2010 Update, *Multi-Jurisdictional Hazard Mitigation Plan;* Calaveras County, October 2006, *Calaveras County Water District Multi-Hazard Mitigation Plan;* Calaveras County Water District, August 2012, *Local Hazard Mitigation Plan Update;* Amador County, August 2006, *Amador County Multi-hazard Mitigation Plan;* San Joaquin County, September 2009, *San Joaquin Operational Area: Local Hazard Mitigation Plan* ; FEMA, 2009, *Flood Insurance Study, San Joaquin County and Incorporated Areas, California.*	$550 million	Statewide		17	Statewide	X	Slow Rise	
San Joaquin River	1999	February	9	Amador, Calaveras	February 9, 1999 Flash Flood	Cosgrove Creek near Valley Springs, Jackson Creek, Sutter Creek	A flash flood near Valley Springs in Calaveras County occurred when Cosgrove Creek left its banks and flooded four homes and a low-lying golf course. The flood threatened sewage treatment ponds, temporarily closed Highway 26, and caused $20,000 in property damage. Flash flood. **Source:** Amador County, August 2006, *Amador County, California, Multi-Hazard Mitigation Plan* ; Calaveras County, October 2006, *Calaveras County Water District Multi-Hazard Mitigation Plan.*	$ 20,000	Valley Springs					Flash	Calaveras County HMP
San Joaquin River	2000	January		Amador, Calavares, Contra Costa			Flash flooding January 23-24 and February 11-14. **Source:** Contra Costa County, May 2011, *Hazard Mitigation Plan Update;* Calaveras County Water District, August 2012, *Local Hazard Mitigation Plan Update.*	$ 100,000	property (SHELDUS)					Flash	Contra Costa County HMP
San Joaquin River	2001	April	17-18	Merced		Black Rascal Creek	There was some minor flooding near Merced around April 17 and 18, 2000. Flooding occurred approximately 3 miles north of Merced at Black Rascal. Merced received around 1.42 inches of rain. **Source:** City of Merced, 2013, *Local Hazard Mitigation Plan* .							Slow Rise	

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
San Joaquin River	2001	November	17	Merced			There was some minor flooding in Merced on November 12, 2001. **Source:** City of Merced, 2013, *Local Hazard Mitigation Plan*.							Slow Rise	
San Joaquin River	2002	December	13-17	Merced			There was a tornado and heavy rain from December 13 to December 17, 2002, that caused damage to an apartment and flooding and spawned a tornadic activity. Merced received 1.78 inches of rain. This rain caused storm drains to be clogged on 16th Street, west of "V" and 18th Street. **Source:** City of Merced, 2013, *Local Hazard Mitigation Plan*.							Stormwater, Flash	
San Joaquin River	2004	June	3	San Joaquin		Delta: Lower Jones Tract	The Lower Jones Tract levee failed, inundating the 5,894-acre island. Levee breaks flooded agricultural areas in western portions of San Joaquin County. Salt water from San Francisco Bay flowed into San Joaquin-Sacramento River Delta. An estimated $10 million worth of crops were flooded, and 250 to 300 migrant farmworkers were displaced. By July 1, the levee break was repaired, but the flood remained. A leak was noticed in Upper Jones Tract at 8:15 am and by 8:45 am the levee broke wide open, and water began to surge into and fill Upper Jones Tract like a reservoir. The levee break was 200 feet wide and by 12:30 the levee break was 300 feet wide. The evacuation of approximately 300 farmworkers on the island began as the water was rushing to fill farmland. The breach ruined homes, killed animals, and flooded 12,000 acres of crops. The change in water level could mean that farmlands would get less water and salt water from the San Francisco Bay to contaminate the drinking water for many California cities. State Declared Disaster for flooding. **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; San Joaquin County, September 2009, *San Joaquin Operational Area: Local Hazard Mitigation Plan*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, "Appendix D."*	$121-125 million	Statewide				X	Engineered Structure Failure	
San Joaquin River	2005	February	15-16	Merced			There was heavy rain in Merced on February 15 and February 16, 2005, totaling approximately 1.24 inches, with reports of flooding throughout the San Joaquin Valley. **Source:** City of Merced, 2013, *Local Hazard Mitigation Plan*.							Slow Rise	Source: City of Merced HMP 2013
San Joaquin River	2005	March		Mariposa, Merced			**Merced:** Quick downpour in Merced: 0.69 inch fell in 1 hour during the afternoon. Numerous buildings and homes flooded in downtown Merced, and an awning collapsed due to the weight of water on it. Gusty winds up to 40 mph added to the problems as they caused a pumphouse roof and carport to suffer damage resulting in power outages when they fell on nearby lines. In Mariposa, 3.22 inches of rain fell in 24 hours, resulting in flooding damage to structures. Several creeks also overflowed in Merced, Madera, and Mariposa counties, and some bridges and roads were washed away. Disaster declaration: GP 2005-03. **Source:** Mariposa County OES, January 2013, *Mariposa County Local Hazard Mitigation Plan*; City of Merced, 2013, *Local Hazard Mitigation Plan*.	$ 2,123,164	Mariposa					Slow Rise	Source: Mariposa County HMP 2013; City of Merced HMP 2013
San Joaquin River	2005-2006	December-January		Alameda, Amador, Contra Costa, El Dorado, Fresno, Sacramento, San Joaquin	New Year's Eve Flood of 2006	Regionwide	**Amador:** DR1628- Amador County sustained extensive damages to the public road system due to severe storms, flooding, mudslides and landslides from December 17, 2005, to January 3, 2006. Damages were estimated at approximately $1.5 million dollars. There were some minor damages to private property reported. In addition, the Amador Regional Sanitation Authority sustained some damages to its pipeline. The most severe problems associated with this storm were the high wind and downed trees and power lines. **Source:** Amador County, August 2006, *Amador County, California, Multi-Hazard Mitigation Plan*; Contra Costa County, May 2011, *Hazard Mitigation Plan Update*; Fresno County OES, January 2009, *Fresno County Multi-Hazard Mitigation Plan*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area;* DWR, 2009, *California Water Plan Update 2009*; USGS, 2006 - last modified January 2013, *Open File Report 2006-1182: Storms and Flooding in California in December 2005 and January 2006–a Preliminary Assessment*.	$ 1,500,000	Amador County				X	Slow Rise, Debris Flow	Source: Amador County HMP 2006; Contra Costa HMP 2011; Fresno County HMP 2009; Taming Natural Disasters Appendix D; California Water Plan 2009; USGS Storms and Flooding in California in December 2005 and January 2006–a Preliminary Assessment.
San Joaquin River	2006	March-May		Alameda, Alpine, Amador, Calaveras, Contra Costa, El Dorado, Fresno, Madera, Merced, Sacramento, San Joaquin, Stanislaus, Tuolumne	2006 Spring Storms	Regionwide—Cities of Plymouth, Ione, Jackson, Sacramento River, San Joaquin River, Kings River	In June 2006, FEMA designated 17 counties in northern California eligible for public assistance for severe storms and flooding. Local flooding was adjacent to some streams. Floods followed a month of above-average rainfall in California. Severe rainstorms, flooding, landslides, and mudslides were prevalent. Two levees near Merced burst, flooding a trailer park, housing development, and farmland. Two hundred people were evacuated from trailer parks. A hundred homes were evacuated after 4 inches of rain fell in 24 hours, weakening an earthen dam, threatening a flood, near Valley Springs in the Sierra foothills and displacing 600 people. State Declared Disaster for Severe rainstorms and flooding. **Amador:** The spring of 2006 had mudslides throughout the county. On April 8, 2006, the Amador Water Agency sustained major damages to an earthen canal that transports water from Lake Tabeaud to the Tanner Water Treatment Facility in Sutter Creek. A 200-foot section of the canal slid down the hillside, cutting off the water supply to the Tanner facility. This outage affected approximately 10,000 customers of raw and treated water in Jackson, Sutter Creek, Amador City, Drytown, and Ione. Estimates for emergency work and repairs exceed $1.5 million dollars. The county road system sustained major damages and estimates for repairs exceed $1 million dollars. The Amador Region Sanitation Authority, the cities of Plymouth, Ione, and Jackson sustained minor damages. There was little damage to private property reported. **Calaveras:** From April 2 to 6, 2006, Calaveras received 6.8 inches of rain, 168 percent the average amount for the month of April (National Weather Service 2006). Approximately 35 acres of farmland, several homes, and a mobile home park were flooded, and many people evacuated. The flood also overflowed sewage treatment plants. In April of 2006, flooding caused significant damage and threat of failure to a small dam at Peachtree Pond near Valley Springs. **Mariposa:** In April 2006, floods caused significant damage to several small communities. This incident had a cost of damage estimate of $4.1 million. Severe Storms, Flooding, Landslides, Mudslides. Disaster # DR-1646, State disaster declared on 06/05/06. **Merced:** Four consecutive days of rain from April 2 through the 5 resulted in the Black Rascal Creek swelling and flooding 300 homes in North Merced, prompting evacuations. Many schools had to be shut down. Crews had to use concrete blocks and sandbags to close the break. Water levels raised at Bear Creek, Black Rascal Creek, and El Capitan Canal. Source: "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; Calaveras County, October 2006, *Calaveras County Water District Multi-Hazard Mitigation Plan;* Madera County, February 2011, *Local Hazard Mitigation Plan*; Mariposa County OES, January 2013, *Mariposa County Local Hazard Mitigation Plan*; City of Merced, 2013, *Local Hazard Mitigation Plan*; Calaveras County Water District, August 2012, *Local Hazard Mitigation Plan Update*; Amador County, August 2006, *Amador County, California, Multi-Hazard Mitigation Plan*; DWR, 2009, *California Water Plan Update 2009*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area.*	4100000; 2,500,000	Mariposa; Amador County				X	Flash, Debris Flow, Engineered Structure Failure	Source: Chronological List Of Governor-Proclaimed Disasters For Property Tax Purposes; Calaveras County HMP 2006; Madera County HMP 2011; Mariposa County HMP 2013; City of Merced HMP 2013; CCWD HMP 2012; Amador County HMP 2006; California Water Plan 2009; Taming Natural Disasters Appendix D.
San Joaquin River	2006	July		Fresno		Huntington Lake	Flash floods from thunderstorms in drainages above the north end of Huntington Lake resulted in a variety of damage, including an estimated $250,000 in damage to private boats and an estimated $200,000 in damage to local infrastructure (roads, boat docks, and such). Other impacts included loss of power for 3 weeks in some areas, closure of a primary summer road for 1 week, and closure of Huntington Lake to recreational use for 1 week. Cleanup costs exceeded $150,000, and search and rescue costs were estimated at $25,000. **Source:** Fresno County OES, January 2009, *Fresno County Multi-Hazard Mitigation Plan*.	$ 625,000	$250,000 - private boats, $200,000 - local infrastructure (roads, boat docks, etc.), $150,000 - cleanup costs, $25,000 - search and rescue costs					Flash	Source: Fresno County MHMP 2009
San Joaquin River	2007	March		Merced			The March 2007 flood lasted 12 hours, but it forced the evacuation of 3,400 citizens and damaged numerous structures. Another factor of the 2007 flood was that it caused a sanitary sewer treatment plant in a neighboring town to overflow, that led to widespread water contamination issues. Many believe the 2007 flood and related damage hinged on Black Rascal Creek and its complete lack of flood control facilities. The damaged school and mobile home park area is also where Black Rascal Creek used to flow prior to being connected to Bear Creek, so it is a low-lying area. **Source:** City of Merced, 2013, *Local Hazard Mitigation Plan*.							Flash	Source: city of Merced HMP 2013
San Joaquin River	2007	October		Madera			**Source:** Madera County, February 2011, *Local Hazard Mitigation Plan*.							Slow Rise	Source: Madera County Local Hazard Mitigation Plan 2011

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Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
San Joaquin River	2008	January	5-14	El Dorado, Sacramento	2008 Winter Storms		Extreme winds and heavy rains flooded the region. **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area.*							Slow Rise	Source: Chronological List Of Governor-Proclaimed Disasters For Property Tax Purposes; Taming Natural Disasters Appendix D.
San Joaquin River	2010-2011	December-January		Madera, Mariposa, Merced	Winter Storms		**Merced:** On December 28 and December 29, 2010, the City of Merced received about 0.75 inch of rain. There was a flood advisory for the central and southern San Joaquin Valley. According to the Merced Sun-Star, "Bear Creek through Merced was high Wednesday, with parts of the bike path disappearing into swift brown water." **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; Madera County, February 2011, *Local Hazard Mitigation Plan.*						X	Slow Rise	Source: Chronological List of Governor Proclaimed Disasters for Property Tax purposes; City of Merced HMP 2013
San Joaquin River	2011	March		Amador, Madera, Mariposa, Stanislaus, Tuolumne, ContraCosta			**Merced:** There were more storms around the middle of March of 2011. Bear Creek flooded again. Inmates sandbagged Bear Creek around Highway 59. The inmates put down hundreds of 35-pound bags between Bear Creek and the road. According to the Merced Sun Star (local newspaper), Merced Airport received 1.78 inches of rain between 10 a.m. Saturday and 10 a.m. Monday (March 19- March 21). Rain storms. **Source:** City of Merced, 2013, *Local Hazard Mitigation Plan* ; "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013.							Slow Rise	Source: city of Merced HMP 2013; Chronological_Listof_GovernerProclaimed_Disasters_for_Property_Tax purposes
South Coast	1760			San Diego		San Diego River	Flooding in San Diego River. **Source:** San Diego County (SDCo), May 2013, Email from Sara Agahi/San Diego County Flood Control District to Terri Wegener/DWR, additional events to include in History of Events table.							Slow Rise	Data from San Diego County Flood Control (SFMP Comments)
South Coast	1770-1771			Los Angeles, Orange		Los Angeles River, San Gabriel River, Santa Ana River	First recorded flood in Los Angeles County. Fields planted by the Portola expedition in 1769 washed away. San Gabriel River overflowed its banks. Great flooding on the Los Angeles River were recorded by Father Juan Crespi. The river overflowed its channel. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area*; City of Glendale, 2006, *Hazard Mitigation Plan* ; Metropolitan Water District of Southern California (MWDSC), 1931, *Rainfall and Stream Run-off in Southern California since 1769*.							Flash	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf and http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf
South Coast	1771-1772			Los Angeles, Orange, Riverside, San Bernardino, San Diego		Los Angeles, Santa Ana, San Diego Rivers	Mission sources note floods during this time. Flooding was recorded by Spanish Mission Fathers, when San Gabriel Mission crops destroyed. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area*; City of Glendale, 2006, *Hazard Mitigation Plan* .							Flash	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf and http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf
South Coast	1775-1776			Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura		San Diego River, Santa Ana River, Los Angeles	The Santa Ana River rose outside its banks and was running rapidly as reported in Colonel Juan Batista de Anza's diary. Flooding also in San Diego River. Due to heavy flooding, San Gabriel Mission was moved about 6 miles back from the river. **Source:** City of Glendale, 2006, *Hazard Mitigation Plan* ; San Diego County (SDCo), May 2013, Email from Sara Agahi/San Diego County Flood Control District to Terri Wegener/DWR, additional events to include in History of Events table.; MWDSC, 1931, *Rainfall and Stream Run-off in Southern California since 1769*.							Flash	http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf http://www.cepsym.org/history/RainfallStreamRunoffSoCA_since1769.pdf
South Coast	1779-1780			Los Angeles, Orange, Riverside, San Bernardino, San Diego		Los Angeles, Santa Ana, San Diego Rivers	Flooding was noted in Mission sources by Spanish Mission of San Diego fathers, Frs. Lasuen and Figuer. Flows filled the riverbeds and flooded the lowlands where wheat and barley had been planted. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area*; City of Glendale, 2006, *Hazard Mitigation Plan* ; MWDSC, 1931, R*ainfall and Stream Run-off in Southern California since 1769*.							Flash	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf and http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf
South Coast	1810-1811			Los Angeles, Orange, Riverside, San Bernardino		Santa Ana River	Flooding was reported, although records are sparse. Floods washed away adobes. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area*; MWDSC, 1931, *Rainfall and Stream Run-off in Southern California since 1769*; City of Glendale, 2006, *Hazard Mitigation Plan* ; Municipal Water District of Orange County (MWDOC), 2012, *Hazard Mitigation Plan* .							Flash	http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf and http://www.cepsym.org/history/RainfallStreamRunoffSoCA_since1769.pdf
South Coast	1812	December	21	Ventura		Ventura Coast	A tsunami damaged ships and inundated lowlands along the Ventura County coastline. **Source:** USGS , 1993, "Historic Earthquakes West of Ventura, California in the Santa Barbara Channel 1812 December 21," *USGS Professional Paper 1527: Seismicity of the United States, 1568-1989* (Revised).						X	Tsunami	http://earthquake.usgs.gov/earthquakes/states/events/1812_12_21.php
South Coast	1814-1815			Los Angeles, Orange		Los Angeles River, Santa Ana River	Flooding was recorded by Father Crespi (prominent mission father) when fields of the Los Angeles Mission completely washed away. Flooding also washed away the original Plaza in Los Angeles. Los Angeles River changed course at Alameda and 4th Street to cut west and join Ballona Creek. From there, it emptied into Santa Monica Bay. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area*; City of Glendale, 2006, *Hazard Mitigation Plan* ; MWDSC, 1931, *Rainfall and Stream Run-off in Southern California since 1769*, MWDOC, February 2012, *Hazard Mitigation Plan.*							Flash	http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf; http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf; and http://www.cepsym.org/history/RainfallStreamRunoffSoCA_since1769.pdf
South Coast	1816-1817			Los Angeles		Los Angeles River	Flood reported. **Source:** MWDSC, 1931, *Rainfall and Stream Run-off in Southern California since 1769.*							Flash	http://www.cepsym.org/history/RainfallStreamRunoffSoCA_since1769.pdf
South Coast	1820-1821			Los Angeles, Orange, Riverside, San Bernardino		Los Angeles, Santa Ana, San Diego Rivers	Mission sources note floods during this time. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area*; MWDSC, 1931, *Rainfall and Stream Run-off in Southern California since 1769*.							Flash	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf; and http://www.cepsym.org/history/RainfallStreamRunoffSoCA_since1769.pdf
South Coast	1821	September-October		San Diego		San Diego River	A remarkable flood occurred in San Diego during September and October, 1821, causing extensive damage (J. C. Hayes 1874). The water rose in a single night, filling the San Diego River in Mission Valley from bank to bank, washing away most of the ranches, and changing the course of the river. Amazingly, no rain fell along the coast at the time of the flood, so its source had to be in the mountains to the east. **Source:** Gerald G. Kuhn and Francis P. Shepard, 1984, *Sea Cliffs, Beaches, and Coastal Valleys of San Diego County: Some Amazing Histories and Some Horrifying Implications*; *San Diego Daily Union*, June 28, 1874, article by J.C. Hayes about the Great Flood of 1821 under heading "Changes in San Diego River."							Flash	http://publishing.cdlib.org/ucpressebooks/view?docId=ft0h4nb01z&chunk.id=d0e2144&toc.id=d0e2144&brand=ucpress
South Coast	1822			Los Angeles, Orange, Riverside, San Bernardino, San Diego		Los Angeles, Santa Ana, San Diego Rivers	Mission sources note floods during this time. A great flood on the Los Angeles River "covered all the lowlands and reached a greater height than was ever known before." **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area*; City of Glendale, 2006, *Hazard Mitigation Plan.*							Flash	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf and http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf
South Coast	1824-1825			Los Angeles, Orange, Riverside, San Bernardino, San Diego		Los Angeles, Santa Ana, San Diego Rivers	Mission sources note floods during this time. The greatest of the earlier recorded floods. The Los Angeles River changed its course from the Ballona wetlands to San Pedro. Before this storm, the river would spread over the entire area, filling depressions at the surface and forming lakes, ponds, and marshes, rarely discharging its waters into the sea. The 1825 floods cut a riverway to the ocean, draining the marshlands and causing the forests to disappear. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area*; City of Glendale, 2006, *Hazard Mitigation Plan;* MWDSC, 1931, *Rainfall and Stream Run-off in Southern California since 1769*.							Flash	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf and http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf
South Coast	1826			San Diego		San Diego River	San Diego: Flooding of the San Diego River. **Source:** San Diego County (SDCo), May 2013, Email from Sara Agahi/San Diego County Flood Control District to Terri Wegener/DWR, additional events to include in History of Events table.							Flash	Data from San Diego County Flood Control (SFMP Comments)

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Coast	1832			Los Angeles			Heavy flooding caused the drainage near Compton to change so that many lakes and ponds that "had been permanent, became dry a few years thereafter." Drainage of these ponds and lakes completed the destruction of the forests that used to cover a large part of southern Los Angeles County. **Source:** City of Glendale, 2006, *Hazard Mitigation Plan*; MWDSC, 1931, *Rainfall and Stream Run-off in Southern California since 1769*.							Flash	http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf
South Coast	1833-1834	Winter		Los Angeles			William Heath Davis described the winter as "a very rainy one." **Source:** MWDSC, 1931, *Rainfall and Stream Run-off in Southern California since 1769*; William Heath Davis, 1929, *Seventy-Five Years in California*..							Flash	http://www.cepsym.org/history/RainfallStreamRunoffSoCA_since1769.pdf
South Coast	1839-1840			Los Angeles, Orange, Riverside, San Bernardino, San Diego		Los Angeles, Santa Ana, San Diego Rivers	Mission sources note floods during this time. William Heath Davis states, "The winter of 1839-40 was a severe one in California, an immense quantity of rain falling. It poured down for forty days and nights with but little cessation... During the prolonged storms of this year the whole county was flooded." **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area*; MWDSC, 1931, *Rainfall and Stream Run-off in Southern California since 1769*.							Flash	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf http://www.cepsym.org/history/RainfallStreamRunoffSoCA_since1769.pdf
South Coast	1841			Los Angeles, Orange, Riverside, San Bernardino, San Diego		Los Angeles, Santa Ana, San Diego Rivers	Mission sources note floods during this time. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area*.							Flash	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf
South Coast	1842			Los Angeles, Orange, Riverside, San Bernardino, San Diego		Los Angeles, Santa Ana, San Diego Rivers	Mission sources note floods during this time. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area*.							Flash	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf
South Coast	1849-1850			Los Angeles			Floods were reported. **Source:** City of Glendale, 2006, *Hazard Mitigation Plan*; MWDSC, 1931, *Rainfall and Stream Run-off in Southern California since 1769*.							Flash	http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf
South Coast	1851-1852	February		Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura		Southern California	Moderate floods occurred. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area*; City of Glendale, 2006, *Hazard Mitigation Plan*; MWDSC, 1931, *Rainfall and Stream Run-off in Southern California since 1769*.							Flash	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf; http://www.cepsym.org/history/RainfallStreamRunoffSoCA_since1769.pdf; and http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf
South Coast	1852-1853	February		Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura		Southern California	Floods were reported. **Source:** MWDSC, 1931, *Rainfall and Stream Run-off in Southern California since 1769*.							Flash	http://www.cepsym.org/history/RainfallStreamRunoffSoCA_since1769.pdf
South Coast	1855	July	10	Orange		Dana Point, San Juan Capistrano	Two swells were observed following an earthquake that was damaging to Los Angeles; the epicenter was on land 60 miles from the wave site. Possible submarine landslides. **Source.** NOAA, December 1993, *Tsunamis Affecting the West Coast of the United States 1806-1992*.							Tsunami	ftp://ftp.ngdc.noaa.gov/hazards/publications/Kgrd-29.pdf
South Coast	1858	October	2	Los Angeles, San Diego	San Diego Hurricane of 2 October 1858	Coastal areas	**Los Angeles:** The only tropical cyclone known to produce estimated hurricane-force winds on the California coast affected San Diego on 2 October 1858. Wind damage was largely confined to coastal areas but heavy rains were felt inland and produced some flooding. The path of the storm exposed the entire coastline from San Diego north to the Long Beach area to estimated tropical storm–force winds. At Los Angeles itself, heavy rain was a problem. The Star noted (16 October 1858), "On Saturday morning last, about two o'clock, rain commenced falling, and shortly after became a perfect pour down, continuing all day and night, not clearing off till after daylight on Sunday morning. Such a heavy rain has not been experienced here since last Christmas. The earth soon became thoroughly saturated, and the water poured down from the hill sides, flooding the streets." **San Diego:** Flooding from San Diego's only hurricane. **Source:** Michael Chenoweth and Christopher Landsea, June 2004, "The San Diego Hurricane of 2 October 1858," *American Meteorological Society* (November 2004); San Diego County (SDCo), May 2013, Email from Sara Agahi/San Diego County Flood Control District to Terri Wegener/DWR, additional events to include in History of Events table.							Flash	http://www.aoml.noaa.gov/hrd/Landsea/chenowethlandsea.pdf
South Coast	1859-1860			Los Angeles			Floods were reported. **Source:** MWDSC, 1931, *Rainfall and Stream Run-off in Southern California since 1769*; City of Glendale, 2006, *Hazard Mitigation Plan*.							Flash	http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf
South Coast	1861-1862	December-March	Winter	Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura	The Great Flood	Arroyo Seco, Santa Ana River	One of the most prominent floods in California history called the "Great Flood" or the "Noachian deluge of California." Fifty inches of rain fell during December and January. The entire valley from Los Angeles to the ocean was a great lake. Part of the river split and drained into Ballona Creek. San Gabriel River also overflowed its banks and started a new channel. This flood event was unusual in that it occurred during the severe drought of 1856-64, and floodwaters did not recede for 20 days. The plains of Los Angeles County were extensively flooded and formed a large lake system where the stronger currents cut new channels to the sea. The Los Angeles, San Gabriel, and Santa Ana rivers converged, forming a solid expanse of water from Signal Hill to Huntington Beach. Runoff transformed much of what is now Orange County into an inland sea that was 4 feet deep in places 4 miles from the Santa Ana River. Nearly 50 inches of rain fell in 30 days, beginning on December 24. The Arroyo Seco brought down immense amounts of driftwood, supplying fuel for Los Angeles residents for several years. The rain began in December 1861 and continued until the summer of 1862. This period became known as the Noachian Deluge (Smythe, 1908). The great Sacramento and San Joaquin valleys of California were turned into a lake about 300 miles long and 20 to 60 miles wide. Many towns were submerged, and the residents had to flee to the surrounding high ground or move to the coast. The state capital at Sacramento was temporarily moved to San Francisco when much o Sacramento was flooded. The governor, state legislature, and state employees were not paid for a year and a half, as the State of California went bankrupt. It was estimated that approximately one-quarter of the taxable real estate in the state was destroyed (Brewer 1966:243). To the south, the narrow coastal plains at Santa Barbara were flooded by the rivers coming out of the mountains, and the town of Ventura was abandoned. **Source:** City of Glendale, 2006, *Hazard Mitigation Plan*; MWDSC, 1931, *Rainfall and Stream Run-off in Southern California since 1769*; Gerald G.Kuhn and Francis P. Shepard, 1984, *Sea Cliffs, Beaches, and Coastal Valleys of San Diego County: Some Amazing Histories and Some Horrifying Implications*; W.E. Smythe, 1907, *The History of San Diego, 1542–1908*; Brewer, W.H. 2003. *Up and Down California in 1860-1864: The Journal of William H. Brewer*.						X	Flash	http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf http://publishing.cdlib.org/ucpressebooks/view?docId=ft0h4nb01z&chunk.id=d0e2144&toc.id=d0e2144&brand=ucpress
South Coast	1862	May	27	San Diego			**San Diego:** A magnitude 5.9 earthquake caused landslides into the bay. A tide observer saw a wave run up on the beach 3 to 4 feet. **Source:** NOAA, December 1993, *Tsunamis Affecting the West Coast of the United States 1806-1992*.							Debris Flow	ftp://ftp.ngdc.noaa.gov/hazards/publications/Kgrd-29.pdf
South Coast	1866			San Diego			Flooding throughout San Diego County causing widespread damage. **Source:** San Diego County (SDCo), May 2013, Email from Sara Agahi/San Diego County Flood Control District to Terri Wegener/DWR, additional events to include in History of Events table.							Flash	Data from San Diego County Flood Control (SFMP Comments)
South Coast	1866-1867			Los Angeles			Moderate Floods were reported. **Source:** MWDSC, 1931, *Rainfall and Stream Run-off in Southern California since 1769*.							Flash	http://www.cepsym.org/history/RainfallStreamRunoffSoCA_since1769.pdf
South Coast	1867-1868			Los Angeles, Ventura		San Gabriel River; Los Angeles River	Floods spilled over river channels and created a large, temporary lake out to Ballona Creek. San Gabriel River broke out of its channel and washed out thousands of acres of land. The San Gabriel River cut a new channel, changing the course from San Pedro Bay to Alamitos Bay. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area*; City of Glendale, 2006, *Hazard Mitigation Plan*; Friends of Pio Pico, 2013, "Pio Pico State Historic Park"; MWDSC, 1931, *Rainfall and Stream Run-off in Southern California since 1769*; Ventura County, 2010, *Hazard Mitigation Plan*.							Flash, Engineered Structure Failure	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf; http://www.cepsym.org/history/RainfallStreamRunoffSoCA_since1769.pdf; and http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf; http://www.piopico.org/History_of_Pio_Pico_El_Ranchito.htm

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Coast	1874			San Diego			Major flooding of all San Diego rivers, all lines of travel were destroyed. **Source:** San Diego County (SDCo), May 2013, Email from Sara Agahi/San Diego County Flood Control District to Terri Wegener/DWR, additional events to include in History of Events table.							Flash	
South Coast	1875-1876	Winter		Los Angeles			Moderate floods were reported. **Source:** MWDSC, 1931, *Rainfall and Stream Run-off in Southern California since 1769*.							Flash	http://www.cepsym.org/history/RainfallStreamRunoffSoCA_since1769.pdf
South Coast	1884	February-March		Los Angeles, Orange, Riverside, San Bernardino, Ventura		Santiago Creek, Santa Ana River	**Orange:** In 1884, the region experienced an unusually long wet season, receiving rains well into June and more than doubling the seasonal average. The second of two floods that occurred inundated the towns of Santa Ana and Orange, and caused the Santa Ana River to cut a new channel to the sea. **Los Angeles:** A heavy winter storm brought 4 inches of rain to Los Angeles. There were two periods of intense rainstorms separated by 6 to 8 days. The first storms caused little damage. The second washed away all but one of the bridges across the Los Angeles River, washed away many houses, and drowned several people. Parts of Los Angeles flooded 3 to 4 feet deep. Newly laid railroad track was washed away. There were numerous reports of mudslides. **San Diego** : Severe flooding of all San Diego rivers from Krakatoa volcano effects. All lines of travel were destroyed. **Source:** County of Orange and Orange County Fire Authority, 2010, *Hazard Mitigation Plan* ; DWR, 2009, *California Water Plan Update 2009*; City of Glendale, 2006, *Hazard Mitigation Plan* ; Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area; Ventura County*, 2010, *Hazard Mitigation Plan* ; MWDOC, 2012, *Hazard Mitigation Plan;* San Diego County (SDCo), May 2013, Email from Sara Agahi/San Diego County Flood Control District to Terri Wegener/DWR, additional events to include in History of Events table. .							Flash; Debris Flow	http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf
South Coast	1886	July	14	Los Angeles			Los Angeles experienced 24 inches of rainfall. At the time it was documented, the 24 inches of rain was a record for the month of July. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area.*							Flash	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf
South Coast	1886-1887			Los Angeles		Los Angeles River	A good part of Los Angeles was inundated. The levees were damaged and railway communication was impossible for 2 to 3 weeks. **Source:** City of Glendale, 2006, *Hazard Mitigation Plan.*							Flash	http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf
South Coast	1889	August	31	Los Angeles			Los Angeles recorded its greatest rainfall in a 24-hour period at 61 inches. The rainfall was a record for the month of August. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area.*							Flash	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf
South Coast	1889			Los Angeles, San Diego		Los Angeles River, San Gabriel River, San Dieguito River	Flood on Christmas Day caused much damage; bridges and levees washed away; the old San Gabriel, new San Gabriel and Los Angeles rivers joined near Downey and formed one body. The Los Angeles River overtopped its channel. San Dieguito River flooded. **Source:** San Diego County (SDCo), May 2013, Email from Sara Agahi/San Diego County Flood Control District to Terri Wegener/DWR, additional events to include in History of Events table; City of Glendale, 2006, *Hazard Mitigation Plan.*							Flash	Data from San Diego County Flood Control (SFMP Comments); http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf
South Coast	1891			Los Angeles, Orange, San Diego		San Gabriel River, Santa Ana River, San Luis Rey, San Diego, and Tijuana Rivers	San Gabriel River again changed course, causing Rio Hondo and Lexington Wash to become its major channels; 33 inches of rain fell in 60 hours. San Diego experienced 33 inches of rain in 60 hours. Summer thunderstorm in Campo produced 11.8 inches of rain in 80 minutes (which set a National Weather Service record), resulting in flooding of the San Luis Rey, San Diego, and Tijuana rivers. **Source:** County of San Diego, August 2007, *Floodplain Management Plan*; County of Los Angeles, June 2005, *All-Hazard Mitigation Plan* ; County of San Diego, March 2004, *Multi-Jurisdictional Hazard Mitigation Plan* ; MWDOC, 2012, *Hazard Mitigation Plan;* San Diego County (SDCo), May 2013, Email from Sara Agahi/San Diego County Flood Control District to Terri Wegener/DWR, additional events to include in History of Events table.							Flash	http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf
South Coast	1895			San Diego		San Diego, Tijuana, Sweetwater, and Otay Rivers	Flooding of the San Diego, Tijuana, Sweetwater, and Otay Rivers. **Source:** San Diego County (SDCo), May 2013, Email from Sara Agahi/San Diego County Flood Control District to Terri Wegener/DWR, additional events to include in History of Events table.							Flash	San Diego County Flood Control (SFMP Comments)
South Coast	1902	July	20-21	Los Angeles			A dying tropical cyclone brought 2 inches of rain to the mountains and desert areas of Southern California during a very strong El Nino event in 1901-1902. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area.*							Flash	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf
South Coast	1910	January	1	San Bernardino		City of San Bernardino, Colton, Santa Ana River, San Jacinto River, Batiste Creek	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. The eastern end of San Bernardino valley was underwater, and on the west end of the valley houses were washed out. San Bernardino Valley was isolated with most bridges and roads destroyed. The area experienced its 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 in diameter were washed out. All outside communication lines were disrupted. Agricultural lands washed away, as well as mature trees. Estimated discharge at the Santa Ana River was 45,000 cfs. Estimated discharge at Mill Creek was 11,000 cfs. Rail traffic was 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. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*							Alluvial Fan, Flash, Debris Flow	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1910	January	1	Riverside		Santa Ana River, San Jacinto River, Batiste Creek	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. **Source:** Water Resources Institute at California State University and Alluvial Fan Task Force (AFTF), July 2010, *AFTF Study Area Flood History.*		Riverside County				X	Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1910-1911	December-March	Winter	Los Angeles, Riverside, San Bernardino	1911 Ventura River Flood	San Gabriel River, Ventura River	**Los Angeles:** Devastating floods along the San Gabriel River destroyed bridges and inundated fertile farmland, depositing sterile sand and silt. Storms prompted the formation of the San Antonio Protection District in 1911 by local residents to provide flood control protection along the upper Rio Hondo and San Gabriel River channels. The San Antonio Protection District erected a series of wooden-pile dikes reinforced with barbed wire and stone to keep the streams from breaking their banks and further inundating farmland. Five other local protection districts were formed in early teens. County Flood Control Engineer Mr. Olmstead published a plan in 1913 that included reservoirs, straightening and reinforcing channels, and spreading water over gravel deposits. This plan provided the basic concepts that all future flood control projects in Los Angeles County would be based on. 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. **Riverside:** January 1, rail traffic was 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. **San Bernardino:** San Bernardino Valley experienced heavy rain that washed out 900 feet of water mains, bridges, and rail lines in Colton. **Ventura:** A 1945 report by the Ventura County Flood Control District reported that floods of sufficient magnitude to cause extensive damage occurred in 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 was flooded, and the steel railroad bridge was torn out and washed out to sea. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History;* Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area;* County of Los Angeles, June 2005, *All-Hazard Mitigation Plan;* Ventura County, 2010, *Hazard Mitigation Plan* .	$ 25,000	Los Angeles		4 (included in South Lahontan too)		X	Flash, Alluvial Fan, Debris Flow	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Coast	1911	March	2	San Bernardino		Mojave River	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. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.		San Bernardino Valley		4 men plus their horses	Victorville Area		Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1914	January	18-26	Riverside, San Bernardino, Ventura		Santa Ana River	**San Bernardino:** In San Bernardino Valley, heavy flooding destroyed many roads and most bridges. Communication lines were destroyed and damage to railroad lines was high. San Bernardino Valley was left isolated from surrounding areas. A large lake formed at Little Mountain in San Bernardino from run-off of Devil Canyon. Rail line damage halted all rail traffic in and out of Valley. Water mains were destroyed. Citrus groves were damaged. San Antonio water tunnel was severely damaged and, as a result, water supply to Upland/Ontario area was disrupted. One death was reported. **Riverside:** Riverside was cut off completely from points west because all bridges were washed out. The Santa Ana River was reported to be a mile wide at full flood heights. All transcontinental trains were halted. There was heavy flooding in the San Jacinto River area, especially in the areas of Temecula and Murrieta Creeks. Murrieta Valley was covered with floodwater. **Ventura:** Extremely heavy rains in January caused widespread flooding. January experienced well over 12 inches of rain in 1 month with a rain total for the year of 28.98 inches. Homes were flooded, roads were damaged, and agricultural lands were destroyed by floodwaters. Railroad lines were out, and transportation was severely hampered. Telegraph lines were down, utility services were 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. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*.				1	San Bernardino	X	Flash, Alluvial Fan	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1914	February	18-22	Los Angeles, Orange, Riverside, San Bernardino, Ventura	1914 San Gabriel Mountains Floods	San Gabriel, Los Angeles Rivers, Santa Ana River, Arroyo Seco, Ventura River	A four-day storm dropped 20 inches of rain in the mountains. **Los Angeles:** In 1914, floodwaters took the lives of many people. More than 3 inches of rain fell along the coast, and 35 bridges were washed out. City of Los Angeles communication to the outside world was cut off for 6 days. Four million cubic yards of sediment were deposited into Los Angeles and Long Beach Harbors, which cost an estimated $400,000 to remove (1914 dollars). Total $10 million in damages (1914 dollars), including damage to Los Angeles and Long Beach Harbors; 1,094 acres of farmland destroyed; 100 to 200 highway bridges, all railroad lines, public utility wires, and pipelines were damaged. At the time, the population in Los Angeles County was approximately 790,000, with property values of $804 million (1914 dollars). The storm prompted the demand and action of forming the Los Angeles County Flood Control District in 1915. Los Angeles County Flood Control Act of 1915 authorized the Los Angeles County Flood Control District to acquire rights-of-way, assess property taxes, and issue bonds. **San Bernardino** : February 20: Rail lines washed out in Cajon Pass, and rail bridges were destroyed. Santa Fe Pre-cooler saw heavy damage and roads were washed out. Citrus groves were badly damaged. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area*; Ventura County, 2010, *Hazard Mitigation Plan*.	$ 10,000,000	Regionwide	1914			X	Flash, Alluvial Fan, Debris Flow	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf
South Coast	1916	January	17-30	Los Angeles, Orange, Riverside, San Diego, San Bernardino, Ventura	Great Flood of 1916	Arroyo Seco, Los Angeles, Santa Ana, San Gabriel Rivers, Lower Otay, Sweetwater Dams, San Diego River, Tijuana River	**Los Angeles:** Flooding occurred along Arroyo Seco, causing significant damage to the Los Angeles area when inadequately sized bridges acted as debris "plugs." 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. Fifty 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. There was heavy silting at Long Beach Harbor as well, with over 1,000,000 yards of silt deposited. Rainfall total at the Los Angeles United States Weather Bureau station for this event was 6.90 inches. **Orange County:** The flood on January 27, 1916 inundated a large area along the Santa Ana River, including Main Street in downtown Santa Ana where the water was 3 feet deep. Adjacent farm lands, which later became the City of Westminster, were also flooded. Three vehicular bridges and three railroad bridges were washed away by the flood, and four people drowned. The total estimated cost of this flood to Orange County was $520,000. Over 11.5 inches of rain fell during this period in Orange County. **Riverside:** Bridges were 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 clubhouse on Lake Shore with flooding. All rail traffic was 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 floodwater and destroyed. Floodwaters destroyed Hemet's water supply when the steel tank toppled over due to erosion at the base. Hemet lost long sections of city water lines. Highway and road damage was 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. **San Bernardino:** San Bernardino Valley was 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 runoff, most running curb to curb. In San Bernardino County, two men drowned. Many streets, sidewalks, and 40 bridges were destroyed. Gas main lines and sewer lines servicing the city were destroyed. Acres of land in San Bernardino were underwater, and others were badly damaged. All roads in Cajon Pass were washed out. The road and all bridges were gone in Lytle Creek. Pipelines to San Bernardino City reservoirs were washed out and destroyed. Water was released at the dam in Big Bear to save dam. A small community (20 homes) at East Highland was 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 were destroyed. A new county highway was washed out. Homes were flooded in Loma Linda. The Santa Ana River ran 2 miles wide during flood height. Approximately 300 people were left homeless. Flooding caused heavy damage to rail lines and railroad works, including bridges, culverts, drains, and rail yards. A hospital in Ontario was flooded with 3 feet of water, and patients were moved upstairs to avoid floodwaters. Major flooding was seen at Wrightwood. Costs associated to flooding were nearly $400,000 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 discharge at the Santa Ana River was 51,000 cfs, and at Mill Creek at 7,000 cfs. **San Diego:** Lower Otay and another dam failed and caused flooding. There were 22 deaths and $4.5 million in losses in San Diego. There were 2 deaths and $4.5 milion in losses in San Diego. This was 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 two-thirds of its capacity. The water supply in San Diego County was severely disrupted by this flooding event. Approximately 135 people were left homeless. This flood cost San Diego County nearly $4.5 million 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 before normal rail traffic could resume. 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 2,500 tons of salt lost. Twenty people lost their lives due to drowning in the Tijuana River. **Source:** Water Resources Institute at California State University, 2010, *AFTF Study Area Flood History*; County of Orange and Orange County Fire Authority, 2010, *Hazard Mitigation Plan*; NWDOC, 2012, *Hazard Mitigation Plan*; DWR, 2009, *California Water Plan Update 2009*; County of San Diego, August 2007, *Floodplain Management Plan*; County of Los Angeles, June 2005, *All-Hazard Mitigation Plan*.	$4.5 million	Los Angeles; Orange; Riverside; San Diego County		26	San Diego County	X	Flash, Engineered Structure Failure, Debris Flow, Alluvial Fan	http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1918	March	18	Riverside		Hemet, Lakeview, Nuevo, Perris Valley	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 were sustained to rail lines between the communities of Ethnic and Winchester. Agriculture loses in this area were high. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*.							Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1918	March		Los Angeles, Orange, San Diego			Heavy rains – subtropical in nature. **Riverside:** 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 were sustained to rail lines between the communities of Ethnic and Winchester. Agriculture loses in this area were high. **Source:** County of San Diego, August 2007, *Floodplain Management Plan*; City of Glendale, 2006, *Hazard Mitigation Plan*; Water Resources Institute at California State University, 2010, *AFTF Study Area Flood History*.							Flash	http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf and http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf
South Coast	1921	December	12-27	Riverside, San Bernardino, San Diego		Prado, Lake Elsinore	**Riverside:** West Riverside Bridge was destroyed. Auburndale Bridge was destroyed. The bridge at Prado was washed out. Main Street Bridge in Corona collapsed. Floodwater on its way to Lake Elsinore flooded the areas of Lakeview, Nuevo, and Perris Valley. Floodwaters destroyed Santa Ana Canyon highway.**San Bernardino:** A heavy storm in San Bernardino left over 2 inches of rain with roads flooded. Bridges and rail lines were washed away. Redlands saw 2.10 inches of rain in a single day. **San Diego** , Dec 19-26: Moderate flooding occurred 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 was much less. Far fewer people had 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 with far fewer damages. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*.							Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1921-1922			Los Angeles		Los Angeles River	**Source:** City of Glendale, 2006, *Hazard Mitigation Plan*.							Flash	http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Coast	1925			Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura		Los Angeles River, Santa Ana River	Another significant flood in 1925 was so severe that it altered the course of both the Santa Ana and Los Angeles Rivers. **Source:** DWR, 2009, *California Water Plan Update 2009*.						X	Flash, Alluvial Fan	http://www.waterplan.water.ca.gov/docs/public_comments/update2009/2008/073108-smith-rco-sc.pdf
South Coast	1926	April	4-8	Los Angeles, Riverside			**Los Angeles** : An unusual thunderstorm with heavy rainfall caused flooding and lightning fires. An oil tank in Brea was struck by lightning during this event. The rainfall total at the Los Angeles United States Weather Bureau station for this event was 7.34 inches. There were damages to roads, rail lines, and utilities, as well as agricultural lands. Approximately 65 inches of rain was recorded at Opid's Camp in the San Gabriel Mountains. Floodwaters damaged and closed highways in the San Gabriel Mountains. **Riverside** : A flood washed out railroad lines at El Casco, halting rail traffic. Check dams at San Jacinto River were 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 was marooned by flooding. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History;* Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area.*							Flash, Alluvial Fan , Debris Flow	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1926			Los Angeles		Los Angeles River	**Source:** City of Glendale, 2006, *Hazard Mitigation Plan.*							Flash	http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf
South Coast	1927	February	11-17	Los Angeles, Orange, Riverside, San Bernardino, San Diego		Santa Ana River, San Jacinto River, Whitewater River, San Diego River	**Los Angeles** : 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 runoff due to soil saturation from earlier storms. Damages are estimated at $547,000 for Los Angeles County. The peak flow at the Los Angeles River at Stewart and Grey Road was 21,600 cfs. The peak flow at Rio Hondo and the Mission Bridge was 25,330 cfs. The rainfall total at the Los Angeles United States Weather Bureau station for this event was 6.38 inches. Heavy warm rains melted the mountain snowpack and caused flooding in large areas of Long Beach.**Orange County** : 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 leading to high runoff rates in the Santa Ana River. Roads, bridges, and agricultural lands were all flooded. **Riverside:** 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 and Batiste Creek had high flood runoff levels. Lakeview Valley flooded and five families had to be rescued. Nuevo and Perris Valley, including the community at Ethnic, also flooded. San Jacinto River ran 2 miles wide between Perris and Homeland. The bridge at San Jacinto River east of Valley Vista was washed out. One man drowned clearing debris. Estimated damages from the flood to Riverside County were more than $1 million. **San Bernardino** : 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 was washed out at El Casco canyon. The Sycamore Inn in Rancho Cucamonga was heavily damaged by floodwaters from Cucamonga Canyon. Heavy damage was sustained by rail lines in this area as well. Highway bridges and major roadways were destroyed by floodwaters. The flow in the Mojave was doubled that of normal years. There was flooding in the Wrightwood area. **San Diego** : Flash flooding occurred, leading to channel improvements. A washed out railroad bridge in Old Town sustained $117,000 in damages. Flash flooding occurred, leading to channel improvements. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; County of Orange and Orange County Fire Authority, 2010, *Hazard Mitigation Plan* ; County of San Diego, August 2007, *Floodplain Management Plan*; Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area*; MWDOC, 2012, *Hazard Mitigation Plan.*	$ 1,664,000	Los Angeles; Riverside; San Diego County	Original Riverside			X	Flash	http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf and http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf
South Coast	1928	March		Los Angeles	St. Francis Dam Disaster	Santa Clara River, St. Francis Dam	The St. Francis Dam in the San Francisquitos Canyon in Los Angeles County (within the Santa Clara River watershed) was constructed to provide 38,000 acre-feet of storage for water from the Los Angeles–Owens River Aqueduct. The midnight collapse of the dam in March 1928 occurred after the newly constructed concrete-arch dam was completely filled for the first time. The St. Francis Dam, located 40 miles northwest of Los Angeles, catastrophically failed, and the resulting flood killed more than 600 people. The collapse of the St. Francis Dam remains the second greatest loss of life in California's history, after the 1906 San Francisco earthquake and fire. The concrete dam was part of the Los Angeles Aqueduct system. Afterwards, the State Engineer's office formed to regulate dam safety; the agency is now known as the Division of Safety of Dams (DSOD). The resulting flood swept through the Santa Clara Valley in Ventura County toward the Pacific Ocean, about 54 miles away. At its peak, the wall of water was reported to be 78 feet high; by the time it hit Santa Paula, 42 miles south of the dam, the water was estimated to be 25 feet deep. Almost everything in its path was destroyed including structures, railways, bridges, livestock, and orchards. By the time the flood subsided, parts of Ventura County lay under 70 feet of mud and debris. Damage estimates topped $20 million. The communities of Piru, Fillmore, Santa Paula, Bardsdale, Saticoy, Montalvo, and El Rio sustained extensive life and property loss from the flood. **Source:** DWR, 2009, *California Water Plan Update 2009*; Ventura County, 2010, *Hazard Mitigation Plan.*	$ 20,000,000	Ventura County		600	Los Angeles County	X	Engineered Structure Failure	Ventura County HMP
South Coast	1930	August	30	Los Angeles		Santa Monica	A magnitude 5.2 earthquake caused a 20-foot wave at Santa Monica, Venice, and Redondo Beach. Sixteen people were rescued from the surf. One drowned at Redondo Beach. **Source:** NOAA, December 1993, *Tsunamis Affecting the West Coast of the United States 1806-1992*							Tsunami	ftp://ftp.ngdc.noaa.gov/hazards/publications/Kgrd-29.pdf
South Coast	1931			Los Angles		Los Angles River	**Source:** City of Glendale, 2006, *Hazard Mitigation Plan*							Flash	http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf
South Coast	1932	February		Los Angeles, Ventura	February 1932 Flood	Santa Clara River	**Source:** Ventura County, 2010, *Hazard Mitigation Plan;* City of Glendale, 2006, *Hazard Mitigation Plan.*							Flash	http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf
South Coast	1933-1934	December-January	December 29-January 1.	Los Angeles, Orange	New Years Flood	La Canada, La Crescenta, Montrose Areas	**Los Angeles** : A total of 8.27 inches of rain fell in 4 days (4.86 inches on December 29, 3.12 inches on January 1). Over 483 homes were destroyed, with $5 million in damages (1934 dollars). Impacts were exacerbated by the November 1933 fire in the La Cañada/La Crescenta area. The event prompted construction of the County's first debris basins, and Los Angeles County's issuance of a $4.5 million emergency bond issue (1935 dollars). The Los Angeles County Flood Control District's Comprehensive Plan was revised in 1935. The Federal Emergency Relief Act of 1935 was enacted, charging USACE to construct various flood control works (channels and debris basins) in Los Angeles County, with an allocation to Los Angeles County of almost $15.8 million (1935/36 dollars). Moderate to severe flooding occurred, starting January 1. Over 40 dead in the La Cañada/Glendale area. Debris flow killed 12 people who had taken shelter in the Montrose Legion Hall. On January 1, 1934, a few minutes after New Year's, a major flood and mudslide terrorized the residents of La Crescenta Valley. Prior to the flood and mudslide, a fire in the Angeles National Forest had occurred that burned the forest to the ground. Then a winter rain storm hit and dumped more than 14 inches in 2 days. Observers told local newspaper reporters that a 20-foot wall of mud and rocks thundered out of the canyons blowing through flimsy check dams of chicken wire and rocks. The flood and mudslide was responsible for 45 deaths and destroyed more than 400 homes and Model "A" cars in La Crescenta and Montrose. Eyewitness accounts stated boulders up to 70 tons lay "strewn about like ping pong balls." To memorialize the lives that were lost that day, a brass plaque stands at Rosemont and Fairway Avenues, where an American Legion Hall, containing 12 refugees, was swept away. **Orange County** : High surf waves hit Los Angeles County coastline as three piers were ripped out. A major winter storm brought heavy rains to Southern California. In Fullerton 6.21 inches of rain, and at 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 seen in some canyon areas. Many deaths are attributed to this flood. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area*; City of Glendale, 2006, *Hazard Mitigation Plan* ; Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	$ 5,000,000	La Canada, La Crescenta, Montrose Areas	1934	52	40 total La Cañada – Glendale area 12 Montrose Legion Hall	X	Flash	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf and http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf

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Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Coast	1934	August	21	Orange, San Diego		Newport Beach	**Orange:** Flooding caused one death at Redondo Beach and damaged boats and a pier at Santa Monica. Source: Paradise Lost: *If a Tsunami Strikes the Orange County Riviera, Orange County.* **San Diego:** The waves, which were breaking with tremendous force along the southern California coastline from Malibu Beach to below Laguna Beach, caused damage in excess of $75,000 . The wind was reported strangely calm along the shore where heavy waves were breaking in San Diego. Running waves 30 and 40 feet high during the day got out of bounds at high tide and swept a two story apartment building from its foundation and damaged other buildings. Part of the city was inundated a few feet. **Source:** NOAA, December 1993, T*sunamis Affecting the West Coast of the United States 1806-1992.*				2	1-Orange, 1-San Diego		Tsunami	http://www.ocgrandjury.org/pdfs/tsunami/tsunami-report.pdf ftp://ftp.ngdc.noaa.gov/hazards/publications/Kgrd-29.pdf
South Coast	1936	February	12	Los Angeles, Riverside		Los Angeles River, San Jacinto River	**Riverside:** The levee at Batiste Creek was topped and threatened the levee of the San Jacinto River. The levee at San Jacinto broke in four 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. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; City of Glendale, 2006, *Hazard Mitigation Plan.*							Flash, Alluvial Fan	http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf
South Coast	1937	February	6-14	Los Angeles, San Diego		San Luis Rey River	**Los Angeles:** A 24-hour record of 4.25 inches rain fell in Long Beach. Flooding caused fatalities. The Los Angeles Basin was flooded in many communities. Afterwards, the Federal Flood Control Act of 1936 was enacted. Due to the existence of Los Angeles County's Comprehensive Plan for flood control, the region received a $70 million allocation (1936 dollars), about 25% of the nationwide allocation. The Act directed the USACE to design and construct flood control works for the Los Angeles River and San Gabriel River and their tributaries. The Act was amended in 1937 to add Ballona Creek Channel to the USACE scope of work. USACE worked off the County's Comprehensive Plan, but decided final design parameters and standards (including size and lining materials). **San Diego:** This medium flood event had a peak flow on the Tijuana River at Nestor Bridge of 50,000 cfs. This flood was centered on the San Luis Rey River, and flooding there was severe. Hodges Dam overtopped. Mountain snowmelt added to the flooding. Maximum daily rainfall for the 1936-37 Storm Season was 5.58 inches at Winter Creek on February 14, 1937. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area*; Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; County of San Diego, March 2004, *Multi-Jurisdictional Hazard Mitigation Plan.*	$ 70,000,000	Los Angeles					Flash, Alluvial Fan	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1937	December		Los Angeles, Orange, San Diego, Ventura		Coastal areas	High surf waves hit Los Angeles County coastline as three piers were ripped out. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Tsunamis/High Waves that have Impacted Los Angeles County Operational Area.*	$ 75,000	Los Angeles County	1937				Tsunami	http://www.lacoa.org/PDF/HazardsandThreats/Tsunami/HAZARDS%20AND%20THREAT%20-%20TSUNAMI%20HISTORY.pdf
South Coast	1937-1938	December-January		San Diego			$600,000 in flood losses. **Source:** County of San Diego California, August 2007, *Floodplain Management Plan*.	$ 600,000	San Diego County					Flash	http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf
South Coast	1937-1938	December-March	27-4	Los Angeles	Great Flood	Santa Ana River, City of Riverside, Whitewater River, Palm Springs, San Bernardino, San Gabriel Mountains, Santa Ana, San Gabriel, Los Angeles Rivers, Deep Creek - Hesperia, West Fork Mojave River, San Gabriel River, Los Angeles River, Big, Little Rock Creeks	**Los Angeles County:** A 24-hour record of 4.25 inches rain fell in Long Beach. Flooding caused fatalities. The Los Angeles Basin was flooded in many communities. Afterwards, the Federal Flood Control Act of 1936 was enacted. Due to the existence of Los Angeles County's Comprehensive Plan for flood control, the region received a $70 million allocation (1936 dollars), about 25% of the nationwide allocation. The Act directed the USACE to design and construct flood control works for the Los Angeles River and San Gabriel River and their tributaries. The Act was amended in 1937 to add Ballona Creek Channel to the USACE scope of work. USACE worked off the County's Comprehensive Plan, but decided final design parameters and standards (including size and lining materials). The flood inundated over 250,000 acres in Orange, Riverside, San Bernardino, Los Angeles, and Ventura counties and caused an estimated $78.5 million in damages. High waves and high tides damaged three piers and coastal developments. Downtown Los Angeles total rainfall was 6.74 inches in 3 days. There were 88 dead, and 127 bodies were never found. The Los Angeles Basin Flood of 1938 was triggered by a series of rainstorms that delivered more than 10 inches of rain from February 27-March 4. The rainstorms hovered over the San Gabriel Mountains, saturating the soil, which gave way sending massive debris and mudflows down the canyons. Los Angeles County was not the most affected by the floods; Riverside and Orange "took the brunt of the waters" like "gargantuan saucers." (*Los Angeles Times* , 1938.) At the time, Los Angeles County was the most populous of the counties affected. Orange and Riverside counties were mostly farming and ranching regions at the time. Therefore, many people were spared by the distribution of floodwaters. Between February 27 and 28, 1938, a storm from the Pacific Ocean moved into the Los Angeles Basin, where it was stopped from progressing eastward by the San Gabriel Mountains. The area received almost constant rain on February 27-28, and early March 1, 1938, before the storm finally abated. A total of 4.4 inches (11 cm) of rain had fallen thus far, and the storm had caused comparatively minor flooding of only a few buildings in the low-lying areas of the Los Angeles Basin. Fifteen hours later on March 1, the second storm entered the basin, creating gale-force winds along the coast and pouring more rain into the region. This storm added more than 5 inches (13 cm) to the total rainfall amount. The storm ended on March 3, but damages remained high. Overall, the flood of 1938 was responsible for approximately $70 million in damages including killing upwards of 110 people, destroying 5,601 houses, damaging an additional 1,500 houses, and stranding over 800 cars. Heavy silt content in floods buried roads and streets in the area, stopping traffic for many days. The Little Rock Dam nearly collapsed during the flood, while another dam in Pickens Canyon produced such large flood releases that it inundated the Roosevelt district of Lancaster. The general hospital of Los Angeles County was threatened by rising floodwaters, which had inundated the hospital power generator. More than 20 structures were destroyed in the Arroyo Seco canyon. **Source:** County of San Diego, August 2007, *Floodplain Management Plan*; City of Glendale, 2006, *Hazard Mitigation Plan*; Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area*; Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; MWDOC, 2012, *Hazard Mitigation Plan*; Ventura County, 2010, *Hazard Mitigation Plan;* County of San Diego, March 2004, *Multi-Jurisdictional Hazard Mitigation Plan.*	$78,500,000, $600,000 - San Diego	Regionwide - $78,500,000, $600,000 - San Diego	1938	88 127 bodies not found		X	Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf
South Coast	1937-1938	December-March	27-4	Orange, Riverside, San Bernardino, San Diego, Ventura	Great Flood	Santa Ana River, City of Riverside, Whitewater River, Palm Springs, San Bernardino, San Gabriel Mountains, Santa Ana, San Gabriel, Los Angeles Rivers, Deep Creek - Hesperia, West Fork Mojave River, San Gabriel River, Los Angeles River, Big, Little Rock Creeks	**Orange County** : The flood of 1938 is considered the most devastating flood to occur in Orange County during the 20th Century. The storm began on February 27 and lasted until March 3. In the Santa Ana Basin, 34 people died and 182,300 acres were flooded. All buildings in Anaheim were damaged or destroyed. Two major railroad bridges, seven vehicular bridges, and the little town of Atwood were completely destroyed. The Santa Ana River inundated the northwestern portion of Orange County and, train service to and from Santa Ana was cancelled. Damage exceeded $50 million. **Riverside County:** Two people died as a result of flooding. The northern section of Riverside was inundated, and many people were forced from their homes. Many people were unable to reach higher ground when their homes became imperiled. Livestock of all sorts was 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 floodwaters. Lake Evans drained to a thick layer of mud where once a lake stood. 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 million. **Ventura County:** Calleguas Creek had an estimated peak flow of 17,000 cfs at Simi Valley and at Moorpark of 4,100 cfs. On the Santa Clara River estimated peak discharges were 120,000 cfs. The estimated peak discharge at Sespe Creek near Fillmore was 58,000 cfs. 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 because all 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 destroyed. Over 100 large eucalyptus trees fell onto roads, completely blocking use. One person died as a result of the flood. **San Diego County:** $600,000 in flood losses. **Source:** County of San Diego, August 2007, *Floodplain Management Plan*; City of Glendale, 2006, *Hazard Mitigation Plan* ; Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area*; Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; MWDOC, 2012, *Hazard Mitigation Plan* ; Ventura County, 2010, *Hazard Mitigation Plan.*	$78,500,000, $600,000 - San Diego	Regionwide - $78,500,000, $600,000 - San Diego	1938	88 127 bodies not found		X	Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Coast	1938		1-3	Riverside, San Diego			**Riverside:** Two people died as a result of flooding. The northern section of Riverside was inundated, and many people were forced from their homes. People had to be rescued from trees when they were unable to reach higher ground and their homes became imperiled. Livestock of all sorts were 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 floodwaters. 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 million. **San Diego:** Of all areas in Southern California, San Diego was least impacted from the 1938 flood; however, there was some flooding in the San Luis Rey River that caused an estimated $600,000 worth of damages, mostly severe sedimentation of the reservoirs. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*	$ 2,600,000	2000000-Riverside County 600000-San Diego County		2	Riverside County		Alluvial Fan, Flash, Engineered Structure Failure	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1939	September	24-26	Los Angeles, Orange	El Cordonazo	Coastal areas	A tropical storm referred to as "El Cordonazo" or "Lash of St. Francis" hit the Southern California area. The storm lost hurricane status shortly before moving onshore at San Pedro at tropical storm strength. Los Angeles received 5.42 inches in less than 24 hours. Over 30 deaths are attributed to this event. Mount Wilson recorded 11.60 inches of rainfall, a record for the month of September. In response, the weather bureau established a forecast office for Southern California, which became operational in February 1940. 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. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area*; Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*				30			Flash	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf
South Coast	1940			Riverside		City of Riverside	Highest record for rainfall in Riverside for the 1940-41 season, but very little flooding occurred in the City of Riverside. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*							Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1941	February-March		Los Angeles		Los Angeles River	The Los Angeles River overflowed and caused flooding in Glendale. Downtown Los Angeles rainfall for the February storm totaled 4.67 inches in 4 days. The 1940-41 season total of 32.79 inches was exceeded (at the time) only by totals of 1883-84 and 1889-90 seasons. The Los Angeles County population was almost 3 million. In the aftermath of the flooding, the Federal Flood Control Act of 1941 was enacted, which reimposed right-of-way acquisition and O&M obligations on Los Angeles County for subsequent flood facilities. USACE retained responsibility for completed and already started facilities. An additional $25 million was allocated for USACE work in the Los Angeles River and San Gabriel River basins, and Ballona Creek. **Source:** City of Glendale, 2006, *Hazard Mitigation Plan.*						X	Flash, Slow Rise	
South Coast	1941			Ventura			**Source:** Ventura County, 2010, *Hazard Mitigation Plan.*							Flash	http://www.oxnardfire.org/Uploads/DisasterPreparation/FINAL%20DRAFT%20Ventura%20County%20HMP%20-%20Oct%202010.pdf
South Coast	1942	August	9-10	Los Angeles		Los Angeles River	The Los Angeles River overflowed and caused floods. Storm total of 3.56 inches at North Baldy-Big Pines. **Source:** City of Glendale, 2006, *Hazard Mitigation Plan.*							Flash, Slow Rise	http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf
South Coast	1943	January	21-24	Los Angeles, San Bernardino, Ventura		Los Angeles River, Coyote Creek	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, runoff 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 was sustained by agricultural lands. Several houses were undermined and later moved. In downtown Los Angeles, the storm total was 7.57 inches. The Los Angeles River overflowed and caused floods. Peak flow on the Los Angeles River at State Street was 38,000 cfs. Significant debris deposition collected in several debris basins. 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 much damage, especially those that crossed rivers. There was one death due to drowning at Lytle Creek. Estimated peak discharge at Lytle Creek was 14,000 cfs. **Ventura:** Heavy storms caused flooding on all rivers in 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 cfs at Montalvo. On Sespe Creek near Fillmore, estimated peak discharges were 44,000 cfs. Roads, agricultural lands, and bridges were damaged or destroyed in 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. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History;* DWR, 2009, *California Water Plan Update 2009*; Ventura County Hazard Mitigation Plan; City of Glendale, 2006, *Hazard Mitigation Plan.*							Alluvial Fan, Flash, Slow Rise, Debris Flow	http://www.oxnardfire.org/Uploads/DisasterPreparation/FINAL%20DRAFT%20Ventura%20County%20HMP%20-%20Oct%202010.pdf
South Coast	1944	February	19-23	Los Angeles, Ventura		Los Angeles River, Santa Clara River	Storm total in downtown Los Angeles was 7.19 inches. The storm produced unusual snow depths in the mountains (105 inches at Cedar Springs). Los Angeles River overflowed and caused floods. High flows occurred in the Santa Clara River from rain and snowmelt runoff. Despite the storm, a prolonged period of below normal rainfall began in Los County. Afterwards, the Federal Flood Control Act of 1944 was enacted, which authorized USACE to operate and maintain recreational facilities in Los Angeles reservoirs, provided the facilities were compatible with the functions of the reservoirs. An additional $25 million was allocated for USACE work in Los Angeles and San Gabriel River basins ,and Ballona Creek. Also, $8.38 million was allocated to the Department of Agriculture for work in the Los Angeles River Basin. **Source:** Ventura County, 2010, *Hazard Mitigation Plan* ; City of Glendale, 2006, *Hazard Mitigation Plan.*						X	Flash	http://www.oxnardfire.org/Uploads/DisasterPreparation/FINAL%20DRAFT%20Ventura%20County%20HMP%20-%20Oct%202010.pdf http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf
South Coast	1946	April		Los Angeles, Ventura		Santa Catalina Island, Port Hueneme	A Tsunami event inundated more than 250,000 acres in six counties, which caused $79 million in damages and killed 87 people statewide. **Source:** NOAA, December 1993, *Tsunamis Affecting the West Coast of the United States 1806-1992* .	$79 million	Statewide	1946	87	Statewide	X	Tsunami	ftp://ftp.ngdc.noaa.gov/hazards/publications/Kgrd-29.pdf
South Coast	1952	January	15-18	Los Angeles, San Bernardino, Ventura		Western Los Angeles County; Santa Clara River	**Los Angeles:** Moderate flooding, with most of the damage due to landslides in the Santa Monica Mountains near Hollywood, which was 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 exceeded $ 6 million 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 2 feet; 21 deaths were attributed to this flooding event. The rainfall total at the Los Angeles 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 cfs. The Bel Air Hotel had 1.43 inches of rain in 1 hour on January 15. Downtown Los Angeles storm total was 8.07 inches. The 1951-52 season was the exception since early 1940s of below normal rainfall in Los Angeles County. Afterward, Los Angeles County passed the 1952 Storm Drain Bond Issue ($172 million [1952 dollars]), to build the first major trunk lines to the channels throughout the Los Angeles County Flood Control District area. **Ventura:** 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 were impossible. Estimated peak flow on the Santa Clara River at Montalvo was 40,000 to 50,000 cfs. **Source:** City of Glendale, 2006, *Hazard Mitigation Plan*; Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	$ 6,000,000	Santa Monica Mountains					Flash, Alluvial Fan	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Coast	1956	January	25-26	Los Angeles		Southwest LA County	Heavy rains caused flooding and 1,500 people to be evacuated from low-lying areas. Glendora saw heavy rains. One death is attributed to this event. It cost the County of Los Angeles $7.5 million in estimated damages for this flood. Heaviest rainfall for the storm was in the southwest portion of Los Angeles County. Despite the storm, the Los Angeles region continued a multi-year period, starting in the early 1940s, of below-normal seasonal rainfall. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	$ 7,500,000	Los Angeles County		1	Los Angeles		Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1956	July	25	Riverside			Thunderstorms in Riverside brought over an inch of rain in a very short timeframe, which led to flash floods. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*							Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1957	October	11-14	San Bernardino			A two-storm event brought 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. Runoff in these developments was very high and construction debris clogged drains and culverts, which resulted in areas being flooded that had not been flooded before. Many existing homes were inundated by floodwaters and debris, especially those that 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 were high. Cost of damages to public property were estimated at $100,000.00. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*							Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1958	February-April		Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura		Regionwide, Los Angeles River, San Gabriel River, Ballona Creek	In Los Angeles County, rainfall during February through April consisted of many storms of short duration. February contributed the greatest amount of rainfall and was the tenth wettest February on record (up to that time). Sheet stormwater flows damaged property in many locations in March-April 1958. The 1957-58 season was a temporary break from below-normal rainfall, ongoing since early 1940s. After the season, Los Angeles County passed the 1958 Storm Drain Bond Issue ($225 million [1958 dollars]) to continue storm drain construction. The Federal Flood Control Act of 1958 allocated an additional $44 million for USACE work in the Los Angeles and San Gabriel River basins, and Ballona Creek. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Association of Bay Area Governments, 2010, *Taming Natural Disasters, Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area* (Appendix D, Disaster History); DWR, 2009, *California Water Plan Update 2009*; Ventura County, 2010, *Hazard Mitigation Plan.*						X	Flash, Alluvial Fan	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1958	July		San Bernardino			**Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D.*							Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1960	May		Los Angeles, Orange, San Diego, Ventura		Regional Coast	A tsunami was observed at stations throughout the entire West Coast, including 13 places in the region. At **Los Angeles** , one person died at Cabrillo Beach and major damage was done to small craft. In **San Diego** , docks were destroyed near Point Loma and boats and docks were damaged throughout the harbor. NOAA reported regional damage at $1 million. Major damage was reported in the Los Angeles and Long Beach harbors. An estimated 300 small craft were set adrift and about 30 sank, including a 24-meter yacht that smashed into bridge piers partially disabling the bridge. The Yacht Center lost 235 boat-landing slips and 110 more were destroyed at the Colonial Yacht Anchorage and Cerritos Yacht Anchorage for a loss of $300,000. A skin diver was missing and presumed drowned at Cabrillo Beach, but no death certificate was found. In the harbor, currents estimated to be 22 kph snapped and washed out pilings. Many thousands of liters of gasoline and oil spilled from the overturned boats, prompting fears of a fire. Several buoys and navigational aids were swept away at Terminal Island. The Coast Guard landing including the tide gauge was washed 5.6 km to sea but was recovered. A messenger fell 6 m from the bridge of the first ship to attempt to leave the harbor the next day. The ship returned to harbor so his injuries could be treated at the hospital. At **San Diego** , ferry service was interrupted after one passenger-laden ferry smashed into the dock at Coronado, knocking out eight pilings. A second ferry was forced 1.5 km off course and into a flotilla of anchored destroyers. More than 80 meters of dock were destroyed. A 100-ton dredge rammed the concrete pilings supporting the Mission Bay bridge, tearing out a 21-meter section. A 45-meter bait barge smashed eight slips at the Seaforth Landing before breaking in half and sinking. The currents swept 12- and 30-meter floats from the San Diego Harbor Masters Pier on Shelter Island and swept away two sections of dockage at the Southwest Yacht Club at Point Loma. At **Santa Monica** the water fell so low that the bottom of the breakwater was nearly exposed. Eight small craft snapped mooring lines but were taken in tow. One surge swept more than 91 meters up the beach, flooding a parking lot just off Pacific Coast Highway. **Source:** USGS, 2013, Earthquake Hazards Program: "Historic Earthquakes"; USGS, 2005 (revised/reprinted), *Surviving a Tsunami—Lessons from Chile, Hawaii, and Japan*.	$500,000 to $1,000,000	Los Angeles, San Diego Harbors	1960	1		X	Tsunami	ftp://ftp.ngdc.noaa.gov/hazards/publications/Kgrd-29.pdf
South Coast	1961	August	4	San Diego		City of San Diego	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. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	$ 78,300	San Diego County					Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1962	February	February 7-20, 1962	Los Angeles, Ventura		Countywide, Santa Clara River	**Los Angeles:** This flood was from a series of storms that produced large 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 the basin quickly and led to higher levels of runoff. **Ventura:** Heavy rain brought about flooding on all rivers of Ventura. President Kennedy declared Ventura County a disaster area. At Revolon Slough, approximately 3,435 acres of land were underwater. Breaks in the channel took about another 100 acres. Five small earthfill irrigation dams were eroded and badly damaged, and other irrigation works were destroyed, including concrete channel linings. 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 occurred along the Ventura River. The estimated peak flows on the Santa Clara River were 47,000 cfs, on the Ventura River 17,800 cfs, and on the Arroyo Simi 2,600 cfs. The estimated peak discharges at Sespe Creek near Fillmore were 25,600 cfs. The estimated cost of this event was $425,000.00. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Ventura County, 2010, *Hazard Mitigation Plan.*	$ 425,000	Ventura County					Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1963	December		Los Angeles	Baldwin Hills Dam Failure	Baldwin Hills	The Baldwin Hills Dam collapse sent a 50-foot wall of water down Cloverdale Avenue on December 14, 1963. Five people were killed. Sixty-five hillside houses were ripped apart, and 210 homes and apartments were damaged. 2,000 homes and 3,000 automobiles were damaged. The flood covered half a square mile. Damages were estimated at $15 million. The flood swept northward in a V-shaped path roughly bounded by La Brea Avenue, Jefferson Boulevard, and La Cienega Boulevard. The earthen dam that created a 19-acre reservoir to supply drinking water to West Los Angeles residents ruptured at 3:38 p.m. A pencil thin crack widened to a 75-foot gash, allowing 292 million gallons to surge out in 77 minutes. The cascade caused an unexpected ripple effect that is still being felt in Los Angeles and beyond. It prompted the end of urban-area earthen dams as a major element of water storage systems, and a tightening of the Division of Safety of Dams control over reservoirs throughout the state. **Source:** USACE, September 1964, *Report on Flood Damage and Disaster Assistance, Baldwin Hills Dam Failure of 14 December 1963*; MWDOC, 2012, *Hazard Mitigation Plan.*	$15 million	Baldwin Hills Dam		5		X	Engineered Structure Failure	http://www.mwdoc.com/pages.php?id_pge=140

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Coast	1964	March		Los Angeles, Orange, San Diego, Ventura		Regional coast	A tsunami was recorded all along the California Coast. It damaged boats and harbor facilities in Santa Monica, Los Angeles, and San Diego. NOAA reported regional damage at more than $275,000. **Los Angeles** : The damage occurred when a high, swift surge entered the channel, wrenching boats and finger piers loose from their moorings. At one time, about 75 to 100 boats were floating free. A longshoreman was killed at Wilmington when a boom with a pallet was being swung back onboard the Philippines Presidential Magsaysay. The cable snapped and went out of control, crushing him. Also, the Union Oil tanker Santa Maria ripped out a 175-foot section of dock when it was suddenly pushed against the dock while being moved by tugboats. The backlash from the tanker propeller racing to prevent the crash swamped an 18-foot boat and sank it. The Santa Maria incident was blamed on continuing surges in the channel, and the longshoreman's death may also have been caused by stresses in the cable due to the ship's motions. **San Diego** : The channel into Shelter Island Yacht Harbor looked like a rapid flowing river. Water rushed in and out of Mission Bay Channel but the effect was less noted. Water rose 6.5 feet in 10 minutes. Surges continued through the night, with one surge breaking the mooring at the Bali Ha'i restaurant on Shelter Island and another wrenching the 60-foot schooner from its moorings. The currents were strong enough to move two sections of a floating concrete pier at the Navy Amphibious Base on the Silver Strand. The sections were anchored by 5,000 pound anchors. One was dragged 100 yards by the current **Source:** NOAA, December 1993, *Tsunamis Affecting the West Coast of the United States 1806-1992.*	$ 275,000	Santa Monica, Los Angeles, San Diego	1964				Tsunami	ftp://ftp.ngdc.noaa.gov/hazards/publications/Kgrd-29.pdf
South Coast	1965	November-December		Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura		Regionwide	In urban Los Angeles County, widespread flood damage was caused at improved channels, and local flooding was common. Precipitation was generally 4 to 8 times the average, with record totals at many stations during November; the heaviest rain was in the mountains. **San Diego:** In San Diego County, six people were killed in primary area affected was Spring Valley. The President declared San Diego County a disaster areas after this event destroyed public and private property. San Diego River, Sweetwater River, and Tijuana Rivers and their tributaries were all flooded. Forester Creek flooded Santee with 4 to 5 inches of water. The floodwaters from Sweetwater River damaged commercial and residential property. The lower parts of Mission Valley were hit with flooding, resulting in one motel with up to a foot of water, and the bridge at Zion Road washed out. There were widespread landslides that impaired transportation in San Diego County. Highway 101 was closed. **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. 2,000 acres of agricultural lands were flooded with erosion or silting. Citrus and date groves suffered heavy damages. 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 drowned. Bridges and highway crossings were also in peril. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History;* USGS, 1966, *Floods of November and December 1965 in Southern California;* USACE, July 1966, *Flood Damage Report on Storms and Floods of November and December 1965, Riverside and San Bernardino Counties, Southern California.*	$8 million	Los Angeles	1965	26	11 in LA, 6 in San Diego, 9 in Riverside	X	Alluvial Fan, Flash, Debris Flow	http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1966-1967	December-January		Los Angeles, Riverside, San Bernardino, San Diego, Ventura		Santa Ana River - Redlands, Mission-Anaja Creek, Day Creek, Lytle Creek, Cucamonga Creek, San Antonio Creek, Etiwanda Creek, Santa Clara River	There was widespread damage to dams, stream channels, levees, highways, and bridges. Redlands, San Bernardino, and Indio sustained water and sewer infrastructure damage. In San Diego County, Otay, Bonita, Chula Vista, Hillcrest, Nestor, and Imperial Beach incurred widespread street and home flooding. San Bernardino County was 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 was closed due to flooding and debris. The Edison Plant at East Highland was cut off when the footbridge was carried away in floodwaters. 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 floodwaters 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 cfs. Estimated peak flow at Mill Creek for this event was 10,000 cfs. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*						X	Alluvial Fan, Flash, Debris Flow, Stormwater, Slow Rise	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1967	November-December		Los Angeles, San Diego, Ventura		Santa Clara River	**Los Angeles:** Big storm brought intense rains to Los Angeles. Los Angeles received almost 8 inches of rain during this event. Two people lost their lives, and 400 people were stranded in mountains because all transportation routes were closed due to landslides or washouts. Flash floods in canyons were caused by heavy rains above. Foothill communities were hit hardest in this event. In the San Fernando Valley and Eagle Rock areas of Los Angeles County, mudslides damaged highways and homes, and streets were flooded in Baldwin Hills. **San Diego** : In San Diego County, Otay, Bonita, Chula Vista, Hillcrest, Nestor, and Imperial Beach sustained widespread street and home flooding. **Ventura:** This is the second largest flooding event in the Simi Valley and Moorpark areas along the Calleguas Creek. Most of the damages were to residential property and to channel improvement. This flood caused an estimated $510.000 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 floodwater backing up onto 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 floodwaters, 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. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	$ 510,000	Ventura	1967	2	Santa Clara River	X	Debris Flow, Stormwater, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1968	March		Los Angeles, Riverside, San Diego, Ventura			Mudslides and debris-choked storm drains recurred but to a lesser extent than November 1967. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*							Debris Flow, Stormwater	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1968	Summer		Los Angeles			A tropical storm that dropped moderate amounts of rain in a short duration period caused flooding in Topanga Canyon and the Malibu Creek areas. The watershed above had burned shortly before this rain event and, although this was not a large amount of rain, the runoff 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. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*							Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Coast	1969	January-February	January 18-26, February 20-26	Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura	Winter '69 Storms	Regionwide	**Los Angeles:** Recurrent precipitation during January and February nearly approached the largest total since 1884. Flooding took the lives of 103 people and caused more than $160 million in damages to the South Coast Hydrologic Region. Due to increased development, the 1969 flood was the most damaging on record for parts of Ventura, Orange, San Bernardino, and Riverside counties. A total of 13.31 inches of rain fell in downtown Los Angeles. Los Angeles River reached 80% of design capacity. There were 73 people in Los Angeles County killed, and 13 died in Ventura County. Los Angeles sustained an estimated $82 million in damages, and Ventura County sustained $44 million in damages (1969 dollars). Impacts were exacerbated by fires in 1968. The population of Los Angeles County was 7 million. Afterward, Los Angeles County passed the 1970 Storm Drain Bond Issue ($225 million [1970 dollars]). The Federal National Environmental Policy Act and State Porter-Cologne Act were enacted in 1970. Federal Flood Control Act of 1970 prohibited dumping into USACE water resource projects or USACE facilities. After the 1971 Sylmar earthquake, the District established its Dam Reanalysis and Rehabilitation Program to identify dams needing upgrades to meet DSOD standards and to implement upgrades. The Federal Water Resources Development Act (WRDA) of 1974 directed USACE to consider nonstructural alternatives when developing flood prevention projects. The WRDA of 1976 directed USACE to study feasibility of enlarging Dominguez Channel, but no funds were made available prior to Federal Fiscal Year (FY) 1978. **Orange County** : The floods of January and February were the most destructive on record in Orange County. Previous floods had greater potential for destruction, but the County was relatively undeveloped when they occurred. During the flood of 1969, rain fell almost continuously from January 18 to January 25, resulting in widespread flooding. Orange County was declared a national disaster area on February 5. A second storm hit on February 21 and lasted until February 25, bringing rain to the already saturated ground. This second storm culminated in a disastrous flood on February 25. The storm resulted in the largest peak outflow from Santiago Reservoir since its inception in 1933. The reservoir at Villa Park Dam reached its capacity for the first time since its construction in 1963; the dam had a maximum inflow of 11,000 cfs. The outlet conduit was releasing up to 4,000 cfs, yet the spillway overflowed for 36 hours. The maximum peak outflow from the dam reached 6,000 cfs. Although the safety of the dam was never threatened, the outflow caused serious erosion downstream in the cities of Orange and Santa Ana and in some parks and golf courses. A Southern Pacific Railroad bridge, water and sewer lines, a pedestrian over crossing, and three roads washed out. Approximately 2,000 Orange and Santa Ana residents were evacuated from houses bordering Santiago Creek.	$213 million	Entire event, all hydrologic regions in SoCal, $2.7 million in San Diego	1969	115	Entire event, all hydrologic regions in SoCal	X	Flash, Debris Flow, Stormwater	http://www.oxnardfire.org/Uploads/DisasterPreparation/FINAL%20DRAFT%20Ventura%20County%20HMP%20-%20Oct%202010.pdf http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1969	January-February	January 18-26, February 20-26	Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura	Winter '69 Storms	Regionwide	**San Diego:** San Diego did not receive major damages from the 1969 floods, except for some cleanup of channels, minor road washouts, beach debris cleanup, and general cleanup 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 was $2.7 million. **Ventura:** One person died in a mudslide, and 12 people died as a result of drowning. Sewer and water supply lines were washed out, posing a health risk to residents. The estimated peak discharges on Sespe Creek near Fillmore were the highest recorded at 60,000 cfs, and on the Santa Clara River at 88,000 cfs. Families were evacuated from the Fillmore area. Along State Route 126, residences were inundated by Sespe Creek, diverted by debris. A railroad trestle bridge collapsed over Sespe Creek. Approximately 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 floodwaters of Santa Paula Creek. Highway damage was heavy in Ventura County. The February event was the largest flood of record in the Simi Valley and Moorpark 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. Three 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. Approximately 90 acres of citrus groves were washed away at the confluence of Sespe Creek and Santa Clara River. Again, the entire City of Santa Paula (6,000+) was evacuated because of the threats from the floodwaters 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 million. **Sources:** MWDOC, 2012, *Hazard Mitigation Plan* ; Ventura County Flood Control District, 1969, *The Great Floods of 1969*; Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area* ; DWR, 2009, *California Water Plan Updated 2009*; Ventura County, 2010, *Hazard Mitigation Plan* ; USACE, December 1969, *Report on Floods of January and February 1969 in Southern California*; City of Glendale, 2006, *Hazard Mitigation Plan;* Ventura County, 2010, *Hazard Mitigation Plan.*							Flash, Slow Rise	
South Coast	1969	January-February	January 18-26, February 20-26	Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura	Winter '69 Storms	Regionwide	**Riverside** : 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 the flooding in 1969, and many lives were saved on account of emergency evacuations. Flood damages in Riverside County amounted to $32 million. 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 greatest agricultural areas damaged by the floods were Prado Reservoir area, the tributaries of the Temescal Wash, the San Jacinto River areas locations. The greatest business losses were from the Temescal Wash in the Corona area, at areas emptying into Prado Reservoir. Transportation infrastructure saw the highest damages in from the Santa Ana River, Temescal, San Saline Creek in Mira Loma, and Oak Avenue channel at Corona. The mainline of the Southern Pacific Railroad was washed out. 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. Railroad lines that had been 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, apartment buildings, mobile home parks, roads, bridges, utilities, and city infrastructure. **Ventura:** The largest and most damaging natural floods recorded in the Santa Clara and Ventura watersheds occurred in January and February of 1969. The January flood was a result of the highest monthly precipitation total ever recorded in Ventura County at that time. The February flood was a result of intense rainfall similar in magnitude to the rainfall that caused the record breaking flood in January. During these floods, the 50- and 100-year peak discharge levels were reached in many channels. The combined effects of the 1969 floods were disastrous: 13 people lost their lives, and property damage was estimated at $60 million (1969 dollars). Homes in Casitas Springs, Live Oak Acres, and Fillmore were flooded, and 3,000 residents in Santa Paula and several families in Fillmore were evacuated twice. A break in the Santa Clara River levee threatened the City of Oxnard. Agricultural land, primarily citrus groves, was seriously damaged or destroyed. All over the County, transportation facilities, including roads, bridges, and railroad tracks, were damaged. The Fillmore, Oak View, and Ventura sewage treatment plants were severely damaged and dumped raw sewage into the Santa Clara and Ventura rivers. The untreated sewage polluted the rivers and the beaches at their outlets into the ocean. In addition, sewer trunk lines were broken along the Ventura River and its tributary, San Antonio Creek. Suspended sediment concentrations and discharge in many streams greatly exceeded any previously measured levels in the flood-affected areas. Suspended sediment concentrations reached a maximum of about 160,000 milligrams per liter in the Santa Clara River at Saticoy, and the maximum daily sediment discharge was 20 million tons during the storm peak.							Flash	
South Coast	1970	November-December		Los Angeles		San Diego County	**San Diego:** San Diego did not receive major damages from the 1969 floods, except for some cleanup of channels, minor road washouts, beach debris cleanup, and general cleanup 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 million. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*							Debris Flow	

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Coast	1970			Los Angeles, Ventura		Calleguas Creek, Simi Valley, Moorpark	Mud- and rockslides and flooding closed roads and damaged homes. Flooding by the Calleguas Creek caused $180,000 in estimated damages to the Simi Valley and Moorpark areas. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	$ 180,000	Ventura County					Flash, Slow Rise, Debris Flow	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1973	January-February		Ventura	Coastal Flooding	Santa Clara River	Santa Clara River peak flow 58,200 cfs. Declared Federal February 3, 1973, declared Venture February 28, 1973. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area*; Ventura County, 2010, *Hazard Mitigation Plan.*							Flash, Coastal	
South Coast	1973-1974	December-January		Los Angeles		Topanga Canyon	Mudslides flowed down Topanga Canyon Boulevard, damaged homes, and stranded motorists. **Source:** DWR, November 1974, *Bulletin No. 69-74: California High Water 1973-1974.*							Debris Flow	
South Coast	1974	January		San Diego, Ventura			Short duration, heavy rainfall in the Urban San Diego River Basin. **Source:** County of San Diego, August 2007, *Floodplain Management Plan.*							Flash	http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf
South Coast	1974	July	23	Riverside		Hemet, San Jacinto and Valle Vista	This was a high-intensity storm event in the western part of the Hemet area. Approximately 2.4 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. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	$ 135,000	Riverside County					Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1974	December		Orange			Heavy rains brought some flooding to low-lying areas of Orange County. Roads and utilities were damaged, along with agricultural lands with erosion and silting. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*							Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1975	November		Los Angeles		Santa Catalina Island	Damage to two docks was estimated at $1,000. **Source:** NOAA, December 1993, *Tsunamis Affecting the West Coast of the United States 1806-1992.*	$ 1,000	Santa Catalina Island	1975				Tsunami	ftp://ftp.ngdc.noaa.gov/hazards/publications/Kgrd-29.pdf
South Coast	1976	September	10	Riverside, San Bernardino, San Diego	Tropical Storm Kathleen		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. S**an Bernardino:** Nine hundred homes were damaged in this heavy rainstorm in the communities of Palm Desert, Rancho Mirage, Indian Wells, and Indio. The 1-day storm rainfall total was 7.38 inches. Total damages were estimated at $39 million. Governor Brown declared the area a disaster on September 13, and President Ford later declared 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 million 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 cfs. At Palm Canyon Creek peak discharges were 4,050 cfs. **San Diego:** Tropical Storm Kathleen brought heavy rain to San Diego desert regions. This event caused severe damage to Highway 8 in the Laguna Mountain region. The rai lines in the same general area also were washed out. This impacted transportation routes between San Diego County, 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 that 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. Estimated damages totaled $1.14 million. **Source:** Water Resources Institute at California State University, 2010, *AFTF Study Area Flood History.*	$39 million	Entire Event				X	Alluvial Fan, Flash	AFTF Study Area Flood History
South Coast	1976	September	23-25	Riverside, San Bernardino		Wilson Creek, Zanja Creek	Floods damaged Yucaipa. President Ford declared San Bernardino a disaster area after a tropical storm brought heavy rains to the area. Zanja Creek overflowed, flooding 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 million. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	$ 4,000,000	San Bernardino					Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1976			San Diego			Flooding throughout San Diego County due to tropical storm Kathleen. **Source:** San Diego County (SDCo), May 2013, Email from Sara Agahi/San Diego County Flood Control District to Terri Wegener/DWR, additional events to include in History of Events table.							Flash	San Diego County (SDCo), May 2013, Email from Sara Agahi/San Diego County Flood Control District to Terri Wegener/DWR, additional events to include in History of Events table.
South Coast	1976			Riverside		Wilson Creek	In September 1976, flooding as a result of tropical storm Kathleen caused approximately $15 million worth of property damage in the Cities of Palm Desert and Indian Wells. **Source:** FEMA, August 2008, *Flood Insurance Study, Riverside County, California, and Incorporated Areas.*							Flash	http://floodmaps.fema.gov/prelim/PrelimData/CALIFORNIA/Riverside%20County/Prelim_Issue_Date-2013-04-19/FIS%20Reports/06065CV001B.pdf
South Coast	1977	September		Riverside			Dike broke. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; DWR, 2009, *California Water Plan Update 2009.*							Engineered Structure Failure, Alluvial Fan	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1977			San Diego			Flooding throughout San Diego County due to tropical storm Doreen. **Source:** San Diego County (SDCo), May 2013, Email from Sara Agahi/San Diego County Flood Control District to Terri Wegener/DWR, additional events to include in History of Events table.							Stormwater, Flash	
South Coast	1978	January	14-19	San Diego			Total damages were $12 million. 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. Three 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 its 57 acres of parking lot. Fifteen 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 were washed out. There were extensive damages to channels and other flood control facilities. Flood control channels overtopped, flooding 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. There were damages to 98 houses, outbuildings or corrals, and 57 businesses. Sycamore Canyon Creek lost its sewer line, and channel embankment. The dikes at Santee Recreation Lakes eroded. Along the San Luis Rey River, the Deutsch 57 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, and bridges were destroyed. A few golf courses had damage, and 500 feet of embankment was washed out at the Tijuana River, which also caused damages to the San Ysidro Athletic Area. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	$ 12,000,000			3	San Diego County	X	Alluvial Fan, Flash, Debris Flow	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Coast	1978	January-March	January 16-17, San Diego	Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura		Countywide, most severe in south, east portions of county, Santa Clara River	In 1978, intense storms combined with inadequate drainage systems caused widespread street flooding and forced the evacuation of homes and businesses residing in lower elevations in Ventura, Los Angeles, Orange, San Bernardino, and Riverside counties. Damages caused by this event were estimated to be $86 million. In Orange County, the Santa Ana River and Santiago, Fullerton, and San Juan creeks damaged business, apartments, golf courses, and infrastructure. Downtown Los Angeles rainfall totaled 5.21 inches between February 5 and February 10, and 8.35 inches between March 1 and March 6. There were heavy mudflows in the Tujunga area of the City of Los Angeles and in La Crescenta. Landslides occurred in Pacific Palisades area, with 11 lives lost and an additional $200 million in damages (1978 dollars). Impacts were exacerbated by the 1975 fire in La Canada/La Crescenta and the 1977 fire in west Los Angeles/Malibu. **Fallbrook.** One of heaviest short-duration rainfalls recorded in County, subtropical origin. **Lakeside.** Long-duration heavy rainfall (60 days) leading to flooding in Lakeside region. Widespread flooding, particularly in the Encinitas, Fallbrook, Lakeside, La Jolla, La Mesa, Poway, Santee, and Spring Valley areas. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; DWR, 2009, *California Water Plan Updated 2009*; Ventura County, 2010, *Hazard Mitigation Plan*; USACE, June 1981, *San Diego River, A Nonstructural Approach*; USACE, November 1978, *Report on Floods of February and March in Southern California;* County of San Diego, August 2007, *Floodplain Management Plan*; City of Glendale, 2006, *Hazard Mitigation Plan* .	$107 million	Entire event, all hydrologic regions in SoCal	1978	20	Entire event, all hydrologic regions in SoCal	X	Slow Rise, Debris Flow, Stormwater	http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf
South Coast	1978	January-March	January 16-17, San Diego	Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura		Countywide, most severe in south, east portions of county, Santa Clara River	**Orange County** : In 1978, intense storms combined with inadequate drainage systems caused widespread street flooding and forced the evacuation of homes and businesses residing in lower elevations of Ventura, Los Angeles, Orange, San Bernardino, and Riverside counties. Damages caused by this event were estimated to be $86 million. In Orange County, the Santa Ana River and Santiago, Fullerton, and San Juan creeks damaged business, apartments, golf courses, and infrastructure. In Blue Bird Canyon, the rains caused a landslide and the cost of recovery was $52.7 million (2000 dollars) with 60 houses destroyed or damaged. Although the 1978 slide area was approximately 3.5 acres, it is suspected to be a portion of a larger, ancient landslide. **Los Angeles** : Downtown Los Angeles rainfall totaled 5.21 inches between February 5 and February 10, and 8.35 inches between March 1 and March 6. There were heavy mudflows in the Tujunga area of the City of Los Angeles and in La Crescenta. Landslides occurred in Pacific Palisades area, with 11 lives lost and an additional $200 million in damages (1978 dollars). Impacts were exacerbated by the 1975 fire in La Canada/La Crescenta and the 1977 fire in West Los Angeles/Malibu. **Riverside** : February 6-14, 1978: Two inches of rain fell in about 2 hours causing some flooding of homes and roads in the Corona and Wildomar areas. Trailer parks in both areas were evacuated due to mudslides or flooding. South of Corona in the Cleveland National Forest, almost 10 inches were recorded for this period. **San Diego:** Fallbrook sustained one of heaviest short-duration rainfalls recorded in the County. Lakeside sustained long-duration heavy rainfall (60 days), leading to flooding in that area. Throughout the county, there was widespread flooding, particularly in the Encinitas, Fallbrook, Lakeside, La Jolla, La Mesa, Poway, Santee, and Spring Valley areas. **Ventura:** Along the Santa Clara River, 1,300 feet of levees were washed out, and 2,100 feet of riprap were destroyed. Bank erosion occurred. Heavy damages occurred to agriculture, including crops 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 ; 30 people were emergency airlifted 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 railroad track was lost, and 1,000 feet of railroad track beds. A fire station had heavy damages as did a metal foundry, which had over 2 feet of silt inside those structures. There were 204 houses and 2 apartment buildings filled with between 2 to 5 feet of water/silt/debris. Approximately 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. Two hundred people were evacuated from this area. Roads and bridges in this area were damaged. Railroad lines were damaged. Utilities in this area had severe damages to lines. Power lines were toppled when poles became undermined by flowing water. Seven 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 was approximately $20 million. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; DWR, 2009, *California Water Plan Updated 2009*; Ventura County, 2010, *Hazard Mitigation Plan*; USACE, June 1981, *San Diego River, A Nonstructural Approach*; USACE, November 1978, *Report on Floods of February and March in Southern California*; County of San Diego, August 2007, *Floodplain Management Plan*; City of Glendale, 2006, *Hazard Mitigation Plan;* MWDOC, 2012, *Hazard Mitigation Plan.*	$107 million	Entire event, all hydrologic regions in SoCal	1978	20	Entire event, all hydrologic regions in SoCal	X	Flash, Debris Flow, Stormwater	http://www.mwdoc.com/pages.php?id_pge=140
South Coast	1978	January	15-17	Riverside			Several homes in Elsinore were flooded when over 4 inches of rain fell during this period. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*							Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1978	January	20	Riverside			The Riverside Canal broke in La Sierra, flooding some homes in the area. Other areas that had flooding problems on this date include Sunnymead, Woodcrest, and Little Lake. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*							Alluvial Fan	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1978	February-March	2/5-13, 2/27-3/6	Riverside, San Bernardino		San Bernardino County	**Riverside:** Two inches of rain fell in about 2 hours causing some flooding of homes and roads in the Corona and Wildomar 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. **San Bernardino:** Beginning February 5, a series of storms began to move through Southern California, causing considerable rainfall, accumulated runoff, flooding, and associated problems. The estimated cost of these events was $25 million. 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 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 damage to Foothill Boulevard and many other roads, including Arrow Highway. Homes were flooded. Landslides, triggered by the heavy rains, fell into homes in the Carbon Canyon area, ruining some houses. 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. At its crossing at the Santa Ana River, Alabama Street was washed away. These severe storms also caused the Mojave River to flood, causing roads crossing the river to be flooded and impassable. The Hinkley area was compromised heavily. Road crossings along Mojave River were destroyed, impeding transportation routes in high desert locations. Cost to San Bernardino County in the high desert areas was more than $1 million. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History.*	$25 million	Southern California and San bernardino County	1978	5	Southern California and San bernardino County	X	Alluvial Fan, Flash	AFTF Study Area Flood History
South Coast	1978	March	1-6	Riverside, San Diego			**San Diego:** March 5th, Flooding in Lakeside region caused over $15 million in damages, and 4 deaths; 21 were injured in this event, 5 homes were destroyed, another 616 homes were damaged, and 118 businesses were left damaged. Thousands of people were evacuated. Lake Hodges overflowed. Roads and highways were flooded. **Riverside:** 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 Wildomar and Winchester areas. Wildomar 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 4, a levee began to fail, and a trailer park and 20 businesses were flooded with 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; 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. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	$ 24,000,000	9000000-Riverside County, 15000000-San Diego County		4	San Diego County	X	Alluvial Fan, Debris Flow	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Coast	1978			Ventura			Along the Santa Clara River 1300 feet of levee was washed out, and 2100 feet of riprap was destroyed. Also, bank erosion occurred. Heavy damages were sustained by agriculture business, including crops destroyed and washed away. Public Utilities were damaged, including water and sewage lines. Roads and highways were blocked by debris. The town of Piru was cut off, and 30 people were emergency airlifted out. 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 railroad track was lost, along with 1,000 feet of railroad track bed. A fire station had heavy damages as did a metal foundry that had over 2 feet of silt inside those structures. Two apartments and 204 houses were filled with between 2 and 5 feet of water/silt/debris. Approximately 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. Two hundred people were evacuated from this area. Roads and bridges in this area were damaged. Railroad lines were damaged. Utilities in this area sustained severe damages to lines. Power lines were toppled when poles became undermined by flowing water. Seven 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 was damaged. Water supply lines and infrastructure were damaged. Total cost for this flood event for Ventura County was approximately $20 million. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History*.	$20 million	Ventura County	1978				Engineered Structure Failure, Debris Flow	AFTF Study Area Flood History, Water Resources Institute at California State University
South Coast	1979	January	31	Los Angeles, San Diego		Cities of La Mesa, Lemon Grove, National City, San Marcos, San Diego	Los Angeles experienced severe flooding and mudslides throughout the cities of La Mesa, Lemon Grove, National City, San Marcos, San Diego and unincorporated areas. The area experienced relatively short-duration high-intensity rainfall, low snow levels to 3,000 feet, and highly unstable weather. Losses totaled $2,766,268. Flooding also occurred in the El Cajon, Lakeside, Santee, and Spring Valley areas. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History;* County of San Diego, March 2004, *Multi-Jurisdictional Hazard Mitigation Plan* ; County of San Diego, August 2007, *Floodplain Management Plan*; City of Glendale, 2006, *Hazard Mitigation Plan.*	$ 2,766,268	San Diego County	1979			X	Flash, Alluvial Fan	http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf
South Coast	1979			San Diego		La Mesa, Lemon Grove, National City, San Marcos, San Diego	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 exceeded $2.5 million. **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History* ; County of San Diego, March 2004, *Multi-Jurisdictional Hazard Mitigation Plan.*	$ 2,500,000	San Diego County	1979				Alluvial Fan	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1980	January-March		Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura		San Jacinto River, Western Riverside County, San Diego River, Santa Clara River, Small Canyon	In 1980, a powerful series of storms left the region with destroyed homes, washed out bridges and roads, and disrupted utilities. Mudslides, erosion, and high water were experienced in all parts of San Diego County. Thousands of people were evacuated from the area, and 29 people lost their lives. Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties were declared disaster areas by President Carter. At the same time, downtown Los Angeles rainfall totaled 13.50 inches. The Los Angeles River overflowed its levees in Long Beach with 18 lives lost and $300 million in damages (1980 dollars). Los Angeles County population was almost 7.5 million at the time. This event prompted concern that the flood control system was inadequate to handle a 100-year storm. Floods topped banks of the river in Long Beach. Sepulveda Basin spillway almost opened. San Diego River topped out in Mission Valley. This was the most severe storm season to date after the 1916 and 1927 seasons, with $120 million in losses. **Orange County** : The damage was estimated at $1.1 billion in 2000 dollars. Heavy winter rainfall in 1979-80 caused damage in six southern California counties. In 1980, the rainstorm started on February 8 with 5 days of continuous rain totaling 7 inches. Slope failures were beginning to develop by February 15, and then very high-intensity rainfall occurred on February 16. As much as 8 inches of rain fell in a 6-hour period in many locations. Records and personal observations in the field on February 16 and 17 showed that the mountains and slopes literally fell apart on those two days. **San Diego** : 1980 Storm with 15 to 20 inches of precipitation over a 6-week period. Heaviest rains fell on February 20 and 21. Evacuations were needed in several neighborhoods, particularly in Lakeside and San Diego. County reservoirs peaked on March 6. **Ventura County:** In 1980, Calleguas Creek breached its levee in the Oxnard Plain and caused approximately $9 million (in 1980 dollars) in damage to the Point Mugu Naval Base from flooding and sediment deposition. In addition, approximately 1,500 acres of farmland were covered by floodwaters. The peak discharge was 9,310 cfs at the Madera Road Bridge in Simi Valley. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History;* DWR, 2009, *California Water Plan Updated 2009*; County of San Diego, March 2004, *Multi-Jurisdictional Hazard Mitigation Plan* ; Ventura County, 2010, *Hazard Mitigation Plan;* San Diego Flood Control District, February 1980, *Storm Report* ; County of San Diego, August 2007, *Floodplain Management Plan*; City of Glendale, 2006, *Hazard Mitigation Plan* ; MWDOC, 2012, *Hazard Mitigation Plan* .	$ 420,000,000	$300 million in Los Angeles and $120 million in San Diego		47	Los Angeles	X	Flash, Stormwater, Alluvial Fan	http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf
South Coast	1980	February	19-22	San Diego		Mission Valley	San Diego River flooded, and topped out in Mission Valley, causing $120 million in damages. This was the third largest flood behind the 1916 flood and 1927. All reservoirs were overfull and all had to spill during the duration of this event. San Diego County was declared a disaster area on February 20. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	$ 120,000,000	San Diego County				X	Flash, Alluvial Fan	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1981	September	7	Riverside		Lakeview, Green Acres near Hemet	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 damages estimated at $77,000. Some roads, utilities, businesses and other structures were also damaged with an estimated cost of for both areas set at $151,400,000. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	$ 294,900						Flash, Alluvial Fan	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1982	March		San Diego		San Diego	One of the largest San Diego River floods with a maximum cfs of 9,590. **Source:** The Day the San Diego River Was Saved: The History of Floods and Floodplain Planning in Mission Valley by Philip Pryde.							Alluvial Fan	http://www.sandiegohistory.org/journal/v57-3/v57-3pryde.pdf
South Coast	1982	November		Orange, San Diego		Countywide	Coastal creeks overflowed in the north part of San Diego County. High tide and surf flooded several homes and damaged boats at Sunset Beach and Anaheim Bay. **Source;** Wiegel, Robert L., 2009, *San Pedro Bay Delta, in Southern California Shore and Shore Use Changes During Past 1-1/2 Centuries from a Coastal Engineering Perspective* ; County of San Diego, August 2007, *Floodplain Management Plan.*							Coastal	http://escholarship.org/uc/item/24v319h6
South Coast	1982-1983	November-March		Ventura	Winter Storms	Regionwide	**Ventura:** In 1983, a Federal disaster was declared because of storm damage. Repairs to flood-control facilities were estimated to cost $15 million (in 1983 dollars). Improved channels in Moorpark and Simi Valley suffered severe damage from erosion during this event, and Calleguas Creek experienced record flooding. Damage to other public and private facilities has been estimated at approximately $39 million, with little more than half of that total due to damage to agricultural lands. **Source:** Ventura County, December 2010, *2010 Ventura County Hazard Mitigation Plan.*							Stormwater, Slow Rise	Ventura County HMP 2010;

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Coast	1982-1983	December-January		Orange, Riverside, San Bernardino, San Diego, Ventura	Winter Storms	Santa Ana River	**Ventura County:** In 1983, a Federal disaster was declared because of storm damage. Repairs to flood-control facilities have been estimated to cost $15 million (in 1983 dollars). Improved channels in Moorpark and Simi Valley suffered severe damage from erosion during this event, and Calleguas Creek experienced record flooding. Damage to other public and private facilities has been estimated at approximately $39 million, with little more than half of that total due to damage to agricultural lands. Declared Federal 2/9/83. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area;* County of Orange and Orange County Fire Authority, 2010, *Hazard Mitigation Plan;* USACE and the State of California, April 1984, *Coastal Storm Damage, Winter 1983*; Ventura County, 2010, *Hazard Mitigation Plan* .	$54 Million	Santa Ana River	1983			X	Slow Rise, Coastal	http://www.oxnardfire.org/Uploads/DisasterPreparation/FINAL%20DRAFT%20Ventura%20County%20HMP%20-%20Oct%202010.pdf
South Coast	1983	February-March	'26-4	Los Angeles, San Diego, Ventura	March 1983 Storms	Countywide; Santa Clara River	**Los Angeles:** Downtown Los Angeles rainfall totaled 5.26 inches, with six lives lost and $40 million in damages (1983 dollars). **Orange County** : El Nino rains caused the flood of 1983. The intense downpour and high tides often associated with El Nino (due to the presence of a low pressure system) affected intense shoreline flooding. Meanwhile, the Santa Ana River crested its sides near the mouth of the ocean; creating a disaster for the low-lying areas of Huntington Beach; floodwaters were 3 to 5 feet deep.**San Diego** : Shallow flooding in Alpine, Lakeside, Poway, Ramona, Ranch Santa Fee, Santee, Spring Valley, and Bonita areas of San Diego.**Ventura:** 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 record floods occurred. The channels in Simi Valley and Moorpark had major damage from erosion, and floodwaters inundated many thousands of acres of agricultural lands. Damages were estimated for the County of more than $39 million. Approximately 1,400 people 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 destroyed by this combination of events. The areas 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 Moorpark. Emergency crews were able to divert the water by quickly building groins to slow the erosion, and only two homes were lost. The floods closed 28 roads in the County. **Source:** MWDOC, 2012, *Hazard Mitigation Plan;* County of San Diego, August 2007, *Floodplain Management Plan*; City of Glendale, 2006, *Hazard Mitigation Plan* ; Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; DWR, 2009, *California Water Plan Updated 2009;* Ventura County, 2010, *Hazard Mitigation Plan* .	$40 million	Los Angeles	1983	6		X	Flash	http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf
South Coast	1983	March	1-4	Los Angeles, San Diego, Ventura	March 1983 Storms	Countywide; Santa Clara River	Downtown Los Angeles rainfall totaled 5.26 inches, with six lives lost and $40 million in damages (1983 dollars). Shallow flooding in Alpine, Lakeside, Poway, Ramona, Ranch Santa Fee, Santee, Spring Valley, and Bonita areas of San Diego. **Source:** County of San Diego, August 2007, *Floodplain Management Plan*; City of Glendale, 2006, *Hazard Mitigation Plan* ; Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; DWR, 2009, *California Water Plan Updated 2009*; Ventura County, 2010, *Hazard Mitigation Plan.*	$40 million	Los Angeles	1983	6		X	Flash, Alluvial Fan	http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf
South Coast	1983	August		Los Angeles, Riverside		Desert Areas	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. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*							Alluvial Fan, Flash, Stormwater	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1985	November	28	San Diego			Isolated showers. Flooding, particularly in the Fallbrook, Lakeside, and Spring Valley areas. **Source:** County of San Diego, August 2007, *Floodplain Management Plan.*							Flash	http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf
South Coast	1986	February		Ventura		Ojai	In the Ojai area of Ventura County, rain pounded down at the rate of nearly 1 inch an hour, turning streams into roaring rivers and forcing the evacuation of homes. Flooding forced closure of the Santa Monica and Ventura freeways in several locations, and Pacific Coast Highway was closed from Topanga to Las Flores canyons due to mudslides. **Source:** *Los Angeles Times*, 1986, "Massive Storm Hits; Flooding, Slides Triggered."							Debris Flow, Flash	http://www.articles.latimes.com/1986-02-15/news/mn-8153_1_small-creeks-and-streams
South Coast	1986	March	15-16	Orange		Countywide, East Walker River, Willow Springs, Mammoth, Old Benton, Hammil Valley, Chalfant	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. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*							Flash, Debris Flow, Alluvial Fan	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1986	November	17-18	San Diego		Mission Valley	Early winter storm brought much rain. The San Diego River overflowed its banks and roads were closed due to street flooding, especially in the Mission Valley area. Encinitas had flooding of streets. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*							Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1987	January	4-5	San Diego		San Diego River	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 were washed out, and untreated sewage spilled into Mission Bay, posing a health risk. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; County of San Diego, March 2004, *Multi-Jurisdictional Hazard Mitigation Plan.*							Stormwater, Coastal, Flash, Alluvial Fan	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1987	October	22	San Bernardino		Blue Jay	Heavy rain, localized at Blue Jay in the San Bernardino Mountains, created a flash flood that caused more than $1 million worth of damages. Two people lost their lives, and there were 10 injuries, some serious **Source:** Water Resources Institute at California State University and AFTF, July 2010, *AFTF Study Area Flood History.*	$ 1,000,000	San Bernardino County	1987	2	San Bernardino County		Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1987	December	4-5	Los Angeles		San Diego River	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. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*							Flash, Alluvial Fan	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1988	February	2	San Diego			A tropical storm lashed San Diego County with heavy rain. Fifty homes in Imperial Beach were flooded with up to 6 feet of water. Thirty families were evacuated from Imperial Beach. Roads flooded and utility outages brought a cost of $.5 million in damages from this event. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	$ 500,000	San Diego County					Slow Rise, Debris Flow, Alluvial Fan	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1988	May	29	Los Angeles		Avalon, Redondo Beach, San Pedro	Gale-force winds caused stormy seas. Avalon Harbor was closed after several boats were driven ashore or scattered. Piers were closed, and high surf claimed part of a restaurant in Redondo Beach. Boats were reported as capsized around San Pedro. Two boaters died as a result of the stormy seas. Several boats were reportedly smashed against the rocks in Avalon Harbor. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area.*							Coastal	http://lacoa.org/PDF/HazardsandThreats/Tsunami/HAZARDS%20AND%20THREAT%20-%20TSUNAMI%20HISTORY.pdf
South Coast	1990	September	5	Riverside		Beaumont-Banning	A thunderstorm in the Beaumont-Banning area dropped 1.77 inches of rain in 45 minutes and caused flooding that 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, surrounding some residential property and flooding one business in this location.. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*							Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1991	March	26-27	San Diego	Miracle March Storms		The "Miracle March" storms that saved the County from one of its worst recorded drought years in recent history. A winter storm dropped heavy rains in San Diego County. The San Diego River overflowed, flooding golf courses and shopping centers in Mission Valley. An apartment complex in the North Park area was flooded, and Highway 78 east of the Wild Animal Park was damaged. **Source:** County of San Diego, August 2007, *Floodplain Management Plan;* Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*							Alluvial Fan, Flash	http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Coast	1992	January, February	Jan 5-20 and Feb 10-15	Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura	Late Winter Storms	Woodland Hills, Sepulveda Basin Hacienda Heights, Quartz Hill, Santa Clara River	**Los Angeles** : 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; 400 yards of its banks were raised and reinforced to prevent it overflowing and flooding nearby by homes. 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. Floods during this period caused $14 million in damages to Los Angeles County. In Pacific Palisades, three homes were destroyed and four more damaged due to landslides. In the Mt. Washington area, two more structures were threatened by slides. Motorists were trapped in Sepulveda basin, and six people died. **Orange:** Coyote Creek, El Modena Irvine Channel, and Segundo Detach Canada all overflowed, but caused only minor problems. In the Anaheim Hills, a 24-acre landslide destroyed three houses and forced the evacuation of 45 others. In other areas of Anaheim Hills, another seven homes were threatened with slides. 100 wells were dug to drain the hillsides to slow this movement. In Laguna Beach, a landslide destroyed three 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 17-19 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 five homes. **Riverside:** During this 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 19, Riverside County was declared a state of emergency by the Governor and on February 3, 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 three cars that were swept away by the river. Seven 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 were set as more than $1 million. **San Bernardino** : A series of winter storms brought heavy rains to the area, especially to the high desert communities of Apple Valley, Hesperia, and Victorville. This storm damaged roads, utilities, and 340 homes were flooded. Six houses in the Victorville area lost their backyards when the Mojave River overflowed. In the Redlands area, two 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. **San Diego:** Flooding in the areas of Fallbrook, Bonita, and Lakeside were due to heavy rainstorms. Fifteen 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. Approximately 1,000 people were isolated in the Fallbrook area for 5 days because 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; the runway remained under 4 feet of water for days. Heavy rain caused some flooding of small streams and several road and intersection closures. Extreme high-intensity short-duration rainfall occurred at Palomar Observatory and Laguna Mountain. **Ventura:** 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 washouts were the extent of the problems in Ventura County from this event. At the Ventura River at Highway 101, peak flow was estimated at 45,800 cfs. Live Oak Creek was jammed with debris backing up at bridges in the Oak View area, and a nursing home was flooded. The Ventura River overflowed and overtopped the west bank at the Highway 101 Bridge in Ventura. 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. Approximately 110 people were rescued from the Resort and motor homes were evacuated from the location. One person died as a result of flooding in this location. Arroyo Simi eroded badly in the Simi Valley/Moorpark area. Walls and bridges were damaged. Calleguas Creek overflowed due to debris buildup, and the Lewis Street Bridge abutments were undermined. **Source:** County of San Diego, August 2007, *Floodplain Management Plan* ; Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*.	14000000 Los Angeles County; 1,000,000 Riverside County		1992	6 Los Angeles County; 7 Riverside County 15 San Diego County; 1 Ventura County			Flash, Alluvial Fan, Coastal	http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf
South Coast	1992	February	10-16	Los Angeles, Orange		Coastal areas	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; 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 four businesses and three homes were flooded. Burbank Boulevard was flooded and motorists were stranded. Twenty cars were flooded as were 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. **Orange County:** In 1992, several coastal storms affected many coastal utilities, storm drain, and sewage treatment processes. South Orange County Water Authority (SOCWA) reported significant cracks and damage to its Aliso Creek Ocean outfall. **Ventura:** 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 cfs. 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. Approximately 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/Moorpark area. Walls and bridges were damaged. Calleguas Creek overflowed due to debris build up, and the Lewis Street Bridge abutments were undermined. **Source:** MWDOC, 2012, *Hazard Mitigation Plan* ; Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*.				6	Los Angeles		Flash, Coastal	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1993	January	5-10	Riverside			During this 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 19, Riverside County was declared in a state of emergency by the Governor and on February 3, 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 of the 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 three cars, which were swept away by the river. Seven deaths were due to flooded roads. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*.				7	Riverside County	X	Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1993	January	17	Riverside			Federally Declared. **Source:** County of Riverside, March 2005, *Riverside County Operational Area Multi-Jurisdictional Local Hazard Mitigation Plan*	$ 12,629,191	Riverside County					Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Riverside_County_LHMP.pdf
South Coast	1993	January, February		San Diego		Fallbrook, Bonita and Lakeside, Santa Margarita River	San Diego County was declared a disaster area by Governor Wilson. Flooding in the areas of Fallbrook, Bonita and Lakeside areas were due to heavy rainstorms. Fifteen 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. Approximately 1,000 people were isolated in the Fallbrook area for 5 days because all access roads were damaged. San Luis Rey River 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 outbuildings were flooded with water and mud up to 10 deep; the runway remained under 4 feet of water for days. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*.				15	San Diego County	X	Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Coast	1993	January-February	5-3	Los Angeles, Orange, Riverside, San Bernardino, San Diego		Laguna Beach	**Great Floods of 1993 -Los Angeles** : On February 3, 1993, President Clinton declared Los Angeles County a disaster area after a series of storms brought heavy rain that caused countywide flooding. Floods during this period caused $14 million in damages to Los Angeles County. In Pacific Palisades, three homes were destroyed and four more damaged due to landslides. In the Mt. Washington area two structures were threatened by mudslides. **Orange:** In 1993, El Nino caused more flooding. Coyote Creek, El Modena Irvine Channel, and Segundo Detach Canada all overflowed, but caused only 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 Hills, another seven homes were threatened with slides. 100 wells were dug to drain the hillsides to slow this movement. In Laguna Beach, a landslide destroyed three 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 17-19 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 five homes. An intense storm was concentrated in the Laguna Canyon Channel area, extending from Lake Forest to downtown Laguna Beach. In spite of a valiant effort to save downtown merchants by sandbagging, the stores were flooded. Laguna Canyon Road was damaged extensively, as well as homes and small businesses in the Laguna Canyon Channel. There were no fatalities reported. **Riverside:** During this 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 were killed. Many others were evacuated or rescued from their homes. On January 19, Riverside County was declared in a state of emergency by the Governor and on February 3, 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 area of Old Town Temecula and Old Town Murrieta were 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 were set above $1 million. **San Bernardino** : In the Redlands area, two 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. **San Diego:** San Diego County was declared a disaster area by Governor Wilson. Flooding in the areas of Fallbrook, Bonita, and Lakeside areas was caused by heavy rainstorms. Fifteen 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. Approximately 1,000 people were isolated in the Fallbrook area for 5 days because 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 outbuildings were flooded with water and mud up to 10 deep; the runway remained under 4 feet of water for days. **San Diego County, Feb 7** : Flooding affected Fallbrook and Lakeside areas of San Diego County. **Feb 20:** Rain in scattered areas with shallow flooding sustained in Lakeside and Bonita. Several roads and intersections were closed. **Ventura:** 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 washouts were the extent of the problems in Ventura County from this event. **Source**: County of San Diego, August 2007, *Floodplain Management Plan* ; MWDOC, 2012, *Hazard Mitigation Plan* ; Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History* ; County of Riverside, March 2005, *Riverside County Operational Area Multi-Jurisdictional Hazard Mitigation Plan.*	$ 14,000,000	Los Angeles				X	Flash	http://www.mwdoc.com/pages.php?id_pge=140
South Coast	1993	February	7, 20	San Diego			San Diego County, **Feb 7** : Isolated showers produced flooding that affected Fallbrook and Lakeside areas. **Feb 20** : Rain in scattered areas caused shallow flooding in Lakeside and Bonita, along with some flooding of small streams. Several roads and intersections were closed. **Source:** County of San Diego, August 2007, *Floodplain Management Plan*							Flash	http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf
South Coast	1994	February	7-8	Los Angeles		Altadena, Malibu	Storm rainfall totaled 1.61 inches in Malibu and 2.01 inches in Altadena. Mudflows were prevalent in Malibu and Altadena on hillsides burned by 1993 fires. Note that the Northridge Earthquake occurred in January 1994, causing $2.3 billion in structural damage countywide (1994 dollars) with 57 lives lost. Among impacted facilities was Pacoima Dam, which was intact, but repairs were needed (completed in 1998). **Source:** Kusky, Timothy, June 2010, *Encyclopedia of Earth and Space Science.*							Debris Flow, Stormwater	http://books.google.com/books?id=vMk4t21fOvoC&pg=PA523&lpg=PA523&dq=malibu+%2Bmudflows+1994&source=bl&ots=5a-4q4n7lB&sig=6aGKyFjkVhMh6NbvFPODMhleC_I&hl=en&sa=X&ei=ZW7kUc3rGKq3ywHkj4CADg&ved=0CE4Q6AEwBg#v=onepage&q=malibu%20%2Bmudflows%201994&f=false
South Coast	1994			San Diego			Extended-period heavy rainfall – subtropical origin. **Source:** County of San Diego, August 2007, *Floodplain Management Plan.*							Flash	http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf
South Coast	1995	January	4-24	San Diego		San Diego River	A series of storms struck Southern California beginning January 4. San Diego County was declared a disaster area on January 10 by President Clinton. A San Diego woman drowned when her basement flooded. The Santee area was flooded when the San Diego River 59 overflowed its banks. The result was many million of dollars in losses. On January 22 rain-soaked cliffs collapsed in La Jolla and killed two people on the beach below. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*							Flash, Alluvial Fan	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1995	January-March		Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura	Severe Winter Storms	Regionwide	**Los Angeles** : In January, local storm drains overflowed, which damaged adjacent areas in many places. Flooding and mudslides closed State Highway 1 at several locations. In Long Beach (Signal Hill), 2.6 inches of rain fell in 1 hour. In south Los Angeles County, 3.6 inches of rain fell in 1.5 hours. Downtown Los Angeles rainfall totaled 3.85 inches. Flooding and mudslides were prevalent. South Los Angeles County was hardest hit, with 200 structures flooded. Impacts in other areas were exacerbated by 1993 fires in Altadena and Malibu. **Orange County:** In 1995, a disaster was declared in Orange County after extremely heavy and intense rains exceeded the storm runoff capacity of local drainage systems in many Orange County cities and regional Flood Control District systems. Widespread flooding of homes and businesses occurred throughout these cities. There were approximately 1,000 people evacuated and extensive damage sustained to both private and public property. **San Diego County:** San Diego County was declared a disaster area. The area experienced moderately heavy 1- to 2-hour rainfall with flooding resulting in tens of million dollars in losses. Flooding in North County equaled the 1% annual chance (100-year) rainfall with short-duration flooding. Thunderstorms in San Felipe Valley produced localized minor flooding. On January 22, rain-soaked cliffs collapsed in La Jolla and killed two people on the beach below. On **January 3** , Loma Alta Creek overflowed its banks flooding nearby mobile home parks and prompting the evacuation of residents. Escondido Creek overflowed and washed out portions of adjacent roads. **February 14** : San Diego River overflowed onto streets in Santee, forcing some residents to evacuate. A woman drowned in her basement in San Diego when it filled with 5 feet of water. **March 5** : Los Penasquitos Creek flooded train tracks. Amtrak passengers were forced to ride buses to their destination. Low-lying bridges were also under water. **March 11:** Flooding in the Ramona area. **Riverside:** 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 23 and 24. A trailer park was threatened with flooding, but emergency levees were built to forestall this disaster. One death was attributed to this event. At the request of Gov. Wilson, President Clinton declared Riverside County a disaster area during this period. **San Bernardino:** March 10-11 Three boys in the City of San Bernardino riding their bikes in the flood control channel were swept away by floodwater. However they were rescued by emergency personnel treated for hypothermia. **Ventura County:** 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 facilities, 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 floodwaters and debris. Above normal rainfall triggered damaging debris flows, deep-seated landslides, and flooding. Several deep-seated landslides were triggered by the storms, the most notable was the La Conchita landslide, which in combination with a local debris flow, destroyed or badly damaged 11 to 12 homes in the small town of La Conchita, about 20 km west of Ventura. There also was widespread debris-flow and flood damage to homes, commercial buildings, and roads and highways in areas along the Malibu coast that had been devastated by wildfire 2 years before. Source: Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History* ; County of San Diego, August 2007, *Floodplain Management Plan* ; MWDOC, 2012, *Hazard Mitigation Plan.*						X	Debris Flow, Flash, Slow Rise, Stormwater, Alluvial Fan	http://www.water.ca.gov/floodmgmt/docs/Bul69-95/00-bull69-95front.pdf http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf
South Coast	1995	March	5,6	Riverside		Mecca, Idyllwild	Flooding caused by rains. 3,000 acres of farmland flooded. Portions of Highway 74 washed away, Flooding caused by rains. 2 people injured. **Source:** County of Riverside, March 2005, *Riverside County Operational Area Multi-Jurisdictional Local Hazard Mitigation Plan* .	$ 2,000,000	Riverside County					Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Riverside_County_LHMP.pdf
South Coast	1995	March	23-24	Riverside		Lake Elsinore	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 23 and 2. A trailer park was threatened with flooding, but emergency levees were built to forestall this disaster. One death was attributed to this event. At the request of Gov. Wilson, President Clinton declared Riverside County a disaster area during this period. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History* , Water Resources Institute at California State University.				1	Riverside County	X	Alluvial Fan, Flash, Debris Flow	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1997	January		Los Angeles, Orange, Santa Barbara, Ventura	January 1997 Floods	Ventura, Santa Clara Rivers, San Antonio Creek, Santa Ana River	Significant coastal flooding. **Source:** Ventura River Watershed Coordinator, February 2013, *Floods in the Ventura River Watershed.*	$ 1,500,000,000	Statewide	1997			X	Flash, Slow Rise	http://pubs.usgs.gov/fs/1999/0073/report.pdf http://venturawatershed.org/wp-content/uploads/2012/08/Floods-2-7-13-web2.pdf
South Coast	1997	October	7	San Bernardino	Flash Floods	Sand Creek, Little Sand Creek Watersheds	A rain event hit the area of Sand Creek and Little Sand Creek in the cities of San Bernardino and Highland. Approximately 1.7 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 runoff, debris, and mud were produced, which caused heavy flooding to 42 homes, 24 units of an apartment building, along with 14 cars, and major damages to a private High School. Flooding occurred over 2 miles away from storm channels that had become clogged with storm debris, causing flows to break out of concrete channels and create new paths. Damage was estimated at $530,000. Private property estimated damage was $448,000. Removal of flood debris and repair to floodworks was estimated to be $110, 400. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History* ; County of Riverside, March 2005, *Riverside County Operational Area Multi-Jurisdictional Hazard Mitigation Plan.*	$ 1,088,400	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				X	Slow Rise, Debris Flow, Alluvial Fan	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Coast	1997-1998			Ventura			**Ventura:** In the winter of 1997–1998, several heavy rainfall events hammered southern California. Some of the most intense rains occurred in Ventura County, causing flooding of dozens of homes and closure of approximately 35 roadways. A falling hillside in Ventura forced more than 60 residents to evacuate. Heavy storms caused an oil pipeline rupture, sending 8,000 gallons of crude oil into the Pacific Ocean and severing a natural gas pipeline that sparked a 100-foot flame. Countywide damages exceeded $50 million; however, no lives were lost. **Source:** Ventura County, December 2010, *2010 Ventura County Hazard Mitigation Plan*.	$50 million	Ventura County	1998				Flash	Ventura County HMP 2010
South Coast	1998	January-March		Los Angeles, Orange, Riverside, San Diego, San Bernardino, Ventura	El Niño Floods	Countywide	**Los Angeles:** El Niño storms damaged the Malibu coastline. Impacts were exacerbated by the 1996 fire. Downtown Los Angeles rainfall totaled 15.18 inches for February, and 33.53 inches for the 1997-98 Water Year. Rains continued into May. **Orange County:** El Niño Storms that occurred during this period created extensive storm damage to private property and public infrastructure, with damages reaching approximately $50 million. Storm conditions caused numerous countywide mudslides, road closures, and channel erosion. Hillside erosion and mudslides forced the continual clearing of roads of fallen trees and debris. Protective measures, such as stabilizing hillside road slopes with rock or K-rail at the toe of slopes, were taken to keep the normal flow of transportation. Harbors, beaches, parks, and trails also sustained substantial storm damage. During the 1997/1998 El Nino Season, heavy rainfall increased movement on the site of an ancient landslide in Laguna Niguel. The storms in December 1997 had accelerated its movement and in early 1998, a crumbling hillside forced the evacuation of 10 hilltop homes and more than 10 condominium units resting below. Ultimately, four of the hilltop homes collapsed, falling down hillside into the void created by the slide area. The condominium complex has since been demolished and the site remains open space. 4-8 inches of rain fell across Orange County in this event. 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 suffered land- and mudslides, which compromised transportation routes. Several sinkholes developed in roads, causing traffic problems. Bridges and rail lines were also damaged. Electricity service was disrupted, and utilities were washed out. Agricultural lands saw damages to crops and livestock. **San Bernardino:** Over 14.5 inches of rain fell during February of 1998. On Feb. 23 alone, over 3 inches were recorded near the center of the City of San Bernardino, and the previous day, 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, as well as removal of debris from the basin, was an enormous undertaking, costing close to $1 million in public property works. **San Diego: Feb. 2, 1998:** Rising waters on Spring Valley Creek briefly stranded motorists. **Feb. 23, 1998:** Widespread flooding led to a Presidential Disaster Declaration that covered four counties. The San Diego River peaked on February 24 at 15.1 feet, which is 3.8 feet above flood stage. Approximately 200 people were evacuated from three mobile home parks in Oceanside. March 28, 1998, Flooding in the El Cajon area. **Ventura County** : In the winter of 1997–1998, several heavy rainfall events hammered southern California. Some of the most intense rains occurred in Ventura County, causing flooding of dozens of homes and closure of approximately 35 roadways. A falling hillside in Ventura forced more than 60 residents to evacuate. Heavy storms caused an oil pipeline rupture, sending 8,000 gallons of crude oil into the Pacific Ocean and severing a natural gas pipeline that sparked a 100-foot flame. Countywide damages exceeded $50 million. However, no lives were lost. **Source:** County of San Diego, August 2007, *Floodplain Management Plan*; Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; MWDOC, 2012, *Hazard Mitigation Plan*, Ventura County, 2010, *Hazard Mitigation Plan*; County of Riverside, March 2005, *Riverside County Operational Area Multi-Jurisdictional Hazard Mitigation Plan.*					X	Flash	http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf
South Coast	1998	February	6	Los Angeles, Riverside, San Diego, San Bernardino, Ventura	El Niño Floods	Countywide	Beaches were severely eroded in L.A. county. Beachfront homes were undermined by severe erosion and damaged from high waves. Federally Declared as a result of El Nino storms with associated flooding, debris, road damage, and water damage to homes. **Source:** County of Riverside, March 2005, *Riverside County Operational Area Multi-Jurisdictional Hazard Mitigation Plan,* FEMA, December 2011, *Open Pacific Coast Study, Los Angeles, California.*	$ 12,629,191	Riverside County					Slow Rise, Flash, Debris Flow	http://www.r9map.org/Docs/111202_FEMA-Brochure_LosAngeles_web.pdf http://hazardmitigation.calema.ca.gov/docs/lhmp/Riverside_County_LHMP.pdf
South Coast	1998	February	23	San Diego		San Diego River	Widespread flooding led to a Presidential Disaster Declaration that covered four counties, including San Diego County. The San Diego River peaked on February 24 at 15.1 feet, which is 3.8 feet above flood stage. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*							Flash, Alluvial Fan	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1998	August	29-30	Riverside		Hemet	Strong thunderstorm focused on the Hemet area caused flash flooding in that area. Homes and roads were flooded and damaged.. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*						X	Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	1999	July	11-12	Riverside		Cherry Valley, Calimesa	Federally Declared. Flash flood. Camp and property damaged. Damage in county was $750,000. Three people were injured. **Source:** County of Riverside, March 2005, *Riverside County Operational Area Multi-Jurisdictional Hazard Mitigation Plan.*	$ 750,000	Riverside County					Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Riverside_County_LHMP.pdf
South Coast	1999	August		Riverside		Wilson Creek	Minor flooding was reported in southeast Yucaipa and Calimesa along Wildwood Creek. **Source:** City of Yucaipa, March 2005, *Yucaipa Hazard Mitigation Plan.*							Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/City_of_Yucaipa_HMP_.pdf
South Coast	2000	March	7	Riverside		Moreno Valley	Flooding and mudslides caused by rain. Homes and property destroyed. **Source:** County of Riverside, March 2005, *Riverside County Operational Area Multi-Jurisdictional Hazard Mitigation Plan.*	$ 1,500,000	Riverside County					Flash, Debris Flow	http://hazardmitigation.calema.ca.gov/docs/lhmp/Riverside_County_LHMP.pdf
South Coast	2001	February	11-13	Orange, Ventura			Heavy rains brought widespread flooding and high runoff 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. **Source:** DWR, 2009, *California Water Plan Update 2009*; Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*							Flash, Alluvial Fan	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	2001	November	24	Riverside		County Areas & Riverside City	Flood channels were blocked, and homes flooded. **Source:** County of Riverside, March 2005, *Riverside County Operational Area Multi-Jurisdictional Hazard Mitigation Plan.*							Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Riverside_County_LHMP.pdf
South Coast	2002	November		Riverside		Wilson Creek	**Source:** City of Yucaipa, March 2005, *Yucaipa Hazard Mitigation Plan*							Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/City_of_Yucaipa_HMP_.pdf
South Coast	2003	February		Los Angeles		San Gabriel Mountains area - Palmer Canyon in Claremont, La Verne	Flash floods and debris flows were caused by record rainfall across southern California. A mudslide occurred in Tejon Pass north of Los Angeles, and an 8-foot wall of water cut off 54 houses in Palmer Canyon. **Source:** *Los Angeles Times*, 2003, "Claremont Flooded as Storm Subsides."							Flash, Debris Flow	http://articles.latimes.com/print/2003/feb/14/local/me-rain14
South Coast	2003	August	18	Riverside		Moreno Valley	There was a flash flood in Moreno Valley and government buildings flooded. Damage was estimated countywide at $500,000. **Source:** County of Riverside, March 2005, *Riverside County Operational Area Multi-Jurisdictional Hazard Mitigation Plan.*	$ 500,000	Riverside County					Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Riverside_County_LHMP.pdf
South Coast	2003	November	12	Los Angeles, Riverside		Watts, South Gate, Compton, Corona	**Riverside:** Storms brought 5 inches of hail and rain, causing flash flooding. Firefighters had to rescue over 100 people from waist-deep waters. Nearly 130 homes and businesses were severely damaged when more than 5 inches of rain fell in 2 hours. State Declared Disaster for flooding. **Corona:** Flash flooding occurred. Riverside countywide damage estimated at $10,000. **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; County of Riverside, March 2005, *Riverside County Operational Area Multi-Jurisdictional Hazard Mitigation Plan.*	$ 10,000	Riverside County					Flash, Alluvial Fan	http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf http://hazardmitigation.calema.ca.gov/docs/lhmp/Riverside_County_LHMP.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Coast	2003	December	25-26	San Bernardino	Christmas Day Storm	Waterman Canyon, Devore, Little Creek, Manzanita Flats, City Creek	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 washed out two bridges downstream. At Lytle Creek, flooding destroyed the road in the Scotland area, and debris was 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 two people at the KOA campground, along with 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. Heavy rain on San Bernardino Mountains, deforested by forest fires in October, produced debris-flow mudslides and floods. There were 15 recorded deaths, which resulted in the construction and rehabilitation of debris basins. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; DWR, 2009, *California Water Plan Updated 2009*.		Lytle Creek, Camp Sofia, Cable Canyon		16	San Bernardino County, 14-Camp Sofia 2 - KOA Campground	X	Alluvial Fan, Flash, Debris Flow	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	2004	January	2	Riverside		Mira Loma, Moreno Valley	Flash floods in Mira Loma and Moreno Valley left damages estimated at $10,000. **Source:** County of Riverside, March 2005, *Riverside County Operational Area Multi-Jurisdictional Hazard Mitigation Plan.*							Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Riverside_County_LHMP.pdf
South Coast	2004	January	18	Riverside		Temecula, Riverside, Mira Loma	Flash floods in Temecula, Riverside, and Mira Loma left damages estimated at $55,000. **Source:** County of Riverside, March 2005, *Riverside County Operational Area Multi-Jurisdictional Hazard Mitigation Plan.*							Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Riverside_County_LHMP.pdf
South Coast	2004	February	2	Riverside		Mira Loma, Moreno Valley	Flash flood. **Source:** County of Riverside, March 2005, *Riverside County Operational Area Multi-Jurisdictional Hazard Mitigation Plan.*	$ 10,000	Riverside County					Flash	http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf
South Coast	2004	February	18	Riverside		Temecula, Riverside, Mira Loma	Flash flood. **Source:** County of Riverside, March 2005, *Riverside County Operational Area Multi-Jurisdictional Hazard Mitigation Plan.*	$ 55,000	Riverside County					Flash	http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf
South Coast	2004	August	13-14	Riverside			Monsoonal thunderstorms produced heavy rains in the Wildomar and Sage areas. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*.							Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	2004	October	20-27	Riverside, San Bernardino, San Diego		Perris, Mira Loma, Moreno Valley, Perris, Sun City, Lake Elsinore, San Jacinto River	**Riverside:** Heavy rains produced widespread flooding. A flooded intersection in Sun City claimed seven cars, and their occupants had to be rescued. Many motorists were stuck in floodwaters near Perris at the San Jacinto River. Damage estimated at $500,000. **San Bernardino** : 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 road damage and closures, especially in mountain locations. Rail lines were washed out and trains were derailed because of slides. Some live stock, most notably horses, were neck deep in floodwater. **San Diego:** The Cedar Fire of October 2003 burned watershed throughout San Diego County Estates (Ramona), Harbison Canyon, and others. Sizeable rainfall on October 27 and subsequent storms resulted in sediment-laden runoff flooding a number of homes, with large amounts of deposition occurring within natural streams. Federal assistance through the Natural Resources Conservation Service resulted in Emergency Watershed protection projects and Damage Survey Reports. **Source:** County of San Diego, August 2007, *Floodplain Management Plan*; Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; County of Riverside, March 2005, *Riverside County Operational Area Multi-Jurisdictional Hazard Mitigation Plan.*	$ 500,000	Riverside County				X	Alluvial Fan, Flash, Debris Flow	http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	2004-2005	December-January		Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura		Regionwide	**Los Angeles:** Five days of heavy rains caused widespread debris-flow and slow-rise flooding throughout Southern California, with damages of $100 million. Twelve people died from this event. Downtown Los Angeles rainfall totaled 10.5 inches between December 27 and January 5, and an additional 7.84 inches between January 7 and January 11. Flood control infrastructure was damaged, with approximately $25 million in damages (2005 dollars). Mudflows damaged a mobile home park in Newhall. Impacts were exacerbated by a fire in 2004. Homes in La Canada-Flintridge, Montrose, Castaic, and Val Verde were damaged by runoff and mudslides from unburned hillsides. This was the second-wettest year on record in the Los Angeles Basin; the rains caused extensive damage in some areas, triggering landslides and debris flows. **Riverside:** On February 4, 2005 President Bush declared seven counties in Southern California disaster areas, including Riverside County. Runoff 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. **San Bernardino** : A pregnant woman was swept away and drowned along with her unborn child by City Creek in Highland. Lytle Creek was over 200 feet wide and flooded homes. In Big Bear City, 111 homes, businesses, and schools were flooded. In the Lake Arrowhead area, three homes were destroyed by mudslides and seven others damaged. A hotel in Crestline was destroyed by a mudslide. Most highways in the San Bernardino Mountains were closed due to washouts, landslides, or flooding. Lake Arrowhead had almost 32 inches of rain for this period alone, with Lytle Creek receiving almost 20 inches. **San Diego** : Continuous rains caused damage in Forrester Creek at La Cresta Road and San Vicente Creek in Ramona. The area was a Federally declared disaster. Federal assistance resulted in Emergency Watershed Protection projects, Damage Survey Reports, and Hazard Mitigation proposals. Bonita was especially hard hit. San Diego River rose above flood stage flooding areas around the Fashion Valley Mall and washing out a low-water crossing in the Mission Valley area. A 20-foot section of State Route 6 was washed out. Several homes were flooded in the El Cajon area. Runoff was high from this event because 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; one person was killed by a falling tree. There was damage to roads, and agricultural lands. **Ventura County** : In January 2005, winter storms brought heavy rains to the region. The Ventura River reached a maximum stage of 17.5 feet and maximum discharge of 152,560 cfs. High-water flows, scouring, and washouts in the Ventura River damaged several water wells and exposed water lines owned by the Ojai Valley Sanitary District. Severe erosion occurred along both embankments of the Ventura River. Damage from the January 2005 storms totaled more than $200 million. 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 seven counties in Southern California disaster areas, including Ventura County. **Source:** Ventura County, 2010, *Hazard Mitigation Plan*; City of Glendale, 2006, *Hazard Mitigation Plan*; Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; County of San Diego, August 2007, *Floodplain Management Plan.*	$ 127,000,000	Regionwide	2005	12	Regionwide	X	Debris Flow, Slow Rise, Alluvial Fan, Flash	http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf; http://www.oxnardfire.org/Uploads/DisasterPreparation/FINAL%20DRAFT%20Ventura%20County%20HMP%20-%20Oct%202010.pdf; and http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf
South Coast	2004-2005	December-February		San Diego			**Source:** County of San Diego, August 2007, *Floodplain Management Plan.*							Alluvial Fan, Flash	http://www.sdcounty.ca.gov/dpw/floodcontrol/floodcontrolpdf/floodplainmanagementplan.pdf
South Coast	2005	January		Ventura			**Ventura County:** In January 2005, winter storms brought heavy rains to the region. The Ventura River reached a maximum stage of 17.5 feet and maximum discharge of 152,560 cfs. High-water flows, scouring, and washouts in the Ventura River damaged several water wells and exposed water lines owned by the Ojai Valley Sanitary District. Severe erosion occurred along both embankments of the Ventura River. Damage from the January 2005 storms totaled more than $200 million. **Source:** Ventura County, 2010, *Hazard Mitigation Plan.*	$200 million	Ventura County	2005				Flash	http://www.oxnardfire.org/Uploads/DisasterPreparation/FINAL%20DRAFT%20Ventura%20County%20HMP%20-%20Oct%202010.pdf
South Coast	2005	February	23	San Diego			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. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*							Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	2005	June	1	Orange		Bluebird Canyon	**Orange County** : On June 1, 2005, Bluebird Canyon in Laguna Beach experienced a landslide. Exceptionally heavy rainfall during the winter period was the underlying cause of the instability in an ancient landslide. A 30-acre piece of hillside between 50 to 60 feet deep broke free and fell on the homes below; 15 homes were destroyed and 32 others had varying levels of damage. The approximate cost of damage was about $35 million. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; MWDOC, 2012, *Hazard Mitigation Plan.*							Debris Flow	http://www.mwdoc.com/pages.php?id_pge=140
South Coast	2005	July	23	Riverside		Hemet	Flash flooding occurred in the Hemet area because of thunderstorms releasing heavy rain. Homes and businesses in Hemet were flooded or damaged by this event. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*						X	Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	2006	July	7	San Bernardino			Thunderstorms caused flooding. **Source:** San Bernardino County, 2011, *Multi-Jurisdictional Hazard Mitigation Plan Update.*							Flash	http://www.sbcounty.gov/Uploads/SBCFire/content/oes/pdf/Hazard-Mitigation-Plan.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Coast	2006	September	4-6	Riverside		San Jacinto, Hemet, Elsinore	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. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*						X	Alluvial Fan, Debris Flow	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	2006	October	13	San Bernardino			Eighteen homes and businesses were flooded when a large thunderstorm dropped heavy rains. Two vehicles were damaged by floodwaters 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. **Source:** San Bernardino County, 2011, *Multi-Jurisdictional Hazard Mitigation Plan Update* ; Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*							Flash	http://www.sbcounty.gov/Uploads/SBCFire/content/oes/pdf/Hazard-Mitigation-Plan.pdf
South Coast	2007	September	23	Los Angeles			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 runoff loads dumped polluted water into the coastal areas, which 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 before the waters seeped across streets and trapped 14 vehicles in mud and debris. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*							Flash, Stormwater	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	2007	September	26	Orange			A late summer storm brought heavy rains to Orange County, where over an inch of rain fell in a short timeframe and caused flooding. A major league baseball game was delayed by the rain, and the infield suffered some minor damages from runoff. 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 runoff amounts of polluted water caused some beaches to be closed as a safety precaution. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*							Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Coast	2007	November	30	San Bernardino		San Bernardino County	Heavy Rains. **Source:** San Bernardino County, 2011, *Multi-Jurisdictional Hazard Mitigation Plan Update*							Flash	http://www.sbcounty.gov/Uploads/SBCFire/content/oes/pdf/Hazard-Mitigation-Plan.pdf
South Coast	2008	August	30	San Bernardino			August thunderstorms. **Source:** San Bernardino County, 2011, *Multi-Jurisdictional Hazard Mitigation Plan Update.*							Flash	http://www.sbcounty.gov/Uploads/SBCFire/content/oes/pdf/Hazard-Mitigation-Plan.pdf
South Coast	2009	November	12-13	Los Angeles		La Crescenta	There was an intense thunderstorm that was isolated over La Crescenta and La Canada; rainfall totaled 0.86 inch in less than 1 hour. Mudflows occurred on hillsides burned by a fire in August and September 2009. There was sediment deposition on several properties and streets in La Crescenta and La Canada, and several debris basins were filled in fire area. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area.*							Flash, Debris Flow	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf
South Coast	2010	January	18	Los Angeles, San Bernardino, Ventura			In January 2010, a series of powerful Pacific winter storms, fueled by El Nino conditions, pounded Los Angeles County and unleashed mud and debris flows that prompted evacuations, flooded businesses, and downed trees and power lines. Little damage was reported. Heavy rain, gusty winds, and heavy snow were witnessed in Ventura County. Rainfall totals ranged from 4 to 8 inches over coastal areas and from 8 to 16 inches in the foothills and mountains. Flash flood watches were issued in areas of Ventura County that were damaged by wildfires in 2008. The January 2010 storm was initially anticipated to be similar in size to the January 2005 storm; however, actual rain totals showed that this storm was not as severe. According to the Ventura County Watershed Protection District, the watershed levels during the January 2010 storm were nowhere near the levels reached in 2005. **Source:** Ventura County, 2010, *Hazard Mitigation Plan* ; San Bernardino County, 2011, *Multi-Jurisdictional Hazard Mitigation Plan Update.*							Flash, Debris Flow	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf; http://www.sbcounty.gov/Uploads/SBCFire/content/oes/pdf/Hazard-Mitigation-Plan.pdf; and http://www.oxnardfire.org/Uploads/DisasterPreparation/FINAL%20DRAFT%20Ventura%20County%20HMP%20-%20Oct%202010.pdf
South Coast	2010	February	6-7	Los Angeles			A rainstorm system triggered severe debris and mudflow on Manistee Drive and Ocean View Boulevard located in the community of Paradise Valley in La Canada-Flintridge. At the time, approximately 800 homes in the Station Fire burned areas (the largest recorded wildfire in Los Angeles County history) of Acton, La Canada-Flintridge, La Crescenta, and Sierra Madre were asked to evacuate. Paradise Valley community of La Canada-Flintridge served as ground zero of the debris and mudflow on February 7. No injuries were reported. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area.*							Flash, Debris Flow	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf
South Coast	2010	February		Los Angeles, Orange, San Diego, Ventura		Coastal areas	A tsunami with amplitude 3.9 feet at Shelter Island in San Diego Bay damaged 20 docks and moved buoys at Ventura. It damaged docks and marine infrastructure at Oxnard, Marina Del Rey, Catalina, Los Angeles Harbor, Oceanside, and Shelter Island and moved buoys at Ventura and Mission Bay. Boats and boat equipment were damaged at Dana Point, Oceanside, Mission Bay, and Shelter Island. A rapid change in sea level caused in excess of $ 200,000 damage to structures and vessels in Ventura Harbor. **Source:** Ventura County, 2010, *Hazard Mitigation Plan* ; USGS et al., 2013, *Effects of the February 27, 2010 Chilean Tsunami on the Harbors, Ports, and the Maritime Community in California with Comparison to Preliminary Evaluation of March 11, 2011 Tsunami.*	$ 200,000	Ventura	2010				Tsunami	http://www.conservation.ca.gov/cgs/geologic_hazards/tsunami/documents/copri2011_chile.pdf
South Coast	2010	February		Los Angeles, Orange, Riverside, San Diego		San Gabriel Mountains, Foothills (Altadena to Ventura County Line), Wilson Creek	Flash flooding. Federal and State declared disaster. Downtown Los Angeles rainfall totaled 4.82 inches in January and 2.41 inches in February. Impacts from mudflows and debris flows were exacerbated by 2008 fires and the 2009 fire (which was the largest recorded fire in Los Angeles County history). In fire-ravaged areas, several debris basins received large volumes of debris (approximately 1 million cubic yards); several homes in La Canada-Flintridge were damaged. Five reservoirs also received huge volumes of debris (more than 3 million cubic yards). Finding places to deposit the debris became a major political environmental issue. Afterward, the FY 2009-10 costs for debris basin cleanouts was over $18 million. Environmental restrictions and attendant politics delayed cleanouts of the reservoirs. A heavy storm system moved over the southern California region. Residents and motorists in and below recently burned areas were put on alert for the potential of flash flooding and debris flows. A flash flood warning was in effect for the Station and Morris burn areas in Los Angeles County. Law enforcement had already reported some minor debris flow occurring over the burn area. Rainfall at these rates caused flash flooding and debris flows in and below the recent burn areas, particularly the Station, Morris, and Santa Anita burn areas in Los Angeles County. Floods damaged Yucaipa, and Riverside. Pacific storms flooded streets, spawned a few tornados and mudflows, and left a trail of damage in southern California. Two 2 deaths were reported in San Diego County. **Source:** City of Los Angeles, revised and adopted 2011, *Hazard Mitigation Plan.*				2	San Diego County		Debris Flow, Flash, Alluvial	http://www.fema.gov/pdf/news/pda/1884.pdf
South Coast	2010	December		Riverside, San Diego	2010 Winter Storms	Western County	In Southern California, a 20-mile stretch of Highway 1 between Malibu and Oxnard was closed on December 21 after a rock and mudslide. Amtrak service was also disrupted between San Diego and San Juan Capistrano due to mudslides and flooding. As many as 70 homes were buried in over 4 feet of mud near San Bernardino, and more than 200 homes were evacuated. One death was confirmed in Riverside County when a woman who drove into a flooded crossing was swept away. A state of emergency was declared for six counties in southern California, and damage was estimated at over $10 million. In Mission Valley, near San Diego, 900 residents were forced from their homes from flooding. **Source:** San Diego County (SDCo), May 2013, Email from Sara Agahi/San Diego County Flood Control District to Terri Wegener/DWR, additional events to include in History of Events table; San Bernardino County, 2011, *Multi-Jurisdictional Hazard Mitigation Plan Update.*	$ 10,000,000	6 counties		1	Riverside County	X	Flash	http://www.wrcc.dri.edu/articles/5/
South Coast	2010			San Diego			Moderate flooding throughout County. **Source:** San Diego County (SDCo), May 2013, Email from Sara Agahi/San Diego County Flood Control District to Terri Wegener/DWR, additional events to include in History of Events table.							Flash	San Diego County Flood Control (SFMP Comments)

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Coast	2010-2011	December-January	Dec 17 - Jan 4	Orange, Riverside, San Bernardino, San Diego	2010 Winter Storms		Severe winter storms, flooding, debris and mud flows affected 163 residents (together for whole event) in impacted counties, in addition to damage to roads and bridges. **Orange County:** On January 26, 2011, California received Presidential Declaration for the severe winter storms, flooding, and debris and mud flows that occurred December 17, 2010, through January 4, 2011. At the time of the declaration, the State of California incurred well over $75 million in damages, while Orange County sustained over $36 million in damages. Orange County sustained extensive damage to private and public property, as well as critical infrastructure. In Southern California, a 20-mile stretch of Highway 1 between Malibu and Oxnard was closed on December 21 after a rock and mudslide. Amtrak service was disrupted between San Diego and San Juan Capistrano due to mudslides and flooding. As many as 70 homes were buried in over 4 feet of mud near San Bernardino and more than 200 homes were evacuated. One death was confirmed in Riverside County when a woman who drove into a flooded crossing was swept away. A state of emergency was declared for six counties in southern California, and damage was estimated at over $10 million. In Mission Valley, near San Diego, 900 residents were forced from their homes from flooding. **Source:** San Bernardino County, 2011, *Multi-Jurisdictional Hazard Mitigation Plan Update;* FEMA, January 2011, *DR 1952*.	$77 million for whole event	Total Individual Assistance cost estimate: $1,909,557 Total Public Assistance cost estimate: $75,414,223	2011	1	Riverside County	X	Debris Flow, Slow Rise, Flash	http://www.fema.gov/pdf/news/pda/1952.pdf http://www.wrcc.dri.edu/articles/5/
South Coast	2011	March		Los Angeles, Orange, San Diego, Ventura		Coastal Areas	A tsunami with maximum amplitude of 4.6 feet at Port Hueneme caused major damage to docks and boats at Ventura, Mission Bay, and Shelter Island in San Diego Bay. Lesser damage was sustained to docks and boats at Oxnard, Marina Del Rey, Redondo Beach, Santa Monica, Catalina Harbor, Los Angeles Harbor, Long Beach, Huntington Beach, and Dana Point. The West Coast and Alaska Tsunami Warning Center reported $150,000 damage at Ventura. **Source:** California Coastal Commission, April 2011, *The Tohoku Tsunami Of March 11, 2011: A Preliminary Report on Effects to the California Coast and Planning Implications.*	$ 150,000	Ventura	2011				Tsunami	http://www.coastal.ca.gov/energy/tsunami/CCC_Tohoku_Tsunami_Report.pdf
South Coast	2013	August	25	Los Angeles, Riverside, San Diego	Tropical Storm Ivo		Several inches of rain fell on Sunday, flooding streets and businesses and causing mudslides that stranded vehicles on roadways. A woman was caught in a flash flood Sunday west of Needles and found deceased in her vehicle, San Bernardino County coroner's personnel reported. **Source:** *KTLA5, Online News,* August 29, 2013, "Heavy Rain Pounds Inland Empire Amid Flood Warning"; *Redlands-Loma Linda Patch* , August 26, 2013, "Flash Flood Death: Woman Dies in Wash West of Needles"; *U-T San Diego* , August 25, 2013, "Flash Floods Strand Cars in Southern Calif. Desert."				1	San Bernardino		Flash, Debris Flow	http://ktla.com/2013/08/29/flood-warning-as-thunderstorms-expected-in-ie/#axzz2dSb3kpZZ http://redlands.patch.com/groups/police-and-fire/p/flash-flood-death-woman-dies-in-wash-west-of-needles http://www.utsandiego.com/news/2013/aug/25/flash-floods-strand-cars-in-southern-calif-desert/
South Lahontan	1861-1862	December-January		Inyo, Kern, Los Angeles, Mono, San Bernardino	The Great Flood	Regionwide	January 10 and 11, 1862, brought extremely high or record-breaking stages on streams, including the Walker River. The Owens Valley experience rain every day from late December to mid February. This rainfall resulted in the Owen River swelling to be up to 0.5 mile wide and Owens Lake rising 12 feet. People were killed on Bodie Creek, and shortages of food and water led to fighting. In the Owens Valley area, snow and flooding depleted the forage, reducing the game population important to local Native American tribes. Fine weather favored them until Christmas Eve, when there came the real beginning of probably the hardest winter that white men ever saw in Inyo. Precipitation was not continuous, but at no time did it quit for a whole day, snowing to a depth of 2 feet or more and then raining it off. The whole country was soaked through and all the hills were deeply covered. The streams became almost impassable, while the river was up to a mile wide, about half ice and half water, and sweeping onto the lake, paying no respect to the crooks and curves of the old channel in its course to the lake, which it raised 12 feet. In that same month of January, a rain of 3 days' duration fell on the accumulated snow around Aurora. Many of the adobe and stone buildings of the camp fell, and a flood in Bodie Creek caused loss of life. **Source:** Chalfant, W.A., 1933, *Story of Inyo;* Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains*; USGS, 1939, Water *Supply Paper 843: Floods of December 1937 in Northern California.*	X	Owens Valley		X	Bodie Creek	X	Flash, Slow Rise	http://archive.org/details/storyofinyo00chal
South Lahontan	1867-1868	December-January		Inyo, Kern, Mono		Owens River, Walker River	More than 16 inches of rain fell in Bishop. Flooding may have occurred as far south as the Owens Valley. The Walker River was extremely high, and it washed out or destroyed farm buildings. **Source:** Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains*; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*	X	Walker River					Flash	
South Lahontan	1890	January		Inyo, Mono		Owens River, Lone Pine	Damaging floods were noted on the Owens River at Lone Pine. In Bishop, bridges and railroad tracks were washed out and Main Street was described as a lake. Ice gorges formed at several points, resulting in damaging flooding. **Source:** Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains*; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*	X	Lone Pine, Bishop					Flash	
South Lahontan	1890	May		Inyo, Mono		Walker River	Heavy snows caused flooding in the Walker River in May 1890. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*	X	Walker River					Flash	Water Supply Paper 843
South Lahontan	1900			Inyo, Mono		Kearsarge Peak	A cloudburst caused a flood on Kearsarge Peak, which destroyed the Silver Spout mine. **Source:** Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains.*	X	Kearsarge Peak					Flash	History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains.
South Lahontan	1906			Mono		Sierra Nevada Rivers	Particularly large snowmelt floods in the Sierra Nevada were documented in 1906. Their total volume was two to four times larger than average. Snow deposition was more than twice average amounts and persisted into April or May. Midwinter rainfall on snow cover has produced all the highest flows in major Sierra Nevada rivers during this century. All lands adjacent to streams that were previously inundated are at risk in the future. **Source:** Mono County, October 2006, *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan* .						X	Flash	Mono County HMP
South Lahontan	1907	March	18-19	Inyo, Mono		Owens River, Big Pine Creek, Walker River	Moderate floods on the Owens river near Big Pine and on the Walker River. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Flash	Water Supply Paper 843
South Lahontan	1909	June		Inyo		Bishop Creek, Lake Sabrina	In 1909, a flow- equalization dam of the Nevada-California Power Company at Bishop Park failed under excessive releases from Lake Sabrina. The flood wave damaged Hydroelectric Plant No. 4 and bridges downstream. **Source:** Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains.*	X	Downstream of Bishop Park					Engineered Structure Failure	History of Water
South Lahontan	1911	March	2	San Bernardino		Mojave River	San Bernardino Valley saw heavy rain wash out 900 feet of water mains, bridges, and rail lines in Colton. The Mojave River ran extremely high, endangering the Santa Fe Bridge in the Victorville area. Four men and their horses were drowned trying to cross the Mojave River near Victorville. **Source:** Water Resources Institute at California State University, July 2010, *Alluvial Fan Task Force (AFTF) Study Area Flood History.*	X	Colton		4	Victorville		Flash, Alluvial Fan	AFTF Study Area Flood History
South Lahontan	1914	January		Inyo, Mono		Bishop, Big Pine	Two floods occurred in January 1914. The first flood left water several feet deep in Bishop streets and damaged almost every house. One week later, a more intense storm hit the area, and it caused the worst damage in Big Pine where roads were deeply eroded, water mains broken, and bridges washed away. **Source:** Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains*; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California* .	X	Bishop, Big Pine					Flash	
South Lahontan	1914	February	20	San Bernardino		Cajon Pass	A rail line was washed out in Cajon Pass, and rail bridges were destroyed. The Santa Fe Pre-cooler saw heavy damage, and roads were washed out. Citrus groves were badly damaged. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*.	X	Cajon Pass					Alluvial Fan, Debris Flow, Flash	AFTF Study Area Flood History
South Lahontan	1916	January	17-28	San Bernardino		Wrightwood, Mojave River, Lytle Creek	All roads in Cajon Pass were washed out. Major flooding was seen at Wrightwood. 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 in the general high desert regions. Costs associated with flooding were nearly $400,000 for San Bernardino County. Estimated Mojave River discharge was 30,000 cfs. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	$ 400,000	San Bernardino County	1916				Alluvial Fan, Flash	AFTF Study Area Flood History

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Lahontan	1927	February	12-15	San Bernardino		Mojave River	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. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	X	Wrightwood, Loma Linda, Rancho Cucamonga					Alluvial Fan, Debris Flow, Flash	AFTF Study Area Flood History
South Lahontan	1932	September	24-30	Kern		Caliente, Tehachapi Creeks, Communities of Lamont, Arvin	The community of Tehachapi was flooded with 5 feet of water, and conditions were similar in the communities of Monolith and Mojave. 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. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	$ 600,000	Tehachapi	1932	26	Tehachapi		Alluvial Fan, Flash	AFTF Study Area Flood History
South Lahontan	1937	December	12	Mono		Round and Pleasant Valleys	Largest flood of record in Round and Pleasant Valleys. **Source:** Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains.*							Flash	History of Water
South Lahontan	1938	February-March		Los Angeles		Los Angeles Basin	The Los Angeles Basin Flood of 1938 was triggered by a series of rainstorms that delivered more than 10 inches of rain from February 27-March 4. The rainstorms hovered over the San Gabriel Mountains, saturated the soil which gave way sending massive debris and mudflows down the canyons, and eventually left its destruction comprised of mud and rocks onto the Los Angeles Basin. Los Angeles County was not the most affected by the floods. Riverside and Orange "took the brunt of the waters" like "gargantuan saucers". Overall, the flood of 1938 was responsible for approximately $70 million in damages including destroying 5,601 houses, damaging a further 1,500, killing upwards of 110 people, and stranding over 800 cars. Heavy silt content in floods buried roads and streets in the area, stopping traffic for many days. The Little Rock Dam nearly collapsed during the flood, while another dam in Pickens Canyon produced such large flood releases that it inundated the Roosevelt district of Lancaster. The general hospital of Los Angeles County was threatened by rising floodwaters, which had inundated the hospital power generator. More than 20 structures were destroyed in the Arroyo Seco canyon, but there were no fatalities there. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area.*	$ 70,000,000	Los Angeles County, Riverside and Orange (See SC HR)		110	Los Angeles, Riverside, Orange Counties (See SC HR)	X	Alluvial Fan, Flash	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf
South Lahontan	1938	February-March		Kern, Los Angeles, Mono, San Bernardino	Great Flood	Mojave River Basin, Lancaster, Palmdale, San Bernardino, San Gabriel Mountains, Santa Ana, San Gabriel, Los Angeles Rivers, Deep Creek - Hesperia, West Fork Mojave River, Tehachapi Creek	Widespread damage occurred, approximately 80 percent in urban areas and the remainder in agricultural areas. Damage was estimated at $2.5 million. 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 and plants. Twenty-two homes in Victorville were swept away by flooding of the Mojave River, as were railroad lines, roads, and bridges. There were floods and mudflows in Wrightwood near the canyon mouth. There were in excess of $11 million in damages in San Bernardino County alone, mostly property losses. Peak discharge was 74,000 cfs 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. **Source** : Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan;* Mono County, October 2006, *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan* ; DWR, 2009, *California Water Plan Update 2009*; Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; San Bernardino County Fire Department OES, April 2005, *San Bernardino County Operational Area, Multi-Jurisdictional Hazard Mitigation Plan* ; USACE, April 1969, *Floodplain Information on the Mojave River (near Victorville), San Bernardino County, California.*	$ 13,500,000	Regionwide	1938	22	San Bernardino County	X	Alluvial Fan, Debris Flow, Flash	
South Lahontan	1938	June		Inyo, Mono		Mono Creek	Snow runoff early in June 1938 caused flooding on Mono Creek. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Flash	Water Supply Paper 843
South Lahontan	1938			Mono		Sierra Nevada Rivers	Particularly large snowmelt floods in the Sierra Nevada were documented in 1938. Their total volume was two to four times larger than average. Snow deposition was more than twice average amounts and persisted into April or May. Midwinter rainfall on snow cover produced all the highest flows in major Sierra Nevada rivers during this century. Lands adjacent to streams that were previously inundated are at risk in the future. **Source:** Mono County, October 2006, *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan.*						X	Flash	Mono County HMP
South Lahontan	1939	July, August		San Bernardino		Needles	A series of rainstorms in eastern San Bernardino County at Needles caused 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, an area that averages just over 2 inches of rain a year, received more than 10 inches of rain during this period. These storms washed out roads, rail lines, and undermined the State Highway, causing transportation and communication problems for this remote location. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	X	Needles					Alluvial Fan, Debris Flow, Flash	AFTF Study Area Flood History
South Lahontan	1941	May		San Bernardino		Wrightwood	Mudflows (estimated to be 1.2 million cubic yards) covered about 190 acres at Wrightwood at Heath Canyon. This mudflow surged daily for as long as 3 weeks, freezing as temperatures dropped at night and moving again as temperatures warmed during the day. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	X	Wrightwood					Alluvial Fan, Debris Flow, Flash	AFTF Study Area Flood History
South Lahontan	1941	August	9	San Bernardino		Needles	A severe summer cloudburst caused widespread flooding in Needles, California. Streets, parks, Santa Fe Railroad Yards, and homes were covered with debris. Damages in the city of Needles exceeded $50,000. Drainage area of 1.1 miles had a peak flow of 35 cfs, and the state highway at Needles (drainage area of .85 miles) had a peak flow of 600 cfs. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	$ 50,000	Needles					Alluvial Fan, Debris Flow, Flash	AFTF Study Area Flood History
South Lahontan	1943	January	23	Inyo, San Bernardino		Victorville, Mojave River Basin	**Inyo:** Floods damaged the Owens River Los Angeles Aqueduct. **San Bernardino** : In San Bernardino Valley, bridges were washed 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 caused by drowning at Lytle Creek. Estimated peak discharge at Lytle Creek was 14,000 cfs. Mojave River flooding washed out highway and railroad lines at Victorville. Ten families were evacuated near Mojave River at Victorville. Minor mudflows occurred in Wrightwood. Estimated peak discharge at Mojave River was 45,000 cfs. Floods inundated 36,000 acres; streets and bridges were damaged, and all highways surrounding Victorville were blocked. About 80 percent of the damage occurred in urban areas and the remainder on agricultural lands. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; DWR, 2009, *California Water Plan Update 2009*; Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains.*	X	Victorville, Mojave River Basin		1	Lytle Creek	X	Alluvial Fan, Flash, Stormwater, Debris Flow	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf http://www.ci.glendale.ca.us/pdf/HMP/HMP_Section-8_Floods.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Lahontan	1943	October	9	San Bernardino		Twentynine Palms, Mojave River	Twentynine Palms had heavy rain, causing mudflows 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 floodwater. The Mojave River ran at flood stage, with an estimated peak discharge of 42,000 cfs. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	X	29 Palms					Flash, Debris Flow, Alluvial Fan	AFTF Study Area Flood History
South Lahontan	1945	September	2	Los Angeles		Wrightwood	A heavy thunderstorm hit Wrightwood. One residence was destroyed, and debris covered Lone Pine Road. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area.*	X	Lone Pine Road					Alluvial Fan, Debris Flow, Flash	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf
South Lahontan	1945	October		Inyo		Owen River	Inyo: Floods damaged the Owens River Los Angeles Aqueduct. **Source:** Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains.*	X	Owens River Los Angeles Aqueduct					Flash	History of Water
South Lahontan	1950	November-December		Inyo, Kern, Mono		Walker River Canyon, Pine Creek Canyon, and Round Valley	**Kern:** Flooding occurred on November 21. A recurrence interval of 670 years was calculated for this event that occurred 4 years before Isabella Dam was constructed. Bakersfield was spared much damage by intensive flood fighting efforts. Approximately 37,000 acres were flooded, and included agricultural areas, the Fruitvale oilfield, Oildale and the Gordon's Ferry bridge that was completely washed out. Some flooding on Poso and Caliente Creeks occurred as well. Damages: $2,000,000. An estimated 115 homes and businesses were damaged in Kernville **Inyo/Mono** : One-sixth of a mile of Highway 395 was washed out in the Walker River Canyon, and other roads were damaged in Pine Creek Canyon and Round Valley. State declared disaster CA OCD 50-01. **Source:** Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains*; Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012;* FEMA, September 2008, *Flood Insurance Study Kern County, California, and Incorporated Areas.*	$ 2,000,000	Kern County	1950				Flash	Kern County HMP
South Lahontan	1952	March		Inyo		Bishop Creek	In March 1952, a snow avalanche briefly dammed Bishop Creek until the snow failed, releasing a small flood of water. **Source:** Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains.*	X	Bishop Creek					Flash	History of Water
South Lahontan	1952	July		Mono		Lee Vinings and Tioga Pass Road	Lee Vinings and Tioga Pass road suffered from flash floods. **Source:** Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains.*	X	Lee Vinings, Tioga Pass Rd					Flash	History of Water
South Lahontan	1952			Mono		Sierra Nevada Rivers	Particularly large snowmelt floods in the Sierra Nevada was documented in 1952. Their total volume was two to four times larger than average. Snow deposition was more than twice average amounts and persisted into April or May. Midwinter rainfall on snow cover produced the highest flows in major Sierra Nevada rivers during this century. Lands adjacent to streams that were previously inundated are at risk in the future. **Sources:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan* ; Mono County, October 2006, *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan.*						X	Flash	Mono County HMP
South Lahontan	1954	July		San Bernardino		Twentynine Palms, Barstow, Yucca Valley, Needles, Mojave River	Twentynine Palms was hit with a series of cloudbursts that 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 U.S. Marine Corps Depot. Rail lines were washed out at Barstow. Many cars were caught in floodwaters in these areas, but no deaths were reported. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	X	29 Palms, Barstow					Alluvial Fan, Flash	AFTF Study Area Flood History
South Lahontan	1955	July		Mono		Lee Vinings and Tioga Pass Road	Lee Vinings and Tioga Pass road suffered from flash floods. **Source:** Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains.*	X	Lee Vinings and Tioga Pass Road					Flash	History for Water
South Lahontan	1955	August		San Bernardino		Barstow, Needles	A series of cloudbursts washed out U.S. Route 66 at Needles and rail lines at the Santa Fe Yard in Needles. A hundred people were made homeless when houses were flooded. Twenty homes were destroyed due to undermining of their foundations. State of Disaster declared by City of Needles. Highways at Barstow, Daggett, and Valley Wells were covered with water and debris from flooding, in one place 4 miles of highway was submerged. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	X	Needles					Alluvial Fan, Flash, Debris Flow	AFTF Study Area Flood History
South Lahontan	1955	December		Inyo, Kern, Mono		Walker River	**Kern:** Flooding occurred in Kern County on December 23. **Mono:** In Walker River drainage, one of the largest floods of record in six streams. Federal declared disaster CD 47-DR-CA. **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan* ; Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains*; Mono County Community Development Department, October 2006, *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan , Mono County Town of Mammoth Lakes*.	X	Walker River				X	Flash	
South Lahontan	1956	July		Mono		Mono Basin	Runoff from thunderstorms in late July raised Crowley Lake to capacity, halting diversion of water from the Mono Basin. **Source:** Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains.*							Flash	
South Lahontan	1958	April	4	Kern, Mono		Kern and Mono Counties	Federal declared disaster CD 82-DR-CA. **Source:** Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*; Mono County Community Development Department, October 2006, *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan (LHMP), Mono County Town of Mammoth Lakes.*	$ 24,000,000	Statewide	1958	13	Statewide	X	Flash	
South Lahontan	1958	July		San Bernardino		Barstow, 29 Palms, Daggett	A severe hailstorm caused a $1 million in damages to roads, highways (U.S. Route 66), and communication lines in various High Desert locations, including Barstow, Twentynine Palms, and Daggett, as well as Forest Home and the Mill Creek areas. Several homes were severely damaged, one pushed off its foundation. Floodwaters ran through motels, homes, and businesses. Major landslides, a result of a cloudburst on burned hillsides, created a 10-foot-high and 300-foot-wide landslide on the highway at Forest Home. The hailstorm also caused thousands of dollars worth of damage to apple orchards at Oak Glen. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D.*	$1,000,000 plus unspecified agricultural damages	Barstow, 29 Palms, Daggett, Forest Home, Mill Creek	1958			X	Alluvial Fan, Flash, Debris Flow	AFTF Study Area Flood History
South Lahontan	1959	August		San Bernardino		Mojave River	Thunderstorms in the area of Essex to Needles washed out bridges, stranded hundreds of travelers, and four cars were carried away by floodwaters. Waves up to 22 feet high washed over U.S. Route 66 at Needles, and there was a complete washout of rail lines from Fenner to Ibis. There was an estimated peak discharge of 40,000 cfs at Sacramento Wash located near Needles for a 31-square-mile drainage area. Homes were damaged in Joshua Tree by floodwaters and debris flows. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D.*	X	Needles, Joshua Tree					Alluvial Fan, Debris Flow, Flash	AFTF Study Area Flood History
South Lahontan	1961	August	15	San Bernardino		Barstow, Victorville, Lucerne Valley, Bell Mountain	Runoff from thunderstorms eroded roads at Barstow and closed others, with mud and water flows at Victorville and Lucerne Valley. Homes were smothered in mud at Bell Mountain. A fierce storm hit Twentynine Palms, Morongo, Quail Wash, Joshua Tree, Panorama Heights, and Barstow areas. Floodwaters 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, with severe erosion to property. There were a few vacationers trapped by mudflows as they were trying to evacuate and had to be rescued by emergency personnel. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D.*	X	Barstow, Victorville, Lucerne Valley				X	Flash, Debris Flow	AFTF Study Area Flood History
South Lahontan	1963	February	26	Mono		Walker River	Record flooding in Walker River drainage on six streams. For "Flooding, Flood and Rainstorms," Mono County was part of the Federally declared disaster area February 25, 1963. **Source:** Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D.*							Flash, Stormwater	Santa Clara HMP

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Lahontan	1963	June		Mono		Pine Creek Canyon	A cloudburst flood in June 1963 closed the mine and mill in Pine Creek Canyon. **Source:** Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains.*							Flash	History of Water
South Lahontan	1963	August	7	San Bernardino		Newberry Springs, Apple Valley, Lenwood, Barstow	Ten inches of mud invaded 30 homes in Newberry Springs. Floodwaters were 3 feet deep in Apple Valley. Flash floods disrupted traffic and endangered lives in Lenwood and Barstow. Heavy rainfall in Victorville and High Desert areas flooded highways and homes. Vehicles were flooded with up to 3 feet of water, mud, and debris. A flock of 20,000 chickens was swept away in Newberry Springs, and washouts on roads and highways stopped all traffic is some areas for days until crews could make repairs. One person was swept away by floodwaters at Lenwood and was carried more than 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 cfs. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D.*	X	Newberry Springs, Lenwood, Barstow				X	Flash, Debris Flow	AFTF Study Area Flood History
South Lahontan	1963	September	17-19	Kern		China Lake, Ridgecrest Area	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 that failed to carry off water from the El Paso Wash. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*		State Highway 178					Stormwater	AFTF Study Area Flood History
South Lahontan	1964	September	3	Kern		El Paso Mountains	A high intensity rain in the El Paso Mountain area overwhelmed the storm culverts at Highway 178 and El Paso Wash, and the culverts overflowed on both sides of the Highway and into the U.S. Naval Weapon's Center. The Michelson Laboratory was flooded, sustaining damages totaling $278,000. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	$ 278,000	U.S. Naval Weapons Center at Ridgecrest	1964				Flash	AFTF Study Area Flood History
South Lahontan	1965	July	16	San Bernardino		Trona	The area of Trona was hit with flash flooding that stranded 800 employees of the American Chemical and Potash and Stauffer Chemical companies. Floodwater of more than 6 feet, along with mud and debris, covered roads in Poison Canyon. Sixty cars were stranded, and many homes in Trona and Argus were flooded with mud and floodwaters. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	X	Trona, Argus					Flash	AFTF Study Area Flood History
South Lahontan	1965	August	16	Los Angeles		Wrightwood	Thunderstorms hit the mountain and desert areas of Southern California. A flash flood 4 feet deep damaged Highway 138 near Wrightwood. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area.*	X	Wrightwood					Debris Flow, Flash	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf
South Lahontan	1965	November	20-25	San Bernardino		Wrightwood, Mojave	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 motorists 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. Fifty homes in Lytle Creek were heavily damaged in Lytle Creek Village and 15 destroyed outright. Thirty-five 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. Eleven homes and cabins were washed away in the Forest Falls area. Mountain Home Village lost four homes outright and eight more were left heavily damaged by floodwaters. 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 cfs. The Mojave River had flooding with an estimated peak discharge at 41,000 cfs. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; DWR, 2009, *California Water Plan Update 2009.*	$ 11,000,000	Wrightwood, Forest Falls, Mountain Home Village		6	San Bernardino County		Alluvial Fan, Flash	AFTF Study Area Flood History
South Lahontan	1966	January	2-6	San Bernardino		Mojave River	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. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	X	Lenwood, Victorville					Alluvial Fan, Debris Flow, Flash	AFTF Study Area Flood History
South Lahontan	1966	December	2-7	Los Angeles		Wrightwood	Debris, mudflows, and flooding damaged homes and roads in Wrightwood. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area.*	X	Wrightwood					Alluvial Fan, Debris Flow, Flash	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf
South Lahontan	1966-1967	December-January		Inyo, Kern		Inyo County, Mammoth Lakes, Rock Creek, Aspen Springs	Flooding during the winter of 1966-1967 took three lives and inundated 142,000 acres of agricultural land. There was much storm damage to roads and to the Los Angeles Aqueduct. **Source:** Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains*; USACE, 1967, *Report on Damage from Floods of 6 December 1966 and 24 January 1967, Santa Barbara, California and Vicinity*; DWR, 2009, *California Water Plan Update 2009.*	X	Inyo County, Mammoth Lakes, Rock Creek, Aspen Springs		3		X	Flash	http://www.wmrs.edu/resources/reference%20documents/History%20of%20Water/wmrs4%203-3.pdf http://books.google.com/books/about/Report_on_Floods_Central_Valley_of_Calif.html?id=9O6vtgAACAAJ
South Lahontan	1969	January-February		Inyo, Kern, Mono, San Bernardino	Winter '69 Storms or Great Flood of 1969	Regionwide	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 runoff. 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 areas toward the Naval Weapons Center. The estimated cost of damages to Kern County for the 1969 floods was $4,700. Rainfall intensities and amounts were greater, and except for Mojave River and its tributaries, runoff peaks were generally greater during these floods than the 1938 event. Between January 18 and January 28, at the Mojave River a railroad bridge was washed out, along with 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. Floodwater 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 were both hit hard by flooding. February storm damage along the Mojave River was 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 where rail lines were washed out. Three thousand people were evacuated from homes along the Mojave River, and a trailer park in Baker was again flooded. In the Mojave River drainage areas, monetary damages from the February flood were more than 10 times greater than those caused by the January flood ($1,020,000 in January and $10,380,000 in February). Declared Federal 1/26/69, DR-253. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area*; DWR, 2009, *California Water Plan Update 2009*; San Bernardino County Fire Department OES, April 2005, *San Bernardino County Operational Area, Multi-Jurisdictional Hazard Mitigation Plan*; San Bernardino County, 2011, *Multi-Jurisdictional Hazard Mitigation Plan Update.*	$ 54,004,700	Kern County ($4,700) San Bernardino Countywide ($54 million)	1969	13	San Bernardino Countywide	X	Alluvial Fan, Flash, Slow Rise	
South Lahontan	1969	May		San Bernardino		Wrightwood	Mudflows, as a result of rapidly melting snow caused a 40-day-long mudflow at Wrightwood beginning in May of 1969 at Heath Canyon. This mudflow froze as temperatures dropped at night and started moving again as temperatures rose during the day, causing flooding of homes, roads, and infrastructure. The volume of the mudflow was estimated at 130,000 cubic yards. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*		Wrightwood					Alluvial Fan, Debris Flow, Flash	AFTF Study Area Flood History

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Lahontan	1969	June	15	Los Angeles		San Gabriel Mountains	Strong thunderstorms hit the San Gabriel Mountains. Flash floods washed out and closed several highways on the north slopes and in the desert, including Highway 138. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area.*	X	Desert Highways, Highway 138					Alluvial Fan, Debris Flow, Flash	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf
South Lahontan	1969			Mono		Sierra Nevada Rivers	Particularly large snowmelt floods in the Sierra Nevada were documented in 1969. Their total volume was two to four times larger than average. Snow deposition was more than twice average amounts and persisted into April or May. Midwinter rainfall on snow cover produced the highest flows in major Sierra Nevada rivers during this century. Lands adjacent to streams that were previously inundated are at risk in the future. **Source:** Mono County, October 2006, *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan.*							Flash	Mono County HMP
South Lahontan	1972	September	5	Inyo		Regionwide	Regional flooding in late summer. **Source:** Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains.*							Flash	History of Water
South Lahontan	1973	January	16	Kern		Countywide	Flooding, Severe. **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*	$ 86,207	Kern County	1973			x	Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf
South Lahontan	1975	September	8-12	Kern, Los Angeles, San Bernardino		Lucerne Valley, Twentynine Palms, Isabella	**Kern**: 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. **Los Angeles** : Thunderstorms caused flooding that closed four highways in Los Angeles County, and two 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, and people nearby pulled them to safety. Flooding in desert areas. **San Bernardino:** 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. Approximately 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 Twentynine Palms was closed for about 3 hours due to several inches of floodwaters on the runway. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*	X	Desert Highways		1	Isabella Area		Alluvial Fan, Debris Flow, Flash	AFTF Study Area Flood History
South Lahontan	1975	October	25	Kern		Kern County	California declared disaster DC 75-04. **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan* .		Kern County					Flash	Kern County HMP
South Lahontan	1976	September	11	Inyo		Regionwide	Regional flooding in late summer. **Source:** Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains.*							Flash	History of Water
South Lahontan	1977	December	21	Kern		Kern County	Severe Windstorm, dust and rain, flood event. State Disaster Declaration GP –1977. **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*	$ 25,000,000	countywide	1977				Flash	Kern County HMP
South Lahontan	1978	January	20	Kern		Kern County	Severe Windstorm, dust and rain, flood. USDA Declared Disaster A-564. **Source:** Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012.*							Flash	Kern County HMP 2012 Update
South Lahontan	1978	February	15	Kern, Mono		Kern and Mono Counties	Flood, heavy event. Federal Disaster Declaration FDAA 547-DR. **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan*; Mono County Community Development Department, October 2006, *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan (LHMP), Mono County Town of Mammoth Lakes*.	$ 5,000,000	Kern County	1978				Flash	Kern County HMP
South Lahontan	1978	February-March	February 5-15 & 27-March 6	San Bernardino		Mojave River	**San Bernardino** : Beginning February 5, 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 million. Five deaths were attributed to these floods. On February 11, 1978, President Carter declared the County of San Bernardino a disaster area. Infrastructure sustained damage from Elizabeth Lake Canyon and from Little Rock and Big Rock creeks. The Mojave River damaged levees from Victorville to Barstow and at isolated locations up- and downstream. These severe storms caused the Mojave River to overflow causing roads crossing the river to be flooded and impassable. The Hinkley area was compromised heavily. Road crossings along Mojave River were destroyed, impeding transportation routes in high desert locations. Cost to San Bernardino County in the high desert areas is $1+ million. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	San Bernardino desert areas ($1M) - full county ($25 M)	see col. to left	1978	5	San Bernardino County	X	Alluvial Fan, Debris Flow, Flash	AFTF Study Area Flood History
South Lahontan	1978	September		Inyo, Mono		Sierra Nevadas, Bishop Creek	In early September 1978, a tropical storm caused widespread damage to roads and bridges and resulted in several deaths among backcountry hikers. Bishop Creek experienced a high flow due to a log- and debris jam impounding floodwaters that suddenly broke free. A slow erosion failure of the North Lake dam during the September 26 storm caused the largest flood measured on Bishop Creek. This flood destroyed hydroelectric Plant No. 4 **Source:** Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains.*	X	Bishop Creek		Multiple Hikers	Sierra Nevadas		Flash	History of Water
South Lahontan	1978			Mono		Communities of Benton, Hammil, Chalfant Valley	Flash flooding occurred along U.S. Highway 6 in the Benton, Hammil, and Chalfant Valley areas in 1978. **Source:** Mono County and Town of Mammoth Lakes, October 2006, *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan* .	X	Communities of Benton, Hammil, Chalfant Valley					Flash	Mono County MJLHMP
South Lahontan	1980	January-February	January 8-February 18	San Bernardino		Victorville, Barstow, Mojave River	During 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, burying them to the eaves with debris and flood flows. Over 100 people were left homeless by this event. Twenty-five homes from this location were removed permanently, and the area was converted to flood channels. An elementary school was also flooded and removed. Other public property was damaged and flooded as well, including streets, 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 were impacted. Utilities, including electricity, cable, and water supply, have been disrupted. The cost of this event was estimated at $2.5 million. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	$ 2,500,000	Victorville, Barstow	1980			X	Alluvial Fan, Debris Flow, Flash	AFTF Study Area Flood History
South Lahontan	1981	September		Inyo, Mono		Northern Owens Valley	Bishop Creek overflowed, washing out U.S. Highway 396 in Bishop and damaging scores of homes. The creek's flow rate was exacerbated by failure of the Pacific Gas & Electric North Lake Dam on the North Fork Bishop Creek. High water on Big Pine Creek overtaxed a diversion channel, damaging 85 homes and 5 businesses on the Big Pine Indian Reservation. **Source:** Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains.*	X	Bishop, Big Pine				X	Flash, Engineered Structure Failure	History of Water
South Lahontan	1982	April	28	Mono		Mono County	Heavy rains caused flooding. **Source:** Mono County Community Development Department, October 2006, *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan (LHMP), Mono County Town of Mammoth Lakes.*							Flash	
South Lahontan	1982	September		Inyo, San Bernardino		Inyo County, San Bernardino County	Some 38 homes were damaged on Big Pine Indian Reservation, and more than 40 homes were damaged in other parts of the region. Bridges were washed out on Glacier Lodge/Big Pine Creek road. Inyo Public Works Department estimated the flooding caused more than $7 million in damage countywide. Flash floods occurred on Bishop Creek. Streets flooded in Victorville. **Source:** Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains.*	$ 7,000,000	Inyo County	1982			X	Flash, Stormwater	History of Water
South Lahontan	1983	February	9	Kern		Kern County	Flood: winter storms. Federal Disaster declaration DR-677. **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*		Kern County					Flash	Kern County HMP

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Lahontan	1983	March	1-5	Kern, San Bernardino		Hinkley, Victorville and Lenwood, Mojave River	**Kern:** Flooding in Kern County. Floods devastated Caliente and Lamont causing an estimated $58.7 million 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. **San Bernardino** : Thunderstorms in the high desert caused the Mojave River to flood. Road crossings at Hinkley, Victorville and Lenwood were damaged. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*	$ 58,700,000	Kern County (50,000 in crop loss, 50,000 in property loss)	1983				Alluvial Fan, Debris Flow, Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf
South Lahontan	1983	Spring		Inyo, Mono, San Bernardino		Needles, Walker River, Big Pine Creek	**Inyo, Mono:** High water from flooding undermined roadways along Walker River and Big Pine Creek. **San Bernardino:** 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 Dam, Davis Dam, and Parker Dam. This caused flooding to low-lying 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. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains.*	X	Needles					Alluvial Fan, Debris Flow, Flash	AFTF Study Area Flood History
South Lahontan	1983	August	10	Kern, San Bernardino		Owens Valley	A flash flood inundated 20 vehicles in Barstow. Flooding closed State Highway 247. **Source:** Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains.*							Flash, Stormwater	History of Water
South Lahontan	1983			Mono		Sierra Nevadas	Particularly large snowmelt floods in the Sierra Nevada was documented in 1983. Their total volume was two to four times larger than average. Snow deposition was more than twice average amounts and persisted into April or May. Midwinter rainfall on snow cover produced the highest flows in major Sierra Nevada rivers during this century. Lands adjacent to streams that were previously inundated are at risk in the future. **Sources:** Mono County, October 2006, *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan.*							Flash	Mono County HMP
South Lahontan	1984	July	15-16	Kern		Goat Ranch Canyon, Long Canyon, Bodfish Creek , Larsen Tract	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, along with many other roads. Uffert Park was covered in mudflows of about 6 inches. Three 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. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*	$ 55,000	$50,000-Property Loss, $5,000-Crop Loss	1984				Flash, Debris Flow, Engineered Structure Failure	http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf
South Lahontan	1984	July	18	Kern		Kern County	Flooding. **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*	$ 50,000	$50,000-Property Loss	1984				Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf
South Lahontan	1984	July	19	Mono		Communities of Benton, Hammil, Chalfant Valley	Flash flooding occurred along U.S. Highway 6 in the Benton, Hammil, and Chalfant Valley areas in 1984. The floods of 1984 resulted in $134,000 in damage to County roads. **Source:** Mono County, October 2006, *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan.*	$ 134,000	Mono County					Flash	Mono County HMP
South Lahontan	1984	July	27-30	Kern		Scodie Canyon, Onyx, Lake Isabella	Flooding. 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 14 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. On July 30, an intense thunderstorm occurred in Scodie Canyon, causing flooding in the community of Onyx. The floodwaters overflowed channels and eroded new channels. Damage was estimated to be $3 million. One man was killed by lightning. A state disaster was declared for Kern County on July 31. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012.*	$555,000; $3,000,000 (Kern Countywide)	Onyx: $500,000-Property Loss, $5,000-Crop Loss Lake Isabella: $50,000	1984	1	Onyx		Flash, Alluvial Fan	http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
South Lahontan	1984	August	15, 18, 20	Kern, Mono		Ridgecrest, Inyokern, Onyx	On August 15, Ridgecrest and Inyokern were hit by the worst floods in 30 years. High flows in Little Dixie Wash were diverted into Inyokern by the Inyokern Road and Southern Pacific Railroad crossings. The China Lake Mountain Rescue group was utilized to deliver medications to a stranded person in Randsburg and to perform wellness checks in Ridgecrest. Damage was estimated at $4.1 million for Ridgecrest and Inyokern, where 412 residences and businesses were impacted. The homes affected were south of Ridgecrest Boulevard and east of China Lake Boulevard. Businesses affected were located on Balsam Street. The Naval Weapons Center at China Lake was impacted as well, where a data lab sustained $20 million in damages. 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, and homes were flooded in Inyokern. Flooding also occurred on August 18 **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*	$ 24,150,000	Onyx: $50,000 Property Loss, $ 20 Million Ceero Costa College $4.1 Million Ridgecrest	1984			X	Alluvial Fan, Flash	Kern County HMP
South Lahontan	1984	September	24	Mono			Flooding. State declared disaster. **Source:** Mono County Community Development Department, October 2006, *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan (LHMP), Mono County Town of Mammoth Lakes.*							Flash	
South Lahontan	1984			Mono		Communities of Benton, Hammil, Chalfant Valley	Flash flood. Flash flooding is reported to have occurred along U.S. Highway 6 in the Benton, Hammil, and Chalfant Valley areas in 1984. The floods of 1984 resulted in $134,000 in damage to County roads. **Source:** Mono County and Town of Mammoth Lakes, October 2006, *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan* .	$ 134,000	Mono County	1984				Flash	Mono County MJLHMP
South Lahontan	1985	July	20	Inyo, Mono		Owens Valley	Flooding occurred. **Source:** Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains.*							Flash	History of Water
South Lahontan	1986	February	17-19	Mono		Communities of Benton, Hammil, Chalfant Valley	Flash flooding is reported to have occurred along U.S. Highway 6 in the Benton, Hammil, and Chalfant Valley areas in 1986. The floods of 1986 resulted in $120,000 damage to County roads. Mono County received $13,251 out of a $15 million statewide flood assistance fund from the Governor's Office of Emergency Services. A flash flood warning for Mono County was issued on February 17, and winds were reported as high as 75 mph. On February 18, the East Walker River overflowed its banks and covered the road with 1.5 feet of water. Flooding also occurred at Willow Springs on February 18. By February 19, Highway 182 at Aurora Canyon was closed as a result of flooding. Highway 395 at Bodie Road and Highway 203 at Meridian in Mammoth were flooded. Old Benton was under 2 to 3 feet of water, and Hammil Valley, Benton, and Chalfant were flooded. Spring storms resulted in Federally declared disaster FEMA 758-DR-CA. **Source:** Mono County Community Development Department, October 2006, *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan (LHMP), Mono County Town of Mammoth Lakes.*	$ 120,000	Mono County	1986			X	Flash	Mono County HMP
South Lahontan	1987	June	5-6	Los Angeles		Antelope Valley	An unseasonable thunderstorm impacted the Antelope Valley with flash flooding, power outages, and lightning-triggered fires. More than 500,000 customers were without power. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area.*							Alluvial Fan, Debris Flow, Flash	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf
South Lahontan	1989	August		Inyo		Owens Valley, Communities of Benton, Hammil, Chalfant Valley, Olancha, Southern Inyo County	The Owens Valley has periodically experienced damaging floods from monsoonal summer storms. In 1989, storms inundated and damaged service roads, damaged retaining walls and protective dikes, and buckled several concrete panels of the Los Angeles Aqueduct near the community of Olancha in southern Inyo County. Losses totaled over $200,000. **Source:** Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains*; DWR, 2009, *California Water Plan Update 2009*.	$ 200,000	Inyo County	1989				Flash	http://www.waterplan.water.ca.gov/docs/cwpu2009/1208prd/vol3/appendices/3-RR_SL_PRDFldApp_mh(12-05-08)jc(01-14-09)mt.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Lahontan	1989	August	9,10	Mono		Communities of Benton, Hammil, Chalfant Valley. Olancha Creek	Olancha creek deposited sediment and debris on roads, and in homes and the Los Angeles Aqueduct. Flash flooding was reported along U.S. Highway 6 in the Benton, Hammil, and Chalfant Valley areas in 1989. The worst flood on record occurred on August 9 and 10, 1989, when precipitation amounts of 1.45 and 1.70 inches, respectively, resulted in tremendous flows down the alluvial fan slopes of the White Mountains. The ensuing mudflow traversed Spring Canyon Creek, causing damage to roads, agricultural land, and some structures. Crop damage was estimated at $1.5 million. The U.S. Natural Resource Conservation Service (formerly the Soil Conservation Service) office in Bishop reported receiving nine applications under the Emergency Conservation Program for damage to 1,365 acres of cultivated agricultural land in the Benton and Hammil Valley areas. The Caltrans office in Bishop reported expenditures of approximately $ 150,000 to fix State highways. Damage to County roads was estimated at another $257,000, for which the County applied to the Office of Emergency Services for reimbursement under the State Natural Disaster Assistance Act Program. There were reports of 50 homes being damaged from mudflows as high as 18 inches, although no structures were washed away. Some residents and tourists were evacuated. On August 9, flash floods closed Highway 120, Highway 6, and County Road at Benton Crossing. Major areas affected were Chalfant, Benton, Hammil Valley, and the County declared State of Emergency. Seventy homes (50 homes, 20 mobile homes) sustained approximately $700,000 in water damage; Agriculture losses totaled $1.5 million; Elementary school had $25,000 in damages; Federal and system roads sustained $412,000 in damages; Public facilities suffered $5,000 in damage; Private damages totaled $2,200,000; Public damages totaled $417,000. Reportedly, the wall of water moved down Highway 6 at 20 mph near Benton. **Source:** Mono County, October 2006, *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan*; Hall et al., 1992, *History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains.*	$ 2,617,000	$2.2 million Private, $417,000 Public	1989			X	Alluvial Fan, Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Mono_County_Mammoth_Lakes_Town_of_LHMP.pdf
South Lahontan	1989	August	29-31	Los Angeles		Wrightwood	Strong thunderstorms dropped more than 0.75 inches of rain in 45 minutes at Wrightwood. **Source:** Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area.*							Flash, Debris Flow	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf
South Lahontan	1991	March	1	Kern		Mammoth Lakes, Rock Creek, and Aspen Springs	**Inyo/Mono** : Flooding, prompted by rain on snowmelt at high elevations, was reported near Mammoth Lakes, Rock Creek, and Aspen Springs. **Kern:** Severe flooding occurred on March 1 and 17. **Source:** Richard Kattelmann, *Historic Floods in the Eastern Sierra Nevada*; Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*	$ 50,000	$50,000-Property Loss	1991			x	Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf http://www.wmrs.edu/resources/reference%20documents/History%20of%20Water/wmrs4%203-3.pdf
South Lahontan	1991-1992	December-January		Kern	1992 Winter Storms	Rosamond	**Kern:** Above average rain in one storm caused erosion of the wastewater treatment plant pond dikes, created sinkholes above water and sewer mains, and closed schools and roads. Damage was estimated to be $15,000. **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*	$ 15,000	Kern County	1992				Flash, Slow Rise	Kern County MHMP 2005
South Lahontan	1992	February	10, 11, 12, 14	Kern		Rosamond	Flooding in Rosamond occurred on February 12. California declared disaster DC 75-04 and FEMA declared disaster 935-DR-CA. Above average rain in one storm caused erosion of the wastewater treatment plant pond dikes, created sink holes above water and sewer mains, and closed schools and roads. **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan*; Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*.	$ 70,719	$11,627 -Property Loss on 02/11/92 $50,000-Property Loss on 02/12/92 $9,090.91 -Property Loss on 02/14/92	1992				Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf
South Lahontan	1992			San Bernardino	Late Winter Storms	Hesperia	Twelve homes and two apartments in Hesperia are destroyed in floods, with 20 missing and 12 rescued in mudslide. **Source:** *San Bernardino Sun,* December 26, 2003, "Special Report: UN-natural Disasters."		Hesperia					Flash	http://lang.sbsun.com/projects/firefloood/articles/122603.asp
South Lahontan	1993	January, February		San Bernardino		Apple Valley, Hesperia and Victorville; Mojave River, Santa Ana River	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 fourth time in 2 years that this area was hit hard by flooding. This storm flooding damaged roads and utilities, as well as 340 homes. Six houses in the Victorville area lost their backyards when the Mojave River overflowed. Part of one house was also lost. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*.							Alluvial Fan, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
South Lahontan	1995	January	10, 25	Kern		Mojave River, Lamont, Caliente Creek	Flash Flood in Mojave. Federal Declared Disaster FEMA 1044-DR. Federal Disaster Declaration, FEMA 1044-DR-CA, 1995 Severe Winter Storms, 01/10/1995. The Community of Lamont was impacted by Caliente Creek flooding. Two floods occurred on Caliente Creek, one in January and another in March. No urban damage occurred, but estimates of road and agricultural damage upstream of Lamont totaled $3 million from both floods. At least $48,000 in disaster relief funds was spent. In addition, Kelso Creek flooded the Weldon Area, causing $32,000 in emergency repair work . **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*	$ 6,050,000	$5,500,000-Property Loss, $550,000-Crop Loss	1995				Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf
South Lahontan	1995	February		Los Angeles, San Bernardino	Severe Winter Storms	Antelope Valley	North of the Los Angeles Basin, the Tehachapi Mountains and the Lancaster and Antelope valleys received heavy snowfall. **Source:** DWR, 2003, *Bulletin 69-95, California High Water.*							Flash	http://www.water.ca.gov/floodmgmt/docs/Bul69-95/00-bull69-95front.pdf
South Lahontan	1995	March	1	Kern	Severe Winter Storms	Kern County	Agricultural land flooded. All counties except Mono and Inyo were declared federal disaster areas in January, and all counties were declared federal disaster areas in March. **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*	$ 22,000,000	Agricultural Crop losses - Countywide	1995				Flash	Kern County HMP
South Lahontan	1995	March	9-12	Mono	Severe Winter Storms	Walker and Coleville	Particularly large snowmelt floods in the Sierra Nevada was documented in 1995. Their total volume was two to four times larger than average. Snow deposition was more than twice average amounts and persisted into April or May. Midwinter rainfall on snow cover produced the highest flows in major Sierra Nevada rivers during this century. Lands adjacent to streams that were previously inundated are at risk in the future. There was one fatality, and Mono County was declared a state of emergency on March 14, 1995. Two homes were destroyed ($160,000), and there were 10 cases of minor damage to rental properties ($100,000), 60 debris-clearance sites (cost unknown), 8 emergency proactive measures ($8,000), storm-damaged roads ($485,000), countywide electric utility damage ($800,000). Total damages were $1,553,000. **Note:** Flooding and avalanches occurred during this storm. All data are grouped together in the sheriff's log, so the totals here do not refer exclusively to flood damage. Identical information is included in "Historical Avalanche Information. Late winter storms Federally declared disasters FEMA 1046-DR-CA." **Source:** Mono County, October 2006, *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan;* Mono County Community Development Department, October 2006, *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan (LHMP), Mono County Town of Mammoth Lakes.*	$ 1,553,000	Mono County	1995	1	Mono County	X	Flash	Mono County HMP
South Lahontan	1995	March	12	Kern	Late Winter Storms	Kern County	Flood/Rain/Wind. Federal Declared disaster FEMA 1046-DR. **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*	$ 57,300,000	Kern County	1995				Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf
South Lahontan	1996			Kern		Kern County	Late Winter Storms. Declared Disasters OEP 223-DR-CA. **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*	$ 18,600,000		1996				Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf

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Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Lahontan	1997	January	2-4	Mono		Walker River Basin	Flooding occurred in the Walker River Basin in January, 1997. Extensive damage occurred along the West Walker River in the Walker River Canyon and in the communities along the West Walker River in the Antelope Valley. The floods of January 1997 were caused by many factors: **1)** the Eastern Sierra had experienced two above normal precipitation years in 1995 and 1996, **2)** a major winter storm from December 21-22, 1996, deposited heavy snow in the Eastern Sierra (4 to 6 feet accumulated below 7,000-foot elevation and up to 8 feet of accumulation at higher elevations), and **3)** large amounts of moisture and warm air ("The Pineapple Express") were transported from the subtropics into the Eastern Sierra on January 1 and 2. The resulting rainfall and snowmelt that poured off the mountains led to extensive flooding. Damage from flooding was found in the towns of Mammoth Lakes, Coleville, Walker, and Topaz, Bridgeport. There were 111 homes and 4 businesses were destroyed by the floods, totaling at least $25 million in damages. More than 30 families countywide were displaced. Destruction to public facilities was near $5 million. Extensive damage was done to the Federal highway system: a 12-mile stretch of Highway 395 (between Topaz and Sonora Junction at Highway 108) was completely destroyed by the West Walker River. The cost for repairs was estimated at $20 million. Total damage to the Federal highway system in the county was near $48 million. TOTAL: $78 million. **Bridgeport:** The town of Bridgeport was under 2 feet of water in the downtown area. **Coleville/Walker** : Houses were washed away in Coleville and Walker, with helicopter rescues necessary. Agricultural Land Loss: $15 million; Residential Land Loss: $3.25 million; Residences: $5.5 million; Mobile Homes: $960,000; Sierra East Mobile Homes Sites: $337, 000. **Mammoth Lakes** : The Mammoth Lakes Police Department was under 6 inches of water. An Initial Damage Estimate Report submitted to the Governor's Office of Emergency Services indicated that the town's total damages (property and service) were just over $1.2 million. An article dated January 9, 1997, "Raging floodwaters devastate Walker, section of U.S. 395," in the Review Herald reported that the damage to private property and business revenue in Mammoth Lakes was actually closer to $3 million. **June Lake:** The June Lake Public Utility District had $125,000 in damage to its water diversion systems, as well as road damage in the Clark Tract. **Twin Lakes** : Three homes were damaged--one a total loss, one with major damage, and one with minor damage. Heavy rains with high snowfalls (Mammoth Lakes reported 8 inches of rain in 36 hours) caused a rapid rise to rivers, creeks, and streams. County declared a Federal Disaster Area by President Clinton on January 4, 1997 FEMA 1155-DR-CA. **Kern:** Flooding in Kern County on January 4. **Source** : Mono County and Town of Mammoth Lakes, October 2006, *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan;* Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*	$78 million-Mono County $18616667-Kern County	$78 million-Mono County $18616667-Kern County ($50,000-Property Loss, $18,566,667-Crop Loss)	1997			X	Flash	Mono County HMP http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf
South Lahontan	1997	September	2-3 & 25	Kern		Ridgecrest and Indian Wells Valley	**Kern:** Two floods within the Indian Wells Valley and Ridgecrest areas occurred on September 2 and 25, 1997. Some roads and businesses were closed as a result, and $100,000 worth of property damage was estimated. 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 cleanup could be completed. The communities of Mojave and Cantil also were impacted with debris flows and flooding. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*	$ 5,065,000	All Property Loss - Countywide	1997				Alluvial Fan, Debris Flow, Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf
South Lahontan	1998	February	3	Kern	El Niño Floods	Cantil	Flash Flood in Cantil. **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*	No Property loss					X	Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf
South Lahontan	1998	February	23-24	Kern	El Niño Floods	Mojave, Weed Patch	Urban/Small Stream, Flash Flooding in Cantil and Mojave. **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*	$ 6,020,000	Property Loss	1998			X	Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf
South Lahontan	1998	February		Kern, San Bernardino	El Niño Floods	Countywide	**Kern:** Flooding during this significant El Nino season resulted in a Federal Disaster Declaration, FEMA 1203-DR-CA, February 6, 1998, for Kern County. **San Bernardino:** February, 1998 was the most productive rainfall month during the 1997/98 winter. 14.59 inches of rain was recorded for the month at the Gilbert Street gauge in San Bernardino. The major storm event that occurred in the Valley was on February 23. The rain gauge at Gilbert Street recorded 3 inches to approximately 10 inches for the day. Prior to February 23, a series of storms starting on February 14 came almost back-to-back. The storms brought light to moderate rainfall except for February 22, which recorded 2.18 inches of rain. Damage was sustained by various flood control and transportation facilities in the county. Several road closures ensued as a result of the storm. **Source** : Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*. San Bernardino County, April 2005, *Multi Jurisdiction Hazard Mitigation Plan*	$35,500,000-Statewide $$1,515,000 - San Bernardino	$35,500,000-Statewide $$1,515,000 - San Bernardino	1998			X	Flash	Kern County HMP, San Bernardino County HMP
South Lahontan	1998	May	5	Kern		Lamont	Urban/Small Stream. **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*	$ 120,000	Property Loss	1998			X	Stormwater	http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf
South Lahontan	1998	June	1	Kern		Taft	Flooding. **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*	$ 33,466,667	$133,333.33 -Property Loss, $33,333,333.33 - Crop Loss	1998			X	Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf
South Lahontan	1998	August	11	Kern		Rosamond	Flooding in Rosamond. **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*	No Property loss						Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf
South Lahontan	1998	August	30	Kern		Inyokern County Airport	Flash Flood at Inyokern County Airport. **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*	$ 10,000	$10,000-Property Loss	1998				Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf
South Lahontan	1998	October	1	Kern		Kern County	Winter Storms and Flooding. USDA declared disaster S1241. **Source:** Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012.*							Flash	Kern County HMP 2012 Update
South Lahontan	1999	July	11	Kern, San Bernardino		Cantil, Rosamond, Forrest Falls, Apple Valley	**Kern:** Flash Flood and Urban/Small Stream flooding in Cantil and Rosamond.**San Bernardino:** There was a severe thunderstorm in the Forest Falls area that caused considerable flooding. Almost 4 inches of rain fell in about 2 hours time, most of it in a 45-minute 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- to 8-foot piles of debris, along with 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 were flooding and mudslides in Oak Glen, Big Bear, and Apple Valley as well. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*	$ 10,000	Kern, San Bernardino Counties	1999	2	Forest Falls Area		Flash, Debris Flow, Alluvial Fan	http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf
South Lahontan	2001	January		Mono		Walker River	Walker River flooding. **Source:** Mono County, October 2006, *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan.*		Walker River					Flash	Mono County HMP
South Lahontan	2001	February	26, 28	Kern		Cantil, Inyokern	Urban/Small Stream flooding in Cantil and Inyokern. **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*		Cantil, Inyokern					Stormwater	http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf
South Lahontan	2001	July	6-7	Kern		Cantil, Inyokern	Flash flooding in Cantil on July 6 and Inyokern on July 7. **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*		Cantil, Inyokern					Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf
South Lahontan	2001	September	3	Kern		Kern County	Rain. **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*		Kern County					Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf
South Lahontan	2002	November	8	Kern		Kern County	Urban/Small Stream Flood. **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*	$ 200,000	Kern County	2002				Stormwater	http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Lahontan	2003	February	11-14	Kern, Los Angeles		Wrightwood, China Lake, Lamont, Grapevine	**Los Angeles:** Flash floods and debris flows were the result of record rains across Southern California. There were flooding and mudslides in Tejon Pass north of Los Angeles. Approximately 5.15 inches of heavy rains fell in Wrightwood and caused localized flooding. **Kern:** Heavy rain on February 12 and 13. **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan*; Los Angeles County Chief Executive Office Flooding, July 2012, *History of Floods, Mudslides, Debris Flows, Landslides in Los Angeles County Operational Area.*	$ 50,000	Wrightwood	2003			X	Flash, Debris Flow	http://lacoa.org/PDF/HazardsandThreats/Landslides/HAZARDS%20AND%20THREAT%20FLOODS%20-%20MUDSLIDES%20-%20LANDSLIDES%20HISTORY.pdf
South Lahontan	2003	May	1	Kern		Kern County	Heavy Rain. **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*	$ 9,600,000	Crop loss- Kern County	2003			X	Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf
South Lahontan	2003	August	20	Kern		Lake Isabella, Kernvale	Flash flooding near Kernvale and Lake Isabella. **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*	No Property loss						Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf
South Lahontan	2004	August	13-14	Kern, San Bernardino		Cantil, Johannesburg, Hesperia, Victorville, Spring Valley Lake	**Kern:** Heavy rain in Cantil on August 13 and in Johannesburg on August 14 caused flooding. **San Bernardino** : 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. Sixty 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. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan.*		Spring Valley Lake Area, Hesperia					Alluvial Fan, Debris Flow, Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf
South Lahontan	2004	August	15	Inyo, San Bernardino		Furnace Creek Wash	Heavy flash flooding from storms killed two people and damaged a major highway. Death Valley National Park was closed and evacuated. **Source:** *Los Angeles Times*, September 17, 2004, "Floods Kill 2, Close Death Valley Park."	highway damage			2	Death Valley	X	Alluvial Fan, Debris Flow, Flash	
South Lahontan	2004	October	20-27	Kern, San Bernardino		Wrightwood	**Kern:** Flooding countywide on October 26. Federal - Declared USDA and SBA Cal EMA S1812**San Bernardino:** Extremely heavy rains caused widespread flooding. A bridge in Wrightwood was washed out. Many land-, mud-, and rockslides caused roads to be damaged and closed, especially in mountain locations. Rail lines were washed out and trains derailed because of it. Some livestock, most notably horses, were neck deep in floodwater. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012.*							Alluvial Fan, Debris Flow, Flash	Kern County HMP 2012 Update, AFTF Study Area Flood History
South Lahontan	2004-2005	December-January	27-11	Kern, San Bernardino		Rosamond, Mojave River, Hesperia, Oro Grande	**Kern:** Heavy rains that began in late December 2004 and continued into February 2005 caused widespread flooding. Impacts sustained to the desert community of Rosamond resulted in a FEMA Federal Disaster Declaration for Individual Assistance (IA). Rosamond was impacted by flooding of residences, and school and road closures. California City incurred approximately $3 million in damage to a fire station, police facility, airport terminal, and golf course, in addition to roads and culverts, and could receive an estimated $1 million in FEMA disaster relief funds GP S-1-05 FEMA DR 1577. **San Bernardino:** Between January 7 and 11, rains caused heavy damage. The Mojave River flooded three homes and caused severe damages in the Hesperia and Oro Grande areas. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan*; Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*.	$ 4,022,000	Kern County	2005	1	City Creek - Highland	X	Alluvial Fan, Flash	http://hazardmitigation.calema.ca.gov/docs/lhmp/Kern_County_LHMP.pdf
South Lahontan	2005	February	16-23	Kern		Kern County	FEMA DR 1585 **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan*; Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012.*	$ 2,000,000	countywide	2005			X	Flash	Kern County HMP 2012 Update
South Lahontan	2005	April	14	Kern		Kern County	Severe Storms, Flooding, Landslides, Mud And Debris Flows. Federal declared disaster DR 1585. **Source:** Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*.	$ 92,772,575	Statewide	2005				Flash, Debris Flow	Kern County HMP 2012 Update
South Lahontan	2005	July	23-24	Kern		California City, Garlock, and Cantil	Severe Thunderstorms and Flash Flooding in California City and Garlock. California declared disaster DC 2005-06. **Source:** Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012.*		California City and Garlock					Flash	Kern County HMP 2012 Update
South Lahontan	2005	August	15	Kern		California City	**Kern:** Flash Flood at California City Civic Center. Heavy rain occurred in the Kern County desert area, which led to flash flooding in California City from Cache Creek and extensive sheet flow through the area. The California Highway Patrol reported flooding across Highway 14 south of Phillips Road and at the intersection of westbound Highway 58 and California City Boulevard (Cache Creek). The fire department rain gauge measured 5 inches of rain in 1 hour from the deluge, with outlying areas reporting up to 2.5 inches of rain. Roof leakage with the heavy rain accounted for some of the damage reported. High wind accompanying the thunderstorm also damaged roofs, signs, and uprooted trees with its passing. This same thunderstorm cell produced a tornado earlier in the afternoon just south of the Kern County line and southeast of Edwards Air Force Base. Approximately $198,500 of property damage was associated with this flash flood. No injuries or deaths were reported. **Source:** Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012.*	$ 199,000	California City	2005			X	Flash	Kern County HMP 2012 Update
South Lahontan	2005	October	17-18	Kern		Cantil, Rosamond, and California City airport	Flash flooding in Cantil, Rosamond, and California City airport. **Source:** Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012.*		Cantil, Rosamond, and California City airport					Flash	Kern County HMP 2012 Update
South Lahontan	2006	January	2	Kern		Kern County	Countywide flooding in Kern. **Source:** Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012.*		Kern County					Flash	Kern County HMP 2012 Update
South Lahontan	2006	July	7	San Bernardino		San Bernardino County	Thunderstorms caused flooding. **Source:** San Bernardino County, 2011, *Multi-Jurisdictional Hazard Mitigation Plan Update.*		San Bernardino County					Flash	San Bernardino 2011 HMP
South Lahontan	2006	October	13	San Bernardino		San Bernardino County	Thunderstorms caused flooding. 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. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; San Bernardino County, 2011, *Multi-Jurisdictional Hazard Mitigation Plan Update.*	X	San Bernardino County					Alluvial Fan, Flash, Debris Flow	AFTF Study Area Flood History
South Lahontan	2007	September	3	Kern		Mojave River	Flash flooding in Mojave. **Source:** Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012.*		Mojave River					Flash	Kern County HMP 2012 Update
South Lahontan	2007	November	30	San Bernardino		San Bernardino County	Heavy rains caused flooding. **Source:** San Bernardino County, 2011, *Multi-Jurisdictional Hazard Mitigation Plan Update.*		San Bernardino County					Flash	San Bernardino 2011 HMP
South Lahontan	2008	January	4	Kern			Flooding due to Wildfires. Federal declared disaster M-1731. **Source:** Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012.*							Flash, Debris Flow	Kern County HMP 2012 Update
South Lahontan	2008	January	27	Kern		Ridgecrest	Ridgecrest thunderstorm. California declared disaster GP 2008-07. **Source:** Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012.*	$ 1,000	Ridgecrest	2008				Flash	Kern County HMP 2012 Update

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Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
South Lahontan	2008	June-August	Summer	Inyo, Kern, San Bernardino		Garlock, Neuralia, Rand, Mt Whitney Fish Hatchery	**Kern:** Flash Flooding at Naval Air Facility China Lake occurred on July 20. Flash Flooding at California City Civic Center, Garlock, Neuralia, and Rand on July 12 through 16. **Inyo:** A strong thunderstorm over the eastern slopes of the Sierra Nevada resulted in debris flows that damaged public and private property near Independence. Damage was inflicted on several structures at the Mt. Whitney Fish Hatchery, several homes below the hatchery, a campground, Highway 395, and property on a Native American tribal reservation. Debris flows damaged structures and Highway 395. **San Bernardino:** August 30 thunderstorm caused flooding. **Source:** Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*; DWR, 2009, *California Water Plan Update 2009*; San Bernardino County, 2011, *Multi-Jurisdictional Hazard Mitigation Plan Update.*	$ 1,696,000	Kern July 12-16	2008				Debris Flow, Flash	Kern County HMP 2012 Update
South Lahontan	2010	January	17-21	Kern, San Bernardino		San Bernardino County	January 2010 winter Storms and Flooding. Federal declared disaster M1884. **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*; San Bernardino County, 2011, *Multi-Jurisdictional Hazard Mitigation Plan Update.*		San Bernardino County					Flash	http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf; Kern County HMP; San Bernardino HMP
South Lahontan	2010-2011	December-January	Dec 17 - Jan 4	Inyo, Kern, Los Angeles, San Bernardino	December 2010 Winter Storm Event	Randsburg, Garlock	Severe winter storms, flooding, and debris- and mudflows occurred from December 17, 2010, to January 4, 2011. The counties affected included Inyo, Kern, and San Bernardino. Approximately 163 residents were impacted (together for whole event). Damages were sustained by roads and bridges. Snow fell in the Kern County deserts, with Ridgecrest reporting accumulating snow and snow falling at Edwards Air Force Base. In December 2012, California Highway Patrol reported flooding on Red Rock Randsburg Road about 5 miles west of Randsburg. California Highway Patrol also reported flooding on Garlock Road at northbound U.S. Highway 395. **Source:** Santa Barbara County Office of Emergency Management, September 13, 2011 (updated March 14, 2012),*2011 Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan* ; FEMA, July 28, 2010 update, *California Severe Winter Storms, Flooding, and Debris and Mud Flows (DR-1884)*; "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013; Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*; San Bernardino County, 2011, *Multi-Jurisdictional Hazard Mitigation Plan Update.*	$ 77,323,780	Inyo, Kern, Kings, Orange, Riverside, Santa Barbara, San Bernardino, San Diego, San Luis Obispo, Santa Barbara, and Tulare	2011			X	Flash, Debris Flow	http://www.fema.gov/pdf/news/pda/1952.pdf, http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf
South Lahontan	2011	January	26	Kern, Los Angeles		Lancaster, Antelope Valleys, Tehachapi Mountains	North of the Los Angeles Basin, the Tehachapi Mountains and the Lancaster and Antelope valleys received heavy snowfall. **Source:** DWR, 2003, *Bulletin 69-95, California High Water* .		Lancaster, Antelope Valleys, Tehachapi Mountains					Flash	DWR Bulletin 63-69
Tulare Lake	1805			Fresno, Kern, Kings, San Benito, Tulare	The Great Flood	Regionwide	Histories of early settlements state that California Indians spoke of a great flood, which was supposed to have occurred about the beginning of the nineteenth century and to have drowned thousands of them. This reference may have been to the flood of 1805, which is said to have covered the entire Sacramento River Valley except the Sutter Buttes. The Sutter Buttes is a volcanic plug that rises about 2,000 feet above the valley floor near the center of the Sacramento Valley. High-water marks observed in the San Joaquin Valley and attributed to the 1805 flood were some six feet higher than the huge 1861–62 flood reached. **Source:** Austin, John T., 2012, *Floods and Droughts in the Tulare Lake Basin.*						X	Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1825-1826	Winter		Fresno, Kern, Kings, Tulare		Central Valley Wide	Reported to have been an unusually wet winter throughout the Central Valley. (One source said that the wet winter was 1824–25, but that was almost certainly an error.) There were heavy runoff and flooding the following year. According to the Yuba County history, the Native Americans said that the Sacramento Valley had a large flood in the winter of 1825–26. One trapping party was compelled to camp in the Marysville Buttes because of high water. Those hills were full of grizzlies, elk, antelope, and smaller game that had taken refuge there. Native Americans recalled the flood of 1826 as a devastating one **Source:** Austin, John T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1845-1846	Winter		Fresno, Kern, Kings, Tulare		Stanislaus River, San Joaquin River, Sacramento River	One account reported that the Stanislaus River, at a point about 1.5 miles upstream from its mouth, overflowed the country for miles beyond its channel, and that the San Joaquin River was about 3 miles wide at the crest of the flood. This is the earliest flood mentioned in historical accounts of the settlement of the San Joaquin River Basin. This flood is known from its effect on rivers farther north in the Central Valley. Rivers in the Tulare Lake Basin may have flooded as well, but no settlers were living here to record the event. **Source:** Austin, John T., 2012, *Floods and Droughts in the Tulare Lake Basin.*	X	Central Valley Wide				X	Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1849-1850	December-June		Fresno, Kern, Kings, Tulare		Central Valley Wide	On May 7, Derby observed that the **Tule River** was 100 yards wide, 12 to 20 feet deep, and very rapid. Two days later, he came to the **Kern River** , which he described as very broad and deep and with a 6 mph current. It was running so full that his mules could not cross. The Kern River was discharging into Buena Vista Lake, which was 10 miles long and 4 to 6 miles wide. Returning north, Derby's party reached the Kaweah Delta on May 14. Including the main river, there were five distinct channels. Derby described four of those channels as being much wider than the Tule River. All five appeared to be at their height, and all were deep and rapid. Derby would later conclude that this was still several weeks before the peak of the runoff. Derby crossed the Kings River by boat on May 18. It was about 300 yards wide, rapid, and as cold as ice. While exploring farther downstream, the Native Americans told him that the Kings River was higher than they had ever seen it. Derby then turned west, cutting across the swampy portion of the San Joaquin Valley. He discovered that all of the water of the Kings River was flowing toward Tulare Lake. In addition, a large amount of overflow from the flooding San Joaquin River was flowing toward Tulare Lake with a strong current. When Derby finally reached the outlet for Tulare Lake (what we now call the Fresno Slough), he discovered that it had only an extremely slow current flowing toward the San Joaquin River. Derby's party became entrapped in the Fresno Slough area by the rising waters and barely escaped with their lives. Derby found extremely high water when he encountered the Kern, Tule, Kaweah, and Kings Rivers during the runoff of May and June, 1850. The May-June 1850 flood was one of the last great snowmelt floods before irrigation diversions captured most of the runoff. **Source:** Austin, John T., 2012, *Floods and Droughts in the Tulare Lake Basin.*	X	Central Valley Wide				X	Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1852-1853	Spring		Fresno, Kern, Kings, Tulare		Tulare Lake, White River, Kern River, Tejon Creek	The flood of 1852–53 raised Tulare Lake by 11.5 feet. At that point, the lake had an elevation of almost 216 feet and a depth of about 37 feet at its deepest point (216–179 feet). There was 9 feet of water in the outlet channel flowing over the delta sill (216–207 feet). From there, the water connected through the Fresno Slough to the San Joaquin River and flowed on to San Francisco Bay. In 1852, Nathaniel Vise and others settled in the Four Creeks Country (Kaweah Delta). The New York Times reported that the news from Four Creeks was dreadful. The 500 settlers there were living on beans. A major flood on the White River also occurred in 1852. Gordon's Ferry was established on the Kern River just north of present-day Bakersfield College in the spring of 1852. Eight months later, rain fell for three weeks across California. An observer wrote, "The rivers have been swelled to such an extent as to inundate all the low lands, causing immense damage, destroying stock and agricultural products." According to José Jesús López, early pioneers said that the Kern River swept Gordon's "perfectly bare of all signs of improvements." Below Gordon's Ferry, the Kern River flowed through Kern and Buena Vista Lakes on its way to Tulare Lake. Tejón Creek overflowed its channel for more than 2 months. During the height of the 1852–53 flood, some sailors jumped ship in San Francisco. They stole a whaleboat, hoisted the sail, and headed inland. Taking advantage of the prevailing winds, they sailed south up the San Joaquin River, through the Fresno Slough, and entered Tulare Lake. This is the first of five documented trips between that lake and San Francisco Bay to occur in historic times. But the sailors didn't stop in Tulare Lake. They continued south up the Kern River to Buena Vista and Kern Lakes. Since Tejón Creek was in flood, they kept going up that creek (east) another 15 miles or so until they were about 2 miles north of a Native American village (near what became the old Tejon Ranch headquarters). **Source:** Austin, John T., 2012, *Floods and Droughts in the Tulare Lake Basin.*						X	Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Tulare Lake	1858	October	2-3	Tulare	San Diego Hurricane of 2 October 1858	Visalia, Tejon	The only tropical cyclone known to produce estimated hurricane-force winds on the California coast on 2 October 1858. At Visalia [36°08'N 119°14'W] about 200 miles northwest from here, it commenced raining about 3 A.M. on October 2 and continued until about 4 P.M., with but little wind. At the Tejon [34°55'N 118°53'W or 34°48'N 118°52'W], the rain continued on October 3 until evening. The quantity of water that fell was unusually great, being estimated by those who had opportunities of judging correctly, at 7 inches. **Source:** Chenoweth, Michael, and Christopher Landsea, June 2004, "The San Diego Hurricane of 2 October 1858," *American Meteorological Society* (November 2004).							Flash	http://www.aoml.noaa.gov/hrd/Landsea/chenowethlandsea.pdf
Tulare Lake	1861-1862	December-March	Winter	Fresno, Kern, Kings, Tulare	The Great Flood	Kern, Kaweah, Kings, Tule, White River, Mill Creek	Most notable in the nineteenth century was the "Great Flood" of 1861-62, which inundated large areas the West Coast states from Canada to Mexico. December 1861 to January 1862 constitutes one of the greatest flood periods in the history of California. The 1861–62 flood period was remarkable for the exceptionally high stages reached on nearly every stream, for repeated large floods, and for the prolonged and widespread inundation in the Sacramento River and San Joaquin River Basins. Rainstorms were heavy in the lower elevations and snowfall continuous in the upper elevations throughout the two basins. That lake that formed in the Central Valley in 1862 was roughly three times larger than the Great Salt Lake (5,500 square miles versus 1,700). The low-elevation lakes and wetlands in the Tulare Lake Basin were part of that big lake. The 1861–62 flood was a record flood in the Tulare Lake Basin not just because of its volume. The force of the flood was such that all four of the major rivers (Kings, Kaweah, Tule, and Kern) cut new channels. In the Tulare Lake Basin, there was an exceptionally great flood on January 11, 1862. The Kings, Kaweah, and Tule Rivers brought down tremendous quantities of timber from the Sierra and deposited them on the plains. The 1861–62 flood on the Kings River began the formation of Cole Slough, cutting the head of that slough. The entire town of Scottsburg was washed away by the Kings during this flood and was subsequently rebuilt at a safer location. From the number of large trees washed down from the mountains by the floods on the Kings, Kaweah, Tule, and White Rivers, the settlers inferred that this was the greatest flood for many years. In the Visalia area, rain started early in October 1861. By the end of that month, the ground was wet down to a depth of 8 inches. By the end of November, sufficient rain had fallen to wet the ground down to a depth of 2.5 feet. The rain started again in mid-December and continued to fall for several weeks. January brought a week of warm gentle rain, which filled the creeks to the banks. Heavy rains continued until March 1862. This rerouting of the floodwaters to the north of the Kaweah Delta may have reduced the flooding in Visalia. In any case, surprisingly little water came down Mill Creek. Mill Creek flooded downtown Visalia three times during the 1861–62 flood: evening of January 11–12 (22 inches deep on Main Street) January 17–18 (20 inches deep on Main Street) night of January 20 – January 23+ (24 inches deep on Main Street). The floodwaters caused significant property damage in the Visalia area as well. The flood destroyed many irrigation ditches, a lot of fencing, and four bridges in and around town. The flood in the Visalia area was described in some detail in the January 23, 1862 issue of the Visalia Delta; some 42 to 46 homes, as well as some businesses, were destroyed in Visalia during the flood. **Source:** DWR, 2009, *California Water Plan Update 2009*, Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.	X	Visalia, Scottsburg		Minimal livestock	Kern River Basin	X	Slow Rise, Debris Flow	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1867-1868	December-January		Fresno, Kern, Kings, Tulare	The Great Kern River Flood	Kern River, Three Rivers, Kaweah River, Mill Creek, Tule River,	The December 1867-January 1868 Tulare Lake Basin flood is considered the greatest flood in the region since European settlement began. Total basin runoff is estimated by the U.S. Bureau of Reclamation to have exceeded the measured 1983 record. The town of Visalia was partly flooded. The Kings River engulfed the newly rebuilt town of Scottsburg. On New Year's Day 1868, residents were awakened to the loud roaring sounds that were accompanied by the very earth trembling. A tidal wave of trees, boulders, ice, and brush thundered down the river channel and created a 50-foot-high logjam near where the Chester Avenue Bridge now exists. This towering pile of ice, uprooted pines, cedars, and oaks dammed the channel, which then ran through town and created a new bed. The new riverbed is the present Kern River channel. The residents of Bakersfield woke on New Year's Day 1868, to a 200-foot-high flood coming out of the Kern Canyon. During recorded history, the 1867–68 flood was one of the greatest in the Tulare Lake Basin. Peak stages in that region during December 24 and 25 were the highest of record. Major floods occurred on all the main tributaries in the Tulare Lake Basin. The Kings. Kaweah, Tule, and Kern rivers carried flood flows in 1867–68 that are believed to be the greatest known, exceeding those of the 1861–62 flood. It is considered to be the greatest flood since at least the flood of 1805. Rain and snow began in mid-November 1867 in the Kaweah River Basin and came down almost continuously through December. Tremendous quantities of timber were brought down from the Sierra and deposited on the plains. During the 1867–68 flood, all the streams in Tulare County were reported to be on a rampage with great loss of property. The Visalia area was awash with water; boats were widely used for transportation, and there was significant loss of property. The 1867–68 flood resulted in the deepest floodwaters ever on the streets of Visalia. The 1861–62 flood put a maximum of 24 inches on Main Street. Tulare Lake was almost 37 feet deep at the deepest point. **Source:** Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California;* Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*	X	Visalia, South Fork of Kaweah dam failure, San Joaquin River failure, Mill Flat Creek Dam Failure, Kern River Dam Failure					X	Slow Rise, Debris Flow, Engineered Structures Failure	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1869			Fresno, Kern, Kings, Tulare			Runoff during water year 1869 caused Tulare Lake to rise a very impressive 9.7 feet in elevation. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1872			Fresno, Kern, Kings, Tulare		Tulare Lake	Water year 1872 was a very large runoff year, delivering an estimated 2.6 million acre-feet of water to Tulare Lake. Tulare Lake was at essentially full pool (elevation 207 feet) when the flood started. The runoff raised the lake 5.3 feet to elevation 212.3 feet. Despite the huge volume, we have found no record of flooding along any of the rivers in the Tulare Lake Basin. Perhaps the record of this old flood has just been lost. Or perhaps it has to do with how the flood is viewed. Maybe the high runoff did little damage to Visalia and the other settlements on the delta areas. But down in the lakebed, floods brought the volume of water necessary to sustain the lake through periods of drought. From that perspective, the flood wasn't damaging at all, it was a boon. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1874			Fresno, Kern, Kings, Tulare		Tulare Lake	This flood occurred during the early stages of the 1873–82 drought. It was relatively common in the Tulare Lake Basin for floods to occur during multi-year droughts. Water year 1874 was a very large runoff year, delivering an estimated 3.1 million acre-feet of water to Tulare Lake. The lake was just below full pool (elevation 206.5 feet) when the flood started. The runoff raised the lake 6.0 feet to elevation 212.5 feet. Tulare Lake has not been this high since. A map drawn in 1874 shows Tulare Lake as being nearly 700 square miles in size. This apparently reflected the condition when the lake was roughly 212 feet in elevation. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1875	January	15-20	Fresno, Kern, Kings, Tulare		Kings River, Kaweah, Tulare lake	In the Tulare Lake Basin, rain began on January 15. By January 20, Visalia had received 3 inches of rain and the foothills east of town had received about 10 inches. The streams in the area were running higher than they had at any time since the 1867–68 flood, but no real damage had occurred as of that date. During the spring runoff of 1875, high water and minor flooding plagued the Kaweah. Visalia incurred only minor to moderate flood damage from this flood. Presumably, there was flooding on other rivers within the Tulare Lake Basin. On the other hand, inflow to Tulare Lake in water year 1875 was relatively low, only 115 thousand acre-feet. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*	X	Visalia						Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1876			Fresno, Kern, Kings, Tulare		Tulare Lake	Water year 1876 was a very large runoff year in the Tulare Lake Basin, delivering an estimated 2.6 million acre-feet of water to Tulare Lake. The lake was just below full pool (elevation 206.3 feet) when the flood started. The runoff raised the lake 5.4 feet to elevation 211.7 feet. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Slow Rise, El Nino	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Tulare Lake	1877			Fresno, Kern, Kings, Tulare		Kaweah, St. John's River, Tulare Lake	During the spring runoff, there was high water on the Kaweah and probably on other rivers within the Tulare Lake Basin. The levee built to protect Visalia gave way, causing flooding. That levee was presumably on the south bank of the St. Johns River. This is the earliest record we have of that levee failing. It would not be the last. See the section of this document that describes the St. Johns Levee — Condition in Recent Years, for an account of some of its continuing problems **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*	X	Visalia					Slow Rise, Engineered Structure Failure	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1878			Fresno, Kern, Kings, Tulare		Kings River, Tulare Lake,	The 1878 flood enlarged the Zalda Canal to form what is now known as the North Fork of the Kings River. The 1878 flood filled Tulare Lake, bringing it to elevation 207.5 feet, causing it to spill through Summit Lake into Fresno Slough and the San Joaquin River. Mr. "Eating" Smith chose that opportunity to bring the 32-foot-long schooner "Water Witch" (formerly the "Alcatraz") from San Francisco to Fresno Slough. From there, Mr. Smith had it loaded onto wagon beds and hauled overland to Tulare Lake. Tulare Lake has never filled again since the 1878 flood. The Water Witch appears to have been the last boat of any significant size to have made it to the lake. Since 1878, the Tulare Lake Basin has functioned essentially as a closed basin, an inland sink without a regular outlet to the ocean. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*						X	Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1879			Fresno, Kern, Kings, Tulare		Kaweah River	Minor flooding occurred on the Kaweah River in 1879. However, inflow to Tulare Lake in water year 1879 was very low, only 58,000 acre-feet. If flooding actually occurred, it must have been localized and of a relatively minor nature. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1880	April	21	Fresno, Kern, Kings, Tulare		Kaweah	Flooding in 1880 occurred in April. W.G. Pennebaker recalled that the Kaweah River peaked on April 21, flooding Visalia and part of the surrounding countryside. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*	X	Visalia					Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1881			Fresno, Kern, Kings, Tulare			In the San Joaquin River and Tulare Lake Basins, the floods of 1881 were not of major proportions. Inflow into Tulare Lake in water year 1881 was 120,000 acre-feet, similar to water year 1875. That suggests that the flooding in 1881 might have been on the order of the relatively minor flooding that occurred in 1875. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1884	February	16	Fresno		Dry Creek, Red Banks, Dog Creek, Fancher Creek	On February 16, floodwaters covered every street in Fresno. All basements and ground floors were flooded. The only means of transportation within the city was by boat. Inflow to Tulare Lake in water year 1884 totaled 1.5 million acre-feet. This raised the level of the lake by 7.6 feet (from elevation 188.0 to 195.6). 1883–84 was reported to have been an unusually wet winter. Floods threatened Fresno every winter because it was located in the sink of four creeks: Dry Creek ran just to the north of town, Red Banks and Dog Creek merged in the flat lands to the east, and Fancher Creek ran nearby. The center of Fresno was the confluent point for these four creeks. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1884	December		Fresno, Kern, Kings, Tulare			1884 was reported to have been an unusually wet winter. There was heavy runoff the following year throughout the San Joaquin River Basin including the Tulare Lake Basin. The USACE identified it as a major flood in the San Joaquin River Basin. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1885			Fresno, Kern, Kings, Tulare		Cottonwood Creek, Tulare Lake	There were high floodwaters during the winter of 1885 along Cottonwood Creek on the route between Visalia and Badger. Inflow to Tulare Lake in water year 1885 totaled 483 thousand acre-feet. This raised the level of the lake by 5.6 feet (from elevation 188.0 to 193.6). **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1886	January	25-27	Fresno, Kern, Kings, Tulare		Kings River, Tulare Lake	Kings River inundated City of Fresno. Runoff during water year 1886 caused Tulare Lake to rise 4.5 feet in elevation. Judging from later comparisons, the Kings River did not reach an extremely high stage at this time, although there was an extensive inundation in the city of Fresno from streams in that vicinity. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*	X	City of Fresno					Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1890	January	25-26	Fresno, Kern, Kings, Tulare		Kern, Kings, and Kaweah Rivers	The Kern River near Bakersfield was reported to have been the highest on January 26, 1890, since 1867-68. The flood apparently was not of major importance, although structures were damaged on the river at Kernville and near Bakersfield. However, there were floods of considerable proportions in the Kaweah and Kings River Basins in January 1890. Overflow from the Kaweah River caused damage in Visalia where it was reported that boats were used on Main Street. Railroad tracks were washed out in the vicinity of Visalia. About January 25, 1890, the Kings River reached a stage reported to have been the highest since 1867-68. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*	X	Visalia					Slow Rise	USGS, 1939, Water Supply Paper 843
Tulare Lake	1893	February	9-11	Fresno, Kern, Kings, Tulare		Kern, Kings, Kaweah, and Tule Rivers	Kern River overflowed near Baskerville, inundating farmland and damaging bridges. The City of Porterville was flooded. Major flooding occurred along the Kaweah in February and Visalia was flooded. The level of Tulare Lake increased only 2.9 feet that year. So by that measure, it was not a major flood. It appears that the total runoff for the year was only average, but there was a rain event in February that caused flooding on the Delta. The Kern River overran its banks on February 10 due to melting snow and heavy rains. The Kern Valley Nursery was one of the areas damaged. Troop B, Fourth Cavalry, arrived in Three Rivers on June 20. The snow had been so heavy that the Mineral King Road was still blocked with snow. Many of the streams were running so high as to be impassable. A flood occurred on the Kaweah and Tule Rivers on February 9, 1893. Bridges and roads were washed out or damaged in the Kaweah River Basin, and it was reported that the Kaweah River was higher than it had been for 20 years. Evidently, the rainfall was especially heavy in the southern part of Tulare Lake Basin, where the Tule River was said to have been as high as in 1867. Highway and railroad bridges were washed out, and parts of the city of Porterville were flooded. The height of this flood on Tule River is not known at a point that would be comparable with recent recorded peak stages. The flood of 1893 was of brief duration and in general does not rank as a major one throughout the Tulare Lake Basin. The gauge height on the Kings River at Kingsburg on February 10, 1893, was 11.5 feet, not an exceptionally high stage. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*	X	Kaweah River Basin, Porterville,					Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1895	Winter		Fresno, Kern, Kings, Tulare		Kaweah River, Tulare Lake	Troop I, Fourth Cavalry arrived in Three Rivers on May 23. Many of the streams were running so high as to be impassable. On June 4, the runoff was still so high as to prevent the cavalry from going up the South Fork of the Kaweah to Hockett Meadows. It was July 10 before the Mineral King Road became passable. Tulare Lake rose 4 feet in 1895, indicating that there was higher than average runoff. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1898	September	26	Fresno, Kern, Kings, Tulare		Tulare	Flooding in 1898 occurred in September. The storm occurred on September 26 and was centered on the town of Tulare. It was apparently an isolated low-elevation event. The atmospheric mechanism behind the storm is unknown. It could have been a thunderstorm embedded in a tropical storm remnant. Tulare received 3.89 inches of rain during the storm event. That was 5.66 standard deviations above the average with a recurrence interval of 2,700 years. Several other stations in the vicinity had over 3 inches of rain on September 26. It was the wettest day ever at Dinuba. This storm almost surely resulted in localized flooding, but there are no accounts to that effect. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1906	January-March, May-June		Fresno, Kern, Kings, Tulare		St. John's River near Visalia, Kaweah River, Tule River	Virtually all the streams and rivers in the Kaweah and Tule River Basins flooded. Hundreds of acres were inundated. Adjacent watersheds presumably flooded as well. In 1906, the St. John's River levee broke, and water poured into Visalia from the north, which helped cause the floods of 1906. The City of Visalia was flooded. **Source:** USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*	X	Visalia				X	Engineered Structure Failure	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf

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Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Tulare Lake	1907	July	3	Fresno, Kern, Kings, Tulare		Buena Vista Lake Levee, Kings, Kern, Kaweah	On July 3, the levee that constrained Buena Vista Lake failed. The resulting flood inundated 25,000 to 30,000 acres south and west of Bakersfield, including the old bed of Kern Lake. It damaged 12 miles of the Sunset Railroad. Total inflow to the lake in water year 1907 was 977,000 acre-feet, raising the elevation 6.7 feet. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin;* Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012.*	X	Buena Vista Levee				X	Slow Rise, Engineered Structure Failure	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1909	Winter		Fresno, Kern, Kings, Tulare		Kern River, Tule River, Tulare Lake, Kaweah	It was a major flood along the Kaweah and the Tule rivers and presumably on the Kings and Kern as well. Levees failed at both Visalia and Porterville. The Kaweah River's peak natural flow occurred at McKay's Point on January 21, measuring 12,227 cfs. The levee protecting Visalia broke on the afternoon of January 14, and the floodwaters swept into town. The northwestern part of the town was quickly submerged. Porterville also flooded on January 14. Twenty-five families living in the lower part of town were rescued by citizens with rafts. Ernest Clayton Northrop recalled the extensive flooding that occurred during the winter of 1908–09. At the time, he was living on Bear Creek, a tributary of the North Fork of the Tule River, downstream from present-day Mountain Home State Forest in the general vicinity of the school. He said that it rained for many days and nights, followed by extensive flooding. The flood washed down sequoia logs, which his family later made into fence posts. Looking out from a point near his farm, Tulare Lake spread over most of the valley. There was a major flood on Garza Creek on the west side of Fresno County in 1909, and a man died while leading a horse across that creek. Troop G, Fourteenth Cavalry, arrived in Three Rivers on May 7. The Cavalry reported that there had been a great fall of snow during the preceding winter. This prevented the troop from reaching its outpost camps until June 15. Buck Canyon had snow for so much of the summer that the troop was never able to establish its usual outpost camp there. Because of the heavy snow, tourists did not begin arriving until about July 1. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*.	X	Visalia, Porterville Levees				X	Slow Rise, Engineered Structure Failure	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1911	January	9-11	Fresno, Kern, Kings, Tulare		Kaweah, Tulare Lake	Kaweah River flooded. High inflow year for Tulare Lake. The Kaweah also flooded. The other rivers within the Tulare Lake Basin may have flooded as well. At the least, it was a year with high runoff. Total inflows to Tulare Lake in water year 1911 were 724,000 acre-feet. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1913	July	22-23	Fresno, Kern, Kings, Tulare	Black Flood	Tulare Lake Basin	The Black Flood happened in Coalinga on July 22 and 23. Presumably this was caused by an intense rainstorm, but why it was called the Black Flood is unknown. Perhaps something swept up in the path of the storm turned the floodwaters black. This storm apparently covered most or all of the Tulare Lake Basin. Panoche/Silver Creek west of Mendota flooded sometime in 1913, probably in July. Fresno and Bakersfield each received 0.33 inches of rain on July 22, making that the wettest July day on record for both of those cities. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1913			Kern	Caliente Creek Flood	Caliente Creek, Caliente	Caliente Creek Flood wiped out the Community of Caliente. **Source:** Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*.	X	Caliente					Slow Rise	Kern County LHMP 2005
Tulare Lake	1914	January	25	Fresno, Kern, Kings, Tulare		Kern, Kaweah, Kings Rivers	An intense rainstorm struck Fresno and Coalinga on January 25. It covered much of the Tulare Lake Basin. Portions of Coalinga were flooded and Panoche/Silver Creek west of Mendota flooded. Kings River peaked near Piedra on January 25 at 59,700 cfs. The bridge over the Kings River near Reedley was awash, and Kings River was reported to be at its highest point since the 1867–68 flood. Major damage was done to the county bridges. The flood did much damage to buildings and killed many animals. The national park's superintendent reported that the rainfall and snowfall of the preceding winter were greater than usual, resulting in heavy damage to roads and trails. The North Fork Kaweah River peaked on January 25 at 7,400 cfs. This would remain the flow of record until the 1937 flood. The mainstem Kaweah River peak natural flow occurred on January 25 at 13,899 cfs. Flow on the Kaweah River in January was almost 10 times greater than for the previous month. The town of Lemon Cove suffered major damage, and a small resort and hotel was washed away. Thousands of acres of valley farms were flooded. There was widespread flooding between Visalia and Exeter, halting highway travel. Water was neck-deep in some parts of Exeter. The Kern River peaked near Bakersfield on January 26 at 18,300 cfs. It was the biggest flood that city had seen and would remain the flood-of-record until the 1937 flood. Floodwaters from the Kings, Kaweah (via Cross Creek), and Tule rivers reached the lakebed in January. An article in the *Hanford Journal* said that farmers in the lakebed were doomed. However, an article in the *Corcoran Journal* said that assessment was premature; it was too soon to say how great the damage would be. As it turned out, the flood was short-lived. A record barley and wheat harvest was brought in that summer, apparently having suffered relatively little from the flood. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*; DWR, 2009, *California Water Plan Update 2009*; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California.*							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1916	January	14-20, 25	Fresno, Kern, Kings, Tulare		Kern, Kings Rivers, Tulare Lake	Highways, agricultural land, and homes along the Kern River were damaged. River flooding occurred in January and continued in the Tulare Lakebed for about 4 months thereafter. That flooding resulted from two Pacific storms. The first storm lasted from January 14 to January 20 and covered an area that extended at least from San Diego north to the Kern River Basin. The next storm struck on January 24. The first storm was unusual in covering such a large area and extending so far north. The entire water year was an anomaly in that the Kern River Basin received twice as much precipitation that year as did any of the other watersheds in the Tulare Lake Basin. The Kern River Basin presumably received the brunt of this mega-storm because it was south-facing and was the southernmost watershed in the Tulare Lake Basin. The Kings River peaked at Piedra on January 17 at 45,400 cfs. The Kaweah River peak natural flow occurred at McKay's Point on January 17 at 15,362 cfs. The Kern River peaked near Bakersfield on January 19 at 18,000 cfs. The Tulare Lakebed was dry on January 1, 1916. Inflows from the Kings, Kaweah, and Tule rivers began in January. Inflow from the Kern River began in March. The Kern River Basin received a huge amount of precipitation during January, some of it falling as rain and some as snow. Apparently, the initial runoff from those storms went into filling Buena Vista Lake. Subsequent melting of the snowpack during the March–June period was responsible for the Kern River contribution to Tulare Lake inflows in 1916. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*; Water Resources Institute at California State University, July 2010, *Alluvial Fan Task Force (AFTF) Study Area Flood History*; Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*.	X	Kern River Basin					Alluvial Fan, La Nina	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1920	March-May		Fresno		Suburban areas of the city of Fresno	Suburban areas of the City were flooded in spring 1920. **Source:** Fresno County OES, January 2009, *Fresno County Multi-Hazard Mitigation Plan.*							Slow Rise	Fresno MHMP, 2009
Tulare Lake	1922	May		Fresno, Kern, Kings, Tulare		Kings, Kaweah	Tulare Lakebed received some inflows from both the Kings and the Kaweah rivers in 1922. Floodwaters arrived in May 1922, and by June a total of 23,680 acres of lakebed cropland was flooded. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1923	April		Fresno, Kern, Kings, Tulare		Kaweah, Tule River	Flooding in 1923 occurred in April. This was either a rain or a rain-on-snow event. April 1923 was the wettest April in 42 years. The Kaweah's peak natural flow occurred at McKay's Point on April 6 at 6,333 cfs (the peak average daily flow was 4,410 cfs). The Tule River had a maximum daily discharge near Porterville on April 6 of 3,820 cfs. That was the highest flow since record keeping began in 1901. It would remain the flow of record for over three decades. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Tulare Lake	1924	Winter		Fresno, Kern, Kings, Tulare		Four Rivers, Tulare Lake	Abundant rain and snowfall occurred in Sequoia National Park as reported in December park report. There were 10 rainy days during December while the month was colder and more gloomy than normal. Six inches of snow on the ground at park headquarters remained for several days. By December 31, 1924, Giant Forest had received 108 inches of snowfall. The combined runoff of the four rivers in the Tulare Lake Basin during 1924 was only 709,080 acre-feet, the second lowest since record keeping began in 1894, only 1977 would be lower. Source: Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1931	December	8	Fresno, Kern, Kings, Tulare		Kaweah River, Taft, South Taft, Taft Heights, Ford City, Fellows	This flood occurred during the 1922–1934 drought. Flooding occurred on the Kaweah River at sometime in 1931. Possibly other rivers within the Tulare Lake Basin also flooded. Little is known about this flood. Two possible clues: 1.02 inches of rain fell on Bakersfield on December 8, 1931, setting the record for the wettest December day ever in that city. A total of 54 inches (4.5 feet) of snow fell in Yosemite Valley in December 1931, setting the record for the snowiest December ever on record there. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf; http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Tulare Lake	1932	September	24-30	Kern		Tehachapi town and creek, Monolith, Mojave, Caliente Creek	A Pacific hurricane caused flooding in the Tulare Lake Basin. Tehachapi received 4.38 inches of rain in 7 hours on September 30, the most extreme rainfall ever recorded in that city. For a time that day, the town of Tehachapi was under 3 feet of water, with a torrent tearing through the streets and sweeping furniture out of houses. The nearby community of Monolith was also flooded. Some of the floodwaters flowed north into the Mojave Desert, forming a large lake. The town of Mojave was under 2 feet of water. However, most of the water poured south down Tehachapi Creek, which is the southern fork of Caliente Creek. Caliente Creek drains into the San Joaquin Valley near Arvin, southeast of Bakersfield. The rain was so intense that it brought Santa Fe Engine No. 3834 to a stop. That train was waiting out the storm atop a new concrete trestle over Tehachapi Creek. Sitting next to it on the mainline was Sunset freight train No. 829 of the Southern Pacific. As the floodwaters poured down Tehachapi Creek, they encountered six railroad bridges. At each bridge, debris snagged and created unstable debris dams, which held back floodwaters long enough to create temporary reservoirs of runoff. These dams broke apart as water built behind them, creating surges of floodwaters that exacerbated the flooding problems. Walls of floodwater, some 40 feet high, raced down Tehachapi Creek as each bridge gave way. The raging floodwaters piled up 50 feet deep against the trestle that the Santa Fe train was sitting on, undermining it. The trestle gave way directly in the center, collapsing with a roar that could be heard above the deafening noise of the storm. The helper locomotive in the center of the train plunged into the torrent, pulling seven freight cars with it. The Santa Fe locomotive also plunged in, but the Southern Pacific train remained on the mainline track, witnessing the horrifying event. By the time the floodwaters reached Caliente, Tehachapi Creek was flowing at 37,000 cfs. All railroad crossings and 31 miles of track had been undermined, and 600 feet of track were washed out. The floods claimed 15 to 26 lives, with total property damage of about $1 million (which might not include $600,000 for track repairs). **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*; Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*.	$1 million (this may or may not include $600K for railroads for track repairs	Tehachapi		15-26	2-Caliente, Rest-Tehachapi	X	Flash	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf; http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Tulare Lake	1935	April		Fresno, Kern, Kings, Tulare		Kaweah River, Elk Creek, Tulare Lake	Precipitation in the Sequoia National Park for April was much above average. In valley towns, all-time records of rainfall were exceeded in April, Fresno receiving over 16 inches. The Kaweah River flooded, along with other rivers in the Tulare Lake Basin. The culvert at Elk Creek overflowed, washing out 260 yards of the Generals Highway. The Kaweah River experienced above-average flows for April. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1936	February	13	Fresno, Kern, Kings, Tulare		Kaweah, Tule, Fig Garden	The Kaweah River peak natural flow occurred at McKay's Point on February 13 at 8,360 cfs. The Tule River peaked near Porterville on February 13 at 12,000 cfs. Tulare Lake had been dry since 1924. No flood flows reached the lakebed from any river during 1936. Total flow for water year 1936 was 109% of the 1894–2011 average for the Kings, 113% for the Kaweah, 122% for the Tule, and 107% for the Kern. **Fresno:** Flooding occurred in the Fig Garden area in 1936. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*; Fresno County OES, January 2009, *Fresno County Multi-Hazard Mitigation Plan* .							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1936	December		Tulare		Giant Forest, Hamilton Gorge Suspension Bridge	The winter of 1936–37 had the heaviest precipitation yet recorded in the national parks. During the last week of December 1936, 75 inches (6.25 feet) of snow fell at Giant Forest, one of the heaviest snowfalls on record to date. This was the winter when an avalanche swept away the 125-foot-long Hamilton Gorge Suspension Bridge. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*						X	Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1937	February		Fresno, Kern		Kern River near Fruitvale, Fairhaven, Kings River	In Giant Forest, 11.96 inches of warm rain fell on 6 feet of snow between February 5 and February 7, resulting in flooc conditions. There was considerable damage to the Generals Highway and to the Colony Mill Road. The Kaweah River rose 11 feet in 13 hours. Another 7.5 inches of rain fell the following weekend, bringing the river to within 1 foot of its previous high mark. The Generals Highway was closed until February 27 by storm damage. The Kaweah River peaked there at 16,000 cfs on February 14, 1937. Two days earlier, the flood had set a record for the highest average daily flow. The Tule River peaked near Porterville on February 6, 1937, at 12,000 cfs. The Kern peaked near Bakersfield on February 7, 1937, at 20,000 cfs. Bakersfield narrowly escaped inundation when the levee along the south bank of the Kern River came within a foot of being overtopped. An emergency flood-fight helped to protect the levee from overflow. The Fruitvale and Fairhaven areas near Meadows Field were flooded, and 16 people had to be rescued by boat in those areas. Over 50 people were evacuated, and all of their homes were destroyed or badly damaged. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*; USGS, 1939, *Water Supply Paper 843: Floods of December 1937 in Northern California*; Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Alluvial Fan	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1937	June	4-7	Fresno, Kern, Kings, Tulare			The second flood of 1937 happened on June 4 through 7. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin* .							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1937	July	24	Fresno, Kern, Kings, Tulare		Kaweah River	July brought numerous thunderstorms to higher elevations of the national parks, a fairly typical situation. However, a cloudburst on the evening of July 24 did considerable damage in the Mineral King area. The East Fork Kaweah River rose 2 feet in 20 minutes. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin* .	X	Mineral King Area					Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1937	December	9-12	Fresno, Kern		Kings, Kaweah River, Visalia	**Fresno:** During December 9–12, a single, intense storm moved rapidly from the North Pacific across California. The storm was warm, and precipitation in the Sierra Nevada fell primarily as rain instead of snow. There was little snow on the ground at the start of the storm, so snowmelt was not a major factor. Damage occurred on the Kings and Kaweah rivers. The Kings River and Kaweah fish hatcheries were severely damaged. A debris flow took out stream gauges on the Kings River, and many bridges were destroyed on the Kaweah River and its tributaries. Tulare Lake reappeared for the first time in 13 years. The December storm caused a major debris flow in the lower Kings River Basin. The storm began late afternoon on December 9. Precipitation fell mainly as rain and ended at in the evening on December 11. The rainfall included two high-intensity periods in the Kings River Basin (2 inches in 30 minutes and 1.5 inches in 1 hour). Structures that housed streamflow instrumentation near the mouths of the subwatersheds were destroyed or severely damaged by flooding. **Kern:** The areas north and east of Visalia looked much as they would in the 1945 flood. Visalia was flooded in one of the 1937 floods, probably the December flood. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*	X	Lower Kings River Basin, Visalia				X	Flash, Debris Flow, Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

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Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Tulare Lake	1938	February-March	February 28-March 4	Kern		Tehachapi Creek, Kern River , Bakersfield	Bakersfield set a 24-hour precipitation record for the month on March 3. Sixteen stations reported 10 or more inches of rain on March 2. It resulted in one-third to one-half of the average annual rainfall at those stations in that 1 day. Records were set by the resulting flood. The Kaweah River crested in Visalia on the night of February 26. The Kern River peaked near Bakersfield on March 3 at 14,600 cfs. The 1938 flood caused major flooding in the Tulare Lakebed. When the elevation of Tulare Lake reached 192 feet, one of the main levees in the lakebed broke and the lake spilled over 49 square miles of land. The lake continued rising, eventually cresting at 195 feet. By June, 135,600 acres of the lakebed were underwater. The flood totaled $79 million in damages and resulted in 87 deaths. **Source:** Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*; DWR, 2009, *California Water Plan Update 2009*; Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.	$ 79,000,000	Regionwide	1938	87	Regionwide	X	Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1938	March		Fresno		Dry Creek and Big Dry Creek	Flooding occurred in the northeast section of the city of Fresno, which had an estimated discharge of 2,700 cubic feet per second (cfs) on Dry Creek at the Big Dry Creek Dam site. **Source:** *Fresno County, January 2009, Fresno County Multi-Hazard Mitigation Plan.*							Slow Rise	Fresno MHMP, 2009
Tulare Lake	1939	June	14	Fresno, Kern, Kings, Tulare		Kings Canyon	An intense summer storm struck Fresno on June 14, 1939. At one point, the rain was coming down at a record-setting rate of 0.65 inch in 10 minutes (equivalent rate of 3.9 inches per hour). **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Flash	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1940	October	25	Fresno, Kern, Kings, Tulare		Dry Creek, Kern River, Bakersfield	Torrential rains pounded the hills east of the Visalia Electric mainline, flooding Dry Creek and washing away a 45-foot trestle at Dry Creek. The Kern River flooded enough to damage Highway 178 through the canyon. A storm dropped 1.51 inches of rain on Bakersfield on October 25, 1940, making that the wettest October day ever in that city. Such storms are typically intense and result in street flooding. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.		Highway 178 - Kern River Basin					Flash	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1941	February	24	Fresno, Kern, Kings, Tulare		Tulare Lake Basin, Kern River	A very intense storm struck Fresno on February 24, 1941. At the peak of the storm, rain was coming down at a rate of 0.48 inch in 5 minutes. In the Tulare Lake Basin, runoff in the spring of 1941 was heaviest in the south end of the valley. It was a much bigger flood on the Kern than on the Kings or Kaweah rivers. So much water was delivered to Tulare Lake that the lake's elevation rose 12.2 feet (from elevation 184.5 to 196.7). **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Flash	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1942	January-February		Kern		Caliente Creek, Lamont, Kern River, Kaweah River	Flooding occurred on the Kaweah and Kern rivers. The Kaweah River had a peak average daily flow at McKay's Point of about 11,000 cfs on February 2. Visalia was flooded. There was a small break in the south levee on the St. John's River near Miller's Bridge (Fourth Avenue East), northeast of Visalia. Bakersfield was flooded in 1942. Highway 178 through the Kern Canyon was damaged. Subsequent floods kept the lake generally at an elevation of 190 feet or above through 1944, a level that had not been seen in decades. American white pelicans thrived here during this period, and in 1942 Frances von Glahn made a color movie of them nesting at the lake (video on file in the national parks). So much water was delivered to Tulare Lake in water year 1942 that the lake's elevation was raised 10.6 feet (from elevation 183.3 to 193.9 feet). **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*	X	Visalia					Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1943	March, April	9-10	Fresno, Kern, Kings, Tulare		Kaweah, Tule, Kern, White River, Caliente Creek	The Kings River passed flood stage on March 9 and 10 with only minor damage. The Kaweah River peak natural flow occurred at McKay's Point on March 9 at 17,765 cfs. Flooding on the Kaweah, Tule, and Kern rivers caused considerable damage. The Tule River peaked near Porterville on March 9 at 15,500 cfs. This was the biggest flood on that river since recordkeeping began and would remain the flood-of-record until the 1950 flood. The White River had a flood crest of 2,300 cfs. This remains the flood-of-record for that river. The Kern River peaked near Bakersfield on March 9 at 21,700 cfs. This was the biggest flood on that river since recordkeeping began in 1896. It would also remain the flood-of-record until the 1950 flood. The Kern River was so high in this flood that it overtopped the old Olcese's Ranch Bridge, a mile downstream from the mouth of the Kern River Canyon. There was a major flood on Caliente Creek in April 1943, causing extensive damage to the Lamont/Arvin area. The overflow from these streams raised the level of Tulare Lake to near the top of the lakebed levees. Wave action caused levee breaks and the flooding of 28,000 acres. These levee breaks increased the size of Tulare Lake from 46,000 acres to 74,000 acres. By summer, 100,000 acres would be flooded. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*; Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*; DWR, 2009, *California Water Plan Update 2009.*	X	Lakebed Levees, Lamont/Arvin					Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1944	March		Kern		Caliente Creek, Lamont	There was a major flood on Caliente Creek in March 1944, causing extensive flood damage to the Lamont/Arvin area. Presumably, this was caused by an intense storm. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*; Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*.	$ 1,870,000	Lamont	2000				Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1945	January-February	30-3	Fresno, Kern, Kings, Tulare		Kaweah, Tule, Tulare Lake, Giant Forest, Kings	The storm of January 30 to February 3 dropped a total of more than 13 inches of precipitation at Giant Forest. Precipitation in the national parks consisted of more rain than snow below approximately 7,500 feet. At times, it was raining as high as 8,500 to 9,000 feet, but rain at the higher elevations was absorbed by the already good snowpack. Visalia received 3 inches of rain on February 2 and 3. Ash Mountain received 6 inches during the storm. Giant Forest received 12 inches during the storm, of which 8 inches fell on the night of February 2. The Kings River peaked at Piedra on February 2 at 49,300 cfs. Parts of Centerville were inundated when the Kings River flooded. There was extensive flooding farther downstream, both north and south of Hanford. The Kaweah River peak natural flow occurred at McKay's Point on February 2 at 18,554 cfs. The North Fork Kaweah River washed out the Airport Bridge, leaving that portion of the Three Rivers community cut off from the highway. Visalia flooded on February 2 and 3. This was described at the time as the most severe flooding ever to hit the town. Flooding of Visalia in 1945 resulted from four levee breaks on the St. John's River, all in the vicinity of Miller's Bridge (Fourth Avenue East) northeast of the city. The breaks occurred about 10 p.m. on February 1, and the water reached Visalia about 3 hours later. The Kaweah River peaked at McKay's Point at 10:30 a.m. on February 2, and the depth of water in Visalia peaked about 6 p.m. that afternoon. Downtown Visalia was heavily damaged. Water was 3 to 4 feet deep in the northeastern part of the city and more than a foot deep on some of the downtown streets. Main Street was closed to vehicular traffic by mid-morning to stop the wakes that were being thrown into adjacent businesses and homes. Similar problems were happening on nearby streets. Over two-thirds of Visalia was flooded. The Tule River peaked near Porterville on February 1 at 12,600 cfs. The Warthan Canyon Highway near Coalinga was closed on February 2 and 3, indicating that there was flooding on the west side of the Tulare Lake Basin. A break in the bypass around Tulare Lake occurred on February 3, about 20 miles south of Hanford at the height of the flood. Some ranchers were driven from their homes on the east side of the bypass and considerable grain was flooded on the west side. Nearly 1,000 people were forced to evacuate their homes. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*	X	Visalia, Warthan Canyon Highway, Hanford, Centerville				X	Slow Rise, Engineered Structure Failure	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1945	October	6	Kern		Caliente, Tehachapi Creeks, Communities of Lamont, Arvin	On October 6, a cloudburst dropped 2.75 inches of rain on the town of Tehachapi in 1.5 hours. Rainfall intensity in the nearby mountains was evidently greater. A wall of water estimated to be 8 feet high swept down Tehachapi Canyon, killing three people and causing property damage estimated to be $62,000. About half of this damage was to property in Tehachapi. Several hundred acres of cropland around Tehachapi were heavily damaged. Several hundred feet of railroad track at Keene and near Caliente were washed out. Transportation (both rail and highway) and communication lines were shut down for 24 hours. This was presumably the same storm that caused a major flood on Caliente Creek, causing extensive flood damage to the Lamont/Arvin area. **Source:** Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*; Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*	$ 262,000	$200,000-Caliente, Lamont, Arvin, 62,000 - Tehachapi	1945	3	Tehachapi		Flash	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1949	March	7	Kern		Bakersfield	On March 7, two thunderstorms hit Bakersfield in the same day. They unleashed heavy downpours that flooded the first floors of office buildings and damaged house foundations, inundating landscaping, streets, and storm drains. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.	X	Bakersfield					Slow Rise, Stormwater	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Tulare Lake	1950	November	18-19	Fresno, Kern, Kings, Tulare		Kings, Kaweah, Tule, and Kern Rivers	The Tule River peaked near Porterville at 4:30 a.m. on November 19 at 25,500 cfs. The flooding in Porterville was shallow and was largely confined to a small portion of the residential area. Between Porterville and Highway 99, the Tule spread over agricultural areas to a width of 3–4 miles. Roads and bridges suffered severe damage throughout the Tule River Basin. The total area flooded by the Tule was about 32,000 acres. Floodwaters covered portions of the town of Kernville and most of the town of Isabella and forced a mass evacuation of about 1,000 inhabitants. The mainstem of the Kern River at the site of the future Isabella Dam peaked at 39,000 cfs. Upstream from the head of the lower canyon near the Isabella Dam site, the river flooded Southern California Edison's Kern No. 3 power plant. The flood almost completely destroyed the State of California's fish hatchery, while it inundated summer homes, commercial recreation developments, and USFS recreational developments. Five bridges were washed out in the Bakersfield area, including the Kernville Bridge. The flood also washed out the old Olcese's Ranch Bridge, a mile downstream from the mouth of the Kern River Canyon. The Kern River peaked near Bakersfield at 4:30 p.m. on November 19 at 36,000 cfs. The south bank levees protecting Bakersfield almost failed. Heroic efforts by 500 volunteers supported by heavy equipment saved the city from inundation. The Kern River floodwaters continued in the main channel to Buena Vista Lake. The total inundated area on the Kern River (including the 18,500 acres of the Goose Lake / Jerry Slough system) was about 37,300 acres. None of the Kern floodwaters made it to the Tulare Lakebed in 1950. The rivers in the Tulare Lake Basin crested on November 19. By November 21, the Kaweah River flows were dropping, and the danger of flooding in Three Rivers had ended. One source said that eight bridges in the town had been so badly damaged that they remained impassable. In addition to losing the only highway bridge in and out of town, families on the North Fork were isolated from the main part of town because the Upper North Fork Bridge was gone. More than a dozen families on the South Fork Road were also isolated from the main part of town until the three bridges on that road could be replaced. But as of mid-December, 12 Tulare County bridges still remained impassable. **Source**: Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Slow Rise, Flash	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1950	November-December	18-19	Fresno, Kern, Kings, Tulare		Kings, Kaweah, Tule, and Kern Rivers	In the Tulare Lake Basin, most of the precipitation fell as rain. Rain was relatively light in the valley but heavy in the foothills and Sierra. The first storm began on November 13. A high-elevation storm passed through Central California on November 18–19, 1950. In Three Rivers, the rain was continuous for 20 hours. Long-time residents of that community could not recall such a heavy downpour. Three days of heavy rain from November 17–19 in the Sierra brought more than 15 inches of rain to some areas as high as 5,500 feet elevation and heavy rain as high as 10,000 feet, which melted the small snowpack. Although the rain was heavy and continuous, the greatest recorded intensity was 0.9 inch per hour at Giant Forest on November 18. Flood crests on the Kings, Kaweah, Tule, and Kern rivers exceeded all previous records. The Kings River peaked at Piedra on November 19 at 91,000 cfs. On November 19, the Kings River washed out the newly completed weir, the cofferdam, and foundation work of the Pine Flat Dam. Damage at the dam site totaled $900,000; that was the most costly single item of property damaged by the 1950 flood. From Piedra to Highway 99 (immediately south of Kingsburg), about 17,000 acres of agricultural land was flooded; most of that land was in Centerville Bottoms. The lower Kings River Bridge in Reedley was washed out. About 500 families were forced to evacuate their homes. Loss of livestock in the area was especially severe. About 30,000 turkeys, valued at $500,000, were lost. Downstream from Highway 99, the Kings River inundated the following areas during the November 19–21 flood—36,100 acres between Highway 99 and the Crescent Weir, 13,100 acres between the Crescent Weir and the San Joaquin River along the north distributaries, Fresno Slough and James Bypass, 3,000 acres along the south distributaries on the way to Tulare Lake. As the result of breaks in the river levees at numerous points near Laton, that community was virtually surrounded by the floodwaters. Farther downstream, the floods encroached upon Riverdale and fringe communities near Hanford. On November 19, debris carried by the Kaweah River lodged against the Visalia Electric trestle near McKay's Point. This created a jetty, diverting the floodwaters toward Woodlake. From Woodlake to Visalia, the flooded area was from 2 to 4 miles wide. A total of about 50 homes in that community were flooded. Six homes were destroyed, and others were extensively damaged. The trestle eventually collapsed, resulting in the destruction of several thousand feet of railroad track and embankment. Mill Creek caused serious flooding in Visalia, a lake formed on E. Main Street extending east from Santa Fe Street. The water averaged 6 to 12 inches deep, although in several places it was 18 inches deep. The St. Johns River flooded extensive tracts of agricultural land on the Kaweah Delta north of Visalia. Wide areas of agricultural lands were flooded south and east of Visalia along the St. Johns River and Cross Creek. The total area flooded by the Kaweah River was about 48,000 acres. Approximately 200 people were evacuated in Woodlake, and 2,000 people were evacuated in Visalia. Damage in the valley reached $5 million, including $500,000 in damage to bridges. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*	$ 5,500,000	Regionwide		2	Central Valley	X	Slow Rise, Debris Flow, Engineered Structure Failure	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1950	November-December		Fresno, Kern, Kings, San Benito, Tulare		Regionwide, Kern River, Bakersfield	Floods damaged Centerville, Visalia, Porterville, Oildale, Isabella, and Kernville. The Kings River washed out the weir, cofferdam, and foundation work of Pine Flat Dam and flooded nearly 70,000 acres from Piedra to Tulare Lake and the San Joaquin River, encroaching on Laton, Riverdale, and Hardwick.**Kern:** A series of storms during November 1950 produced widespread flooding throughout the Sacramento and San Joaquin River basins in California, and the Truckee, Carson, and Walker River basins in California and Nevada. At many localities, these floods were the most destructive experienced over the 40 percent or 2 percent annual chance period of record. A recurrence interval of 670 years was calculated for this event that occurred 4 years before Isabella Dam was constructed. Bakersfield was spared much damage by intensive flood-fighting efforts. Approximately 37,000 acres were flooded, and included agricultural areas, the Fruitvale oilfield, Oildale and the Gordon's Ferry bridge that was completely washed out. Some flooding on Poso and Caliente Creeks occurred as well. Damages: $2,000,000. An estimated 115 homes and businesses were damaged in Kernville. **Source**: Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area.;* Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*	33000000-Regionwide, 2000000-Kern County	Regionwide		2	Central Valley	X	Slow Rise, Stormwater, Engineered Structure Failure	http://quake.abag.ca.gov/wp-content/documents/ThePlan-Chapters-Intro.pdf, Kern county HMP 2012
Tulare Lake	1950	December	4-6	Fresno, Kern, Kings, Tulare		Regionwide, Kern River, Bakersfield	A second 1950 flood, somewhat smaller, came down the Kings River on December 4–6. This was the last major uncontrolled Kings River flood event. The flood caused significant damage to roads and trails in Sequoia, Kings Canyon, and Yosemite National Parks. Flooding occurred in Sequoia and Kings Canyon National Parks from November 18 through December 8. Rain continued to fall until December 8, causing additional damage by slides and washouts. Slide and washout conditions prevented the use of heavy equipment to keep drainage channels open. In some instances, it was necessary to use dynamite to dislodge jams of drifted material endangering structures. Floods damaged Centerville, Visalia, Porterville, Oildale, Isabella and Kernville. The Kings River washed out the weir, cofferdam, and foundation work of Pine Flat Dam and flooded nearly 70,000 acres from Piedra to Tulare Lake and the San Joaquin River, encroaching on Laton, Riverdale, and Hardwick. **Source:** Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area, Appendix D;* Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Slow Rise, Debris Flow, Engineered Structure Failure	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf http://quake.abag.ca.gov/wp-content/documents/ThePlan-Chapters-Intro.pdf
Tulare Lake	1951	July		Kings		Kings	In July 1951, a cloudburst in Kings Canyon caused a significant debris flow to come down across the highway. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Flash, Debris Flow	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1952	March		Fresno, Kern, Kings, Tulare		Kings, Kaweah, Tule, and Kern Rivers	In March, another set of similar storms swept the Sierra, again disrupting travel and halting most human activity in the mountains. By the end of March, almost 30 feet of snow had fallen at Giant Forest, one of the wettest seasons ever recorded in the Southern Sierra. On March 15, a big, late-season snowfall struck the Sierra. Grant Grove received 37 inches of snow in a 24-hour period. This was the second time that month that 30 inches or more of snow was recorded in 24 hours. Grant Grove received a total of 168 inches (14 feet) of snow during March, making it the snowiest month ever. The second flood of the year occurred in March. So much water was delivered to the Tulare Lakebed that it caused a levee failure within the lakebed. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Slow Rise, Engineered Structure Failure	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Tulare Lake	1952	April-July		Kings		Kings, Kaweah, Tule, and Kern Rivers	The 1952 snowmelt flood affected all the rivers on the east side of the San Joaquin River and Tulare Lake basins. In May 1952, the Kern River overflowed its north bank west of Bakersfield and entered the natural flood channels known as Goose Slough and Jerry Slough. The floodwaters put pressure on the levee downstream and a 40-foot-wide break formed in that levee just north of the Lerdo Highway. Private interests worked into the night, using heavy equipment to repair that break. Flood crests on the various rivers within the Tulare Lake Basin were not particularly high in 1952. However, moderately heavy flows over a long period caused considerable damage in the valley, particularly in the Tulare Lakebed. A total of 108,900 acres were flooded and over $9.8 million in damages occurred on the Kings, Tule, Kaweah, and Kern rivers. The Tulare Lakebed rose by 15.5 feet to a maximum elevation of 194.6 feet (elevation 194.6 to 179.1 feet). Levee failures in the lakebed occurred from March until June 2, 1952. **Source:** Kings County, September 2007, *Kings County Multi-Jurisdictional Multi-Hazard Mitigation Plan* ; Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.	$ 9,800,000	Tule, Kaweah, Kern Rivers	1952			X	Slow Rise, Engineered Structure Failure	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1952	Winter		Fresno, Kern, Kings, Tulare		Kings, Kaweah, Tule, and Kern Rivers	Widespread storms began in October and occurred intermittently until the end of March. Most of the storms brought abnormally cold air and produced snow down to and below an altitude of 1,000 feet. Very little of this snow melted, and a very large snowpack accumulated over the entire mountain area. By New Year's Day, substantial snow had begun to accumulate from one end of the Sierra to the other. January began with several relatively light storms, but on January 12 and 13, the first in a series of powerful and cold storms began to move through the state. Highway 40 was nearby, but it was buried in snow, lost in the blizzard. Highway 180 was closed entirely above 5,000 feet, as was the Generals Highway into Giant Forest from Three Rivers. The storm continued for the next two days. The first flood in 1952 occurred in January, a rain-on-snow event. The Kaweah River peak natural flow occurred at McKay's Point on January 25 at 8,851 cfs. By the end of January, the weather station in Giant Forest had recorded more than 300% of average January precipitation and more than 7 feet of snow covered area meadows. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1955-1956	December-January		Fresno, Kern, Kings, San Benito, Tulare	1955 Christmas Flood	Eastern Fresno County, Valley Region, Kern River, Tulare Lake, Kaweah River system, Visalia, Three Rivers, Exeter	**Tulare County:** In 1955–56, river flooding due to storms occurred from mid-November through December, 1955; river flooding was caused by a storm that occurred on January 25, 1956. The winter of 1955–56 was a strong La Niña event. During December 17 through 27, 1955, a warm rainstorm melted accumulated snowfall up to an elevation of 10,000 feet. Dry Creek peaked below present-day Terminus Dam. Those floodwaters merged with the Kaweah River. The area from Terminus Beach to Highway 99 was hard hit by flooding on December 23. When the Kaweah River reached the Lemon Cove–Woodlake Road (Highway 216), it was about a mile wide, stretching from the intersection with Dry Creek Drive almost to the intersection with Highway 198. The Kaweah River overtopped and broke the Friant-Kern Canal south of Woodlake, causing significant damage to that canal. The flood damage below Terminus Beach had two separate components—damage to agricultural lands because floodwaters were greater than levees were designed to contain; damage to Visalia due to failure of the diversion structure at McKay's Point. In addition, the flood plugged the mouth of St. Johns channel with a huge amount of sediment. Cameron Creek (a distributary of Deep Creek, southwest of Kaweah Oaks Preserve) caused widespread flooding, especially in the area from the Cameron Creek Colony to Farmersville. The communities of Woodlake, Farmersville, and Lindcove, were so widely inundated that water was generally flowing in a shallow sheet along the Kaweah Delta, bound for Tulare Lake. The Tule River flowing past Porterville flooded. Thousands of acres were flooded west of Porterville. More than 15 inches of rain over a 2-day period and caused some flooding along the Kern River. The state fish hatchery was washed away. The Kings River flooded on January 25, apparently brought on by a sudden downpour. Flooding was most significant near Visalia. The principal damages in the Tulare Lakebed in the 1955–56 flood were the loss of a crop of barley growing on the flooded land, the loss of irrigation equipment, and the erosion of levees and land.**Fresno County:** December 1955—A rain on snow event caused local and downstream flooding in eastern Fresno County, ultimately affecting the entire valley region. Homes were lost and roads and bridges were damaged or destroyed. Damage to some dam facilities also resulted. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin;* Fresno County OES, January 2009, *Fresno County Multi-Hazard Mitigation Plan;* Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*.	$575,000 + $1,000,000 + $600,000 + $200,000 + $200,000 +$10 million + $10 million (Tulare County). $200 million (Fresno County)	See column to the left		0; 74;	Tulare County; Fresno County	X	Slow Rise, Engineered Structure Failure, Debris Flow, Alluvial Fan	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1956	October	4	Fresno, Kern		Taft, Ford City	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. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*							Alluvial Fan, Debris Flow, Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Tulare Lake	1956-1957	December-March		Tulare	La Niña	Tulare Lake Basin	Moderate to strong event. Only known from the stream gauge record. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Slow Rise	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Tulare Lake	1957	June	2-9	Fresno, Kern, Kings		Pine Flat, South Fork Kings, Kern	The peak day natural flow at Pine Flat on the Kings River occurred on June 4 at 13,077 cfs. The Kings River remained high from June 2 through June 8. The South Fork Kings River peaked on June 4 at 7,220 cfs. The peak day on the Kern River occurred on June 5 at 3375 cfs. The Kern River remained high from June 3 through June 9. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Slow Rise	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Tulare Lake	1958	February-June		Fresno, Kings, San Benito		Tulare Lake	There were three periods of flooding during 1958: **1.** March (west of Mendota); **2.** April (near Coalinga and west of Mendota); **3.** Flooding occurred in the Tulare Lakebed from February through June as the result of a combination rain and snowmelt flood event. The flood of **February-June 1958** was a combination rain and snowmelt flood. The rains began in February and continued into April. On the Kings River, much of the precipitation above Pine Flat Dam fell as snow, although some intense rain also occurred at low elevations. The rain-flood runoff, which occurred in April, was well below the record of December 1955. The snowmelt runoff began in late May. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Slow Rise	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Tulare Lake	1958	March		Fresno, Kings, San Benito		West of Mendota	There were 22 days of storms during March. The biggest storm occurred March 11 through 17, dropping 38 inches on Giant Forest and 52 inches on Grant Grove. On March 16, heavy rain triggered debris flows that caused a bridge to wash out 21 miles west of Mendota. A car drove into the raging water, resulting in one boy being killed. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*				1	Mendota	X	Slow Rise, Debris Flow	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Tulare Lake	1958	April		Fresno, Kern, Kings, San Benito		West of Mendota, near Coalinga	There were three periods of flooding during 1958—in March (west of Mendota), in April (near Coalinga), and the flood that occurred in the Tulare Lakebed during February–June as the result of a combination rain and snowmelt flood event. The **April** event was an almost unparalleled late storm, dropping 72 inches of rain at Grant Grove and 57 inches at Giant Forest. Sometime in April, there was a major flood event near Coalinga (presumably from Los Gatos Creek or Warthan Creek). The flood mainly affected agricultural lands and public facilities such as roads and bridges. This was one of the three biggest flood events to occur in the Coalinga area during historic times. Panoche/Silver Creek west of Mendota also flooded in April 1958.**Kern:** 13 deaths and $24,000,000 statewide. Federally declared. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*; Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012.*							Slow Rise	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Tulare Lake	1962	February		Fresno, Kings, San Benito			A small rain flood in February. The peak day natural flow at Pine Flat on the Kings River occurred on February 10 at 10,236 cfs. The Kaweah River peak natural flow occurred at Terminus Dam on February 10 at 8,000 cfs. The Tule River peaked on February 10 at 1,337 cfs. The Kern River peaked on February 11 at 2,438 cfs. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Slow Rise	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Tulare Lake	1962	May		Fresno, Kings, San Benito			The second flood of 1962 was a snowmelt flood. In this flood, the peak day natural flow at Pine Flat on the Kings River occurred on May 6 at 12,724 cfs. The Kings River remained high from May 4 through May 9. The South Fork Kings River peaked at 5,600 cfs around May 6. The Kaweah River peak average daily flow at Terminus Dam during the runoff occurred on May 5 at 2,652 cfs. The Kaweah River remained high from approximately May 3 through May 9. The runoff came early on the Tule River in 1962. The peak day occurred on April 9 at 573 cfs. The peak day natural flow on the Kern River occurred on May 6 at 3,574 cfs. The Kern River remained high from approximately May 4 through May 10. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Slow Rise	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Tulare Lake	1962-1963	December-February		Fresno, Kern, Kings, Tulare		Kernville, Lake of the Woods	Flood damage to agricultural and public facilities during the 1962-63 flood was particularly serious along the streams flowing from west-side tributaries. Flood and Rainstorms, Declared Federal 2/25/63, amended declared Tulare 2/26/63. Lake of the Woods floodwaters overcame a small dam and washed away two homes. People were evacuated from their homes in the Kernville area. The fish hatchery sustained damages, and roads, homes, and utilities were damaged. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; DWR, 2009, *California Water Plan Updated 2009*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area;* Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*; Kings County, September 2007, *Kings County Multi-Jurisdictional Multi-Hazard Mitigation Plan* ; Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.					X	Slow Rise, Alluvial Fan	http://www.waterplan.water.ca.gov/docs/cwpu2009/1009prf/3-rr_sjr_pre-final_app.a-c.pdf http://quake.abag.ca.gov/wp-content/documents/ThePlan-Chapters-Intro.pdf
Tulare Lake	1963	September	17-19	Kern		Highway 178 and El Paso Wash	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. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*	$ 278,000	Michelson Laboratory					Flash	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Tulare Lake	1964-1965	December-January		Fresno, Kings	La Niña	Kings River	An arctic air mass moved into Northern California on December 14, and precipitation from December 18 through December 20 produced large quantities of snow. Beginning on December 20, a storm track 500 miles wide extended from Hawaii to Oregon and Northern California. Warm, moist air collided with the arctic air and resulted in turbulent storms that produced unprecedented rainfall on Northern California and melted much of the snow from the previous storms. The heavy rains caused some damage to the Generals Highway. On December 27, a portion of the wooden cribbing a mile above Ash Mountain failed, leaving a one-lane roadway for about 60 feet. A section of dry rubble retaining wall at the 5,000-foot elevation also failed because of the heavy rains. **Source:** DWR, January 1965, *Bulletin 161: Flood! December 1964-January 1965*; Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Slow Rise, Debris Flow	Report on Floods of December 1964 - January 1965; Floods and Droughts in the Tulare Lake Basin, Austin 2012
Tulare Lake	1965	March		Fresno, Kern, Kings, Tulare			Fresno received 1.55 inches of rain on March 12, setting a daily rainfall record. Most of the rain fell in a 5-hour window from 4 p.m. to 9 p.m., inundating streets and poor drainage areas with water described as up to hip deep. A number of transformers in the city shorted out, plunging many homes and businesses into darkness. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Slow Rise, Stormwater	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1965	August		Fresno, Kern, Kings, Tulare			The Sierra experienced a series of storms during the week of August 11–17. From August 11 through August 19, Cedar Grove had daily rains with downpours that caused debris flows that blocked the road to traffic until cleared away. Cedar Grove had 2.81 inches of rain in August. Heavy rain occurred in the national parks during the week of August 11–17. This storm affected the area of the South Fork Kings River. Grizzly Creek peaked at 247 cfs approximately August 17. The Marble Fork of the Kaweah River flooded through Lodgepole Campground on August 17. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Slow Rise, Debris Flow	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1966-1967	December-January		Fresno, Kern, Kings, Tulare		Kings River, Kern River, Tulare Lake Basin, Caliente Creek	Flooding during the winter of 1966-1967 took three lives and inundated 142,000 acres of agricultural land. A very large storm brought a strong inflow of warm moist Pacific air across Central California from December 3 through December 7. In the Tulare Lake Basin, the most severe effects of the storm were felt south of the Kings River. Rain fell as high as 9,000 feet. The rain apparently melted all the snow on the ground at Grant Grove, Giant Forest, and the Wolverton Ski Bowl. However, there may not have been a particularly heavy snowpack to melt. Grant Grove experienced an exceptionally severe rain and wind storm on the night of December 5. That event brought down a 100-foot forked-top sugar pine, demolishing a visitor cabin that was fortunately closed for the season. On December 7, the weather turned cold, reducing the amount of flooding. Severe flooding extended over the Kaweah, Tule, and Kern river basins in a 60- by 100-mile area of the Sierra northeast of Bakersfield. Moderate flooding occurred in the Kings River Basin and other basins to the north, as well as in streams draining from the Coast Ranges to the west. Flood peaks were the greatest of record at many gauging stations in the Kaweah, Tule, and Kern river basins. Damage was severe in all headwater areas. Culverts were overflowed or plugged with debris, or usually a combination of both. Most highway bridges were destroyed or severely damaged. In the Tulare Lake Basin, the December 1966 flood was generally the biggest flood-of-record along most major streams south of the Kings River, including along Sand Creek draining the area west of the North Fork Kaweah River and Deer Creek draining the area west of the Kern River and south of the Tule River, and along Poso Creek draining the area west of the lower Kern River Basin. Extremely high peak discharges occurred at most gauging stations between 11:00 p.m. December 5 and 6:00 p.m. December 6. Snowmelt was not a major cause of the floods, although some snow that had accumulated during minor November and early December storms was melted. These record-breaking floods inundated parts of the towns of Kernville, Springville, Three Rivers, Lindsay, and Lamont. Panoche/Silver Creek west of Mendota also flooded in December 1966. The peak day natural flow at Pine Flat on the Kings River occurred on December 6, 1966. The South Fork Kings River peaked at 11,800 cfs on December 6. Pine Flat Reservoir appears to have caught (or at least diverted) the entire flood on the Kings River. No floodwaters from the Kings River made it into the Tulare Lakebed during 1966.	$21.4 million	Tulare		3		X	Slow Rise, Alluvial Fan, Debris Flow, Engineered Structure Failure	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf, Water Resources Institute at California State University; Kern County LHMP; California Water Plan 2009; Report on Floods; Central Valley of California; 1966-67 Flood Season; Floods and Droughts in the Tulare Lake Basin, Austin 2012; Tulare County HMP 2011
Tulare Lake	1966-1967	December-January		Fresno, Kern, Kings, Tulare		Kings River, Kern River, Tulare Lake Basin, Caliente Creek	Fifteen-foot waves were reported to have been common on the mainstem of the Kaweah River in Three Rivers at the peak of the flood. Flooding occurred in Lindsay, East Woodlake, Terra Bella, and some isolated areas near Cutler, Orosi, Yettem, and Seville. Flooding was up to 3 feet deep in Tonyville near Lindsay, and 150 people were evacuated from that community. The Tule River was flowing 18,000 cfs at Globe on December 5 when the gauge was swept away. The Tule River sent nearly as much floodwater into the Tulare Lakebed in 1966 as the Kaweah River did. There was a major flood on Caliente Creek in December, causing extensive flood damage to the Lamont/Arvin area. There was a severe rainstorm over the Kern River Basin between December 2 and December 7. Almost 21 inches of rain fell in the area in 2 days. The flooding was most severe in the Kernville area. Flooding there isolated an area of 150 square miles and forced the evacuation of 200 persons. All roads in that area were under water. A trailer court and other buildings along the river at Kernville were badly damaged. Many people were evacuated from the Kernville area. Prisoners at a work camp were evacuated. A section of the golf course at Kernville was washed away. All of the mountain roads were washed out or closed by landslides. All trailer parks, motels, lodges and cabins were swept away by floodwaters. The fire station at Lake Isabella was flooded. Highway 178 was closed due to flooding and debris. The historic wooden Bellevue Weir just west of Bakersfield washed out. Two people lost their lives in Kern County. On December 9, Governor Brown declared portions of Tulare and Kern counties to be disaster areas. There were three deaths and $18 million in property damage. Damage to roads and bridges in the Kern River area of the county was particularly bad. The Tulare County civil defense chief estimated damage to ranch property as "simply astounding." Tulare: The 1966 flood on the Tule River was a 120-year event. Despite the presence of Success Dam and Reservoir, operated by the USACE since 1961, significant damage occurred. The December 1966 rains were so intense over the watershed of the Tule River that they produced uncontrolled spill at Success Dam. Water poured into Tulare Lake and flooded agricultural land. Primary damage from the 1966 flood was estimated at $21.4 million. **Source:** Tulare County OES, August 2011, *Local Hazard Mitigation Plan*; Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Kern County, September 2012, *Kern County, California, Multi-Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*; DWR, 2009, *California Water Plan Update 2009*; Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Flash	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf; Kern County HMP 2012

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Tulare Lake	1968-1969	December-February		Fresno, Kern, Kings, Tulare	Winter '69 Storms	Sand Creek, Cottonwood Creek, Yokohl Creek, Lewis Creek, Frazier Creek, Deer Creek, White River, and in the southwest corner of the County; Cutler, Earlimart, East Orisi, Orisi, Strathmore, Dinuba, Exeter, and Lindsay	**Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*; DWR, 2009, *California Water Plan Update 2009*; Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin* .	$86.2 million	Tulare	1969			X	Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1969	January		Kings		Kings County	Heavy snow runoff caused flooding in Kings County in January of 1969. Kings County was the only county designated in this Federal disaster declaration. Damage included $1.56 million in public costs and $1.25 million in private costs for a total of $2.81 million. **Source:** Kings County, September 2007, *Kings County Multi-Jurisdictional Multi-Hazard Mitigation Plan,*	$ 5,620,000	Kings	1969			X	Slow Rise	Kings County MJMHMP 2007
Tulare Lake	1969	January, February		Kern	Winter '69 Storms	Ridgecrest - Jacks Ranch Road; Tulare lake Bed	**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 runoff. The estimated cost of damages to Kern County for the 1969 floods was $4,700.00. Heavy precipitation plus a prodigious snowpack in January and February 1969 caused flooding throughout the region and reinundated 89,000 acres of the Tulare Lake bed. Declared Federal 1/26/69. **Source:** Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area*; Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; DWR, 2009, *California Water Plan Update 2009*.	$ 4,700,000	Kern				X	Slow Rise	http://quake.abag.ca.gov/wp-content/documents/ThePlan-Chapters-Intro.pdf 2009;http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Tulare Lake	1969	April-July		Fresno, Kern, Kings, Tulare			The winter of 1969 was very wet in the Southern Sierra. The 1969 flood was a major flood in the San Joaquin River Basin, especially in **January.** It was one of the most damaging natural catastrophes in California's history. Property damage was about $400 million and 60 lives were lost. Governor Reagan declared a state of emergency for the January storm—a total of 40 counties were declared disaster areas. President Nixon also declared the State of California a disaster area for the January storm. Fresno recorded 8.56 inches of rain in January 1969, making that the wettest month ever for this city. In all, 22 days of the month recorded precipitation. As the heavy rains continued in the valley, a snowpack of unprecedented depth and water content accumulated in the mid- to higher elevations of the Sierra. Record after record was broken during the winter of 1968-69. Incredible all-time 24-hour snowfall records were set in parts of the Sierra on **February** 24–25, with 46 inches of snow measured at Lodgepole and 36 inches of snow at Grant Grove. Lodgepole received 187 inches (15.6 feet) of snowfall during the month of February. This is the greatest amount of snowfall ever recorded in 1 month at that location. On February 26, 1969, the snowpack at Lodgepole reached 197 inches (16.4 feet), the greatest snowpack ever recorded at that site. The Montecito-Sequoia Lodge was damaged from a 20-foot snowfall. Lodgepole received a total snowfall of at least 440.5 inches (36.7 feet) during the winter of 1968–69. Flood releases of 12,000 cfs or greater occurred at Friant Dam on the San Joaquin River during the **April–July** snowmelt period. Panoche/Silver Creek west of Mendota flooded in January 1969. During the January and February floods, storage in Pine Flat Reservoir increased from about 420,000 acre-feet on January 1 to 820,000 acre-feet on March 1. In that time, about 223,000 acre-feet of Kings River water was passed through the dam and routed to the San Joaquin River via the Kings River North Channel and Fresno Slough Bypass. During March, April, May, and June, increasingly large quantities of water were released from Pine Flat for diversion to the San Joaquin River. The total diversion during those 4 months was about 1,185,000 acre-feet. No floodwaters from the basin above Pine Flat Dam reached the Tulare Lakebed before June. Inflow to Lake Kaweah was 153,000 acre-feet between **January 19–27** . Storage rose from 8,300 acre-feet on January 18 to 139,800 acre-feet on January 27, an increase of over 131,000 acre-feet. Most of the subsequent flow, which was released because of flood operating criteria, found its way into the Tulare Lakebed. Panoche/Silver Creek west of Mendota flooded in February 1969. Peak discharges for the second, and somewhat smaller, rain-flood period on the Kaweah occurred on **February 24–28** . Lake Kaweah was drawn down to 82,000 acre-feet on February 23, just prior to the second heavy rain flood. Storage rose to 117,300 acre-feet by February 28, and eventually reached a maximum of 158,800 acre-feet on **June** 26. The USACE, with cooperation from local organizations and parties, used every possible means to reduce Kaweah River flows into the Tulare Lakebed. Throughout the months of January to July, efforts were made to apply maximum quantities of water in the Kaweah service area, drawing down the reservoir. Sandbags were again placed on the spillway of the dam, increasing the storage capacity of the reservoir by 10,000 acre-feet. Even with all these efforts, 430,000 acre-feet of Kaweah floodwaters made it into the Tulare Lakebed in 1969.						X	Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1969	April-July		Fresno, Kern, Kings, Tulare			As on the Kings and Kaweah Rivers, runoff during water year 1969 on the Tule River was the second highest since recordkeeping began in 1894. Runoff for the Tule River below Success Dam during water year 1969 was 504,000 acre-feet. The 1969 storm pattern on the Tule River was similar to that on the Kaweah River. Storage in Lake Success rose from 11,100 acre-feet on January 18 to 77,230 acre-feet on January 28. Gross storage in Lake Success was considered at the time to be 85,400 acre-feet. Available storage was decreased after the January rain flood to about 63,000 acre-feet. The February rain flood caused storage to rise to 83,800 acre-feet on February 25. As at Lake Kaweah, USACE and local water-using agencies worked together, making every effort to reduce the amount of water that had to be spilled into the Tulare Lakebed. Sandbags were placed on the Lake Success spillway, increasing the storage pool above the designed 85,400 acre-feet. During the snowmelt flood runoff season, storage in Lake Success rose to a maximum of 95,300 acre-feet on June 20 and was above 85,400 acre-feet from May 19 through July 15. The lower Tule River flooded in both the January and February floods, and 215,000 acre-feet were passed downstream to the Tulare Lakebed. Even normally dry Deer Creek was flowing into the Tulare Lakebed in the spring. The Kern River peak natural flow was 22,359 cfs. Inflows to Isabella Reservoir during the peak of the rain flood in January and February were not nearly as great as those during the even more impressive December 1966 flood. Maximum mean daily inflow to Isabella Reservoir on January 25, 1969, was 22,200 cfs. There was a major flood on Caliente Creek in February, causing extensive flood damage to the Lamont/Arvin area. The third flood of 1969 was a snowmelt flood. A great snowpack had accumulated in the Southern Sierra by the beginning of April. Flooding occurred during the April–July runoff period. Tulare Lake reappeared on January 20, 1969; it had been completely dry since August 9, 1967. By the end of March 1969, 125 square miles (80,000 acres) of farmland had been inundated. The total lakebed inflow in 1969 was about 1.155 million acre-feet. This is the second biggest lakebed flood (both by volume and by area flooded) since the Federal reservoirs were completed. In 1969, 88,700 acres were inundated, significantly more than the 72,700 acres flooded in 1952. The combined runoff of the four rivers in the Tulare Lake Basin during 1969 was 8,379,585 acre-feet. On June 24, 1969, Tulare Lake reached a peak height of 192.5 feet elevation. The lake threatened the west side of the town of Corcoran during the 1969 flood. An emergency levee was built just west of the Corcoran Airport. The J.G. Boswell Co. took the lead on the levee building with much assistance from Salyer and the smaller farmers in the area. J.G. Boswell Co. had more land flooded in the Tulare Lakebed than any other landowner (almost 50,000 of the total 88,700 acres). Boswell also took the lead on the purchase and movement of junk cars to the levees. These were used as riprap to protect the levee from erosion. Tulare Lake was deep enough to cause significant erosion to the emergency levee, even though it was faced with the junk cars. The chop on the water during windy/stormy weather was significant, so the levees were constantly monitored. Declared Federal 1/26/69. **Source** : Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area*; DWR, 2009, *California Water Plan Update 2009*.							Flash	http://quake.abag.ca.gov/wp-content/documents/ThePlan-Chapters-Intro.pdf
Tulare Lake	1969-1970	December-January		Kern, Kings, San Benito, Tulare	Winter '69 Storms	Tulare Lakebed	Even normally dry Deer Creek was flowing into the Tulare Lakebed in the spring. **Source:** *Kern County, September 2012, Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012;*						X	Slow Rise	Kern County, September 2012, Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012;
Tulare Lake	1970			Kings			The Kern River peak natural flow was 22,359 cfs. Inflows to Isabella Reservoir during the peak of the rain flood in January and February were not nearly as great as those during the even more impressive December 1966 flood. Maximum mean daily inflow to Isabella Reservoir on January 25, 1969, was 22,200 cfs. There was a major flood on Caliente Creek in February, causing extensive flood damage to the Lamont/Arvin area. The third flood of 1969 was a snowmelt flood. A great snowpack had accumulated in the Southern Sierra by the beginning of April. Flooding occurred during the April–July runoff period. **Source:** Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012.*						X	Flash	Kings County MJMHMP 2012

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Tulare Lake	1970-1971			Tulare		Tulare Lakebed	Tulare Lake reappeared on January 20, 1969; it had been completely dry since August 9, 1967. By the end of March, 125 square miles (80,000 acres) of farmland had been inundated. The total lakebed inflow in 1969 was about 1.155 million acre-feet. This is the second biggest lakebed flood (both by volume and by area flooded) since the Federal reservoirs were completed. In 1969, 88,700 acres were inundated, significantly more than the 72,700 acres flooded in 1952. The combined runoff of the four rivers in the Tulare Lake Basin during 1969 was 8,379,585 acre-feet. On June 24, 1969, Tulare Lake reached a peak height of 192.5 feet elevation. The lake threatened the west side of the town of Corcoran during the 1969 flood. An emergency levee was built just west of the Corcoran Airport. The J.G. Boswell Co. took the lead on the levee building with much assistance from Salyer and the smaller farmers in the area (Boyett and Gilkey). J.G. Boswell Co. had more land flooded in the Tulare Lakebed than any other landowner (almost 50,000 of the total 88,700 acres). Boswell also took the lead on the purchase and movement of junk cars to the levees. These were used as riprap to protect the levee from erosion. In 1969, Mo Basham was a 12-year-old girl living in Corcoran, and she remembers much of what happened. Tulare Lake was deep enough to cause significant erosion to the emergency levee, even though it was faced with the junk cars. The chop on the water during windy/stormy weather was pretty significant, so the levees were constantly monitored. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1971			Kings			Cottonwood and Cross creeks overflowed and damaged farmland. Caliente Creek overflowed and destroyed 15 homes, damaged 50 more, and obliterated 12 miles of local roads near Caliente. Floodwaters then inundated Lamont and deposited silt throughout the area Declared Federal 1/26/69. **Source:** Kings County, September 2007, *Kings County Multi-Jurisdictional Multi-Hazard Mitigation Plan* .						X	Slow Rise	Kings County MJMHMP 2012
Tulare Lake	1972	June, August	7; 30	Kern		North Bakersfield; East Bakersfield	There were two floods in 1972; the first was in June, the second in August. On **June** 7, an intense thunderstorm centered over the north Bakersfield area caused flooding and damages in its wake. The storm dropped 1.09 inches at Meadows Field in Bakersfield in 45 minutes, making it the wettest June day ever in that city. Two people drowned. On **August** 30, a cloudburst associated with Hurricane Gwen off the coast of Southern California dropped 0.99 inches of rain 14 miles southwest of Coalinga in the Bear Canyon - Jupiter area, resulting in flash flooding. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*; Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*; Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*				2	Bakersfield		Flash; Alluvial Fan	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1973			Kings, Tulare		Tulare Lake Basin; Kings	Flooding occurred in the Tulare Lake Basin. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*; Kings County, September 2007, *Kings County Multi-Jurisdictional Multi-Hazard Mitigation Plan.*							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1975	September	8-12	Kern		Lake Isabella, Desert Areas	**September 8-12, 1975:** In the Lake Isabella area, a high intensity flash flood left behind many damages and left one person dead in Kern County when she was swept from Highway 14 and drowned. High levels of sediment and debris deposits were a cleanup chore on highways, roads, and on agricultural lands. Agricultural lands saw some damages, mostly to crops waiting to be harvested. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012.*				1	Highway 14 - Kern County		Flash, Alluvial Fan, Debris Flow	Kern County LHMP; http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf
Tulare Lake	1975	October	25	Kern			Heavy rains/storms. **Source:** Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012.*							Slow Rise	Kern County MHMP
Tulare Lake	1976	February	4-10	Fresno			February 10 was the seventh consecutive day of measurable rain in Fresno, with 4.01 inches falling between February 4 and February 10. Daily precipitation records were set on both February 5 (0.83 inches) and February 9 (1.50 inches). **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1976	September		Kern		South Fork Kern River, Kelso Creek, Erskine Creek	1976 Flash Flooding South Fork Kern River, Kelso Creek, and Erskine Creek (September). Damage occurred at Uffert Park in the Lake Isabella area. Damage was severe to Kern County Water Agency Improvement District No. 3 levees along Kelso Creek; the flow was estimated at 1.5 to 2 times the levee design flood. Repairs to the levee totaled $50,000. **Source:** FEMA, September 2008, *Flood Insurance Study Kern County, California, and Incorporated Areas*; Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012.*	$ 50,000	Kern Levee					Flash	Kern County MHMP
Tulare Lake	1976	September, October	29; 1	Fresno		Fresno	**September 29** : The heavy rain caused a roof to collapse at a building under construction and flooded homes, businesses, and streets. **October 1** : Fresno received 1.46 inches of rain, setting a daily precipitation record. Several roads were heavily flooded in that city, temporarily stranding some motorists. Los Banos received 0.5 inch of rain in just 30 minutes. Many roads and fields in Mendota were flooded. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Flash	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1977	December	21	Kern		Arvin/Lamont	Severe windstorm, dust and rain, flood. **Source:** Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012* .	$25 million ($10 million)	(Arvin/Lamont)					Slow Rise	Kern County HMP 2012
Tulare Lake	1977	December	27-28	Kern		Lost Hills, Bakersfield	Flooding in 1977 occurred in December. This flood occurred near the end of the 1976–77 drought. Soaking rains fell in Kern County on December 27–28. Storm totals were 2.05 inches in Lost Hills and 1.11 inches in Bakersfield. Water was 2 feet deep at some intersections in Bakersfield, stranding some motorists. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1978	January-March		Kern, Kings, San Benito		Kern River - Bakersfield, Poso Creek - McFarland, Kelso Creek, Caliente Creek - Lamont, Caliente Creek, other streams	1978 Kern River, Poso Creek, Kelso Creek, and Caliente Creek Flooding (February). This was calculated to be a 70-year event on the Kern River based on a flow of 8,300 cfs near Bakersfield. The City of McFarland experienced flooding from Poso Creek. Runoff ponded behind the Friant-Kern Canal and flowed southerly along the east canal bank. Approximately 580 homes in the community of Lamont were affected by flooding of Caliente Creek. Public water facilities owned by the Arvin-Edison Water Storage District ($3,928,799 in damage, $2 million covered by insurance and $834,600 disaster assistance received) and Kern-Delta Water District sustained damage ($72,685, with $70,000 reimbursed from Federal disaster funds). The Kern Sanitation Authority treatment plant was flooded, but suffered no permanent damage. This flood inundated 13,000 acres and caused approximately $7.6 million ($20.3 million in year 2000 dollars) in damage. Repairs to the Kelso Creek Levee totaled $155,000, and two people died in this flood. February 13, 1978. One woman died in Kern County as a result of her car being swept away by a mudslide across Interstate 5, and there was extensive damage to agricultural lands. More than 6,000 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 flooded. Mudslides, landslides, and debris flows were common. Cost was approximately $25 million. Flooding occurred on the west side of the valley in February. Flooding occurred on the east side of the valley and in the Tulare Lakebed in early **summer** due to high runoff. River flooding occurred in September due to a tropical downpour throughout the Sierra. **Ventura County** received over 13 inches of rain in 1 day, resulting in floods and landslides. Panoche/Silver Creek west of Mendota flooded in February. Flooding occurred along Los Gatos Creek from the foothills to the valley floor and damaged agricultural lands, roads, and bridges, and utilities. An estimated 4,500 acres were flooded, and damage totaled $160,000. The February 1978 Buena Vista Lake storm washed out the Interstate 5 bridges near Coalinga. **Kern County** : 1/20/78 - Severe windstorm dust and rain, flood; and 2/15/78 - Flood: Heavy Rains. $5 million. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*; Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012;* FEMA, September 2008, *Flood Insurance Study Kern County, California, and Incorporated Areas;* Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Kings County, September 2007, *Kings County Multi-Jurisdictional Multi-Hazard Mitigation Plan.*	$25 million	Kern County		3	Kern County	X	Alluvial Fan	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf; http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf; Kings County MHMP; Kern County LHMP; Kern County HMP 2012

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Tulare Lake	1978	September	4	Fresno		Highway 180: west of Grizzly Falls and near the Boyden Bridge, Tulare Lakebed	Jerry Torres, Kings Canyon National Park's trails supervisor on September 4, 1978, recalled that the flood over the Labor Day Weekend covered the North Side Road and spilled over onto Highway 180 in two spots—west of Grizzly Falls and near the Boyden Bridge. Flooding occurred in the Tulare Lakebed. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1980	January-February		Fresno, Kings, San Benito		Pine Flat, Tulare Lakebed, Kern	There were two floods in 1980—one in January and another in February. The peak-day natural flow at Pine Flat on the Kings River occurred on **January 13** . In the Tulare Lake Basin, the second flood of the year occurred on**February 18.** The Kern River had a much bigger relative response to this storm than the rivers farther to the north. Flooding occurred in the Tulare Lakebed; this was the first significant flooding since 1978. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*; Kings County, September 2007, *Kings County Multi-Jurisdictional Multi-Hazard Mitigation Plan.*							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1982	April	11	Fresno, Tulare		Pine Flat, Terminus Dam	The peak-day natural flow at Pine Flat on the Kings River occurred on April 11, 1982. The Kaweah River peak natural flow occurred at Terminus Dam (or possibly McKay's Point) on April 11, 1982 at 28,800 cfs. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1982	June	30	Tulare		Farmersville, Marble Fork Kaweah	Thunderstorms caused street flooding in Farmersville and flooded homes in other parts of the valley. The Marble Fork Kaweah River flooded through Lodgepole in June. This suggests that there was a strong thunderstorm cell in the Tablelands area. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Flash	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1982	September	24 - 26	Fresno		Cedar Grove, Middle Fork Kings Bridge at Dougherty Creek, Highway 180 near Grizzly Falls	Measurable rain fell from September 24 to September 26 in both Fresno and Bakersfield. The rain caused power outages to over 10,000 customers in Fresno County. Rain fell nonstop for at least 2 days in Cedar Grove, resulting in a major flooding event in the Kings River Basin. The Middle Fork Kings Bridge at Dougherty Creek was washed out in the September 1982 flood. The flood damaged a section of Highway 180, 100 yards west of Grizzly Falls. The biggest damage occurred 2 miles west of Grizzly Falls where an entire hillside was washed away, including a section of Highway 180. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Slow rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1982-1983	December-March		Fresno, Kern, Kings, San Benito, Tulare	Winter Storms	Regionwide: Caliente Creek - Lamont, Arvin, Kelso Creek - Weldon	Cottonwood and Cross creeks overflowed and damaged farmland. Caliente Creek overflowed and destroyed 15 homes, damaged 50 more, and obliterated 12 miles of local roads near Caliente. Floodwaters then inundated Lamont and deposited silt throughout the area. Floods closed northbound U.S. Highway 99 in February. Many roads were closed, and many bridges and culverts were clogged with silt. Generally wet conditions damaged crops and cut dairy production. Stormwaters flooded Visalia and Lindsay streets. Tulare Lake received inflow, flooding 82,000 acres of farmland. **Source:** Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area*; Kings County, September 2007, *Kings County Multi-Jurisdictional Multi-Hazard Mitigation Plan.*						X	Alluvial Fan	Kern County HMP 2012, http://quake.abag.ca.gov/wp-content/documents/ThePlan-Chapters-Intro.pdf
Tulare Lake	1983	March	1-2	Kern		Tehachapi Mountains, Frazier Park, Caliente Creek, Lamont Creek, Kern County, Caliente	An intense storm struck the Tehachapi Mountains on March 1-2, 1983. Heavy rainfall of 6.5 inches fell at Frazier Park. This triggered flash flooding on Caliente Creek. Most severely impacted was Lamont. Roads were washed out in Kern County. The town of Caliente was also flooded. Agricultural lands and irrigation works were also damaged and destroyed. Irrigation works were washed out. Total damage from the flood was an estimated $58.7 million. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*; Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*	58.7 million	Kern					Flash, Alluvial Fan	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1983	May	27-29	Fresno		Kings Canyon National Park - Bubbs Creek, Unnamed tributary of Lewis Creek, Castle Dome Meadow, Pine Flat	**The 1983 Memorial Day Weekend:** **1**. Bubbs Creek; **2**. Unnamed tributary of Lewis Creek; **3**. Castle Dome Meadow. The debris flow scoured Bubbs Creek for approximately the first one-third mile (0.5 km), taking vegetation including large trees, rocks, tons of soil, and a good swath of the trail downstream. The second debris flow occurred in the Lewis Creek Basin. This tributary (now informally referred to as Tsunami Creek) had a massive wall of water and debris come barreling down its channel late on Friday morning (May 27, 1983) prior to the Memorial Day Weekend. The wall scoured the channel, depositing mud 50 feet up the trunks of those trees that survived the onslaught of the "tsunami." The debris flood nearly took out the Lewis Creek pump house. The debris flow closed Highway 180 below the Lewis Creek Bridge for most of the day. The peak day natural flow at Pine Flat on the Kings River occurred on May 29, 1983. It was a significant flood, but only half of what the peak day natural flow had been during the much less famous 1982 flood. **Source:** Austin, J.T., 2012, Floods and Droughts in the Tulare Lake Basin; Water Resources Institute at California State University, July 2010.							Debris Flows	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1983	August	16-17	Fresno		Tehachapi Mountains to Highway 58, California City	On August 16, more than 1.5 inches of rain fell in the Tehachapi Mountains in an hour, washing out portions of Highway 58. On August 17, portions of California City were flooded after heavy rain fell in the Tehachapi Mountains. The second severe storm of August 1983 occurred when a very large black cloud brought intense rain to a section of the Kings Canyon high country. It apparently dumped onto the Lamarck and Darwin Glaciers and resulted in major flooding of Darwin Creek. A lot of debris plugged the creek where it crosses the Pacific Crest Trail. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Flash, Debris Flow	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1984	July	15-16	Kern		Highway 178, Uffert Park, Goat Ranch Canyon, Long Canyon Area, Bodfish Creek	On July 15-16, a high-intensity, short-duration thunderstorm produced debris flows, and debris blocked Highway 178 and many other roads. Uffert Park was covered by debris flows that were about 6 inches deep. Other flooded areas include Goat Ranch Canyon, Long Canyon Area, Bodfish Creek. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*; Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History.*							Debris Flows	http://aftf.csusb.edu/documents/AFTF%20Study%20Area%20Flood%20History_ALL.pdf; http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1984	August	20	Kern		Lake Isabella, Scodie Creek/Onyx; Lake of the Woods near Frazier Park, Ridgecrest, Inyokern	An intense storm occurred in the hills east of Lake Isabella on August 20. Two-thirds of an inch of rain fell in just 40 minutes. Scodie Creek (sometimes incorrectly listed as Sodie Creek) overflowed its banks, flooding the community of Onyx. Four homes were damaged by mud and one home was washed away. This is a different event from the July 30 flood. 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 because 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. **Source:** Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*; Water Resources Institute at California State University, July 2010, *AFTF Study Area Flood History*; Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*							Flash, Alluvial Fan, Debris Flow	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1984	September	19	Kern		Lake Isabella	An intense storm occurred over Lake Isabella on September 19. Over an inch of rain fell in just 45 minutes, washing out a quarter mile of one road, covering others with mud, and destroying two mobile homes. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Flash	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1985			Kings			FEMA's Flood Insurance Study listed flooding events in 1985. **Source:** Kings County, September 2007, *Kings County Multi-Jurisdictional Multi-Hazard Mitigation Plan.*							Slow Rise	Kings County MHMP
Tulare Lake	1986	February	13-19	Fresno, Kern, Kings, San Benito, Tulare		Pine Flat, Tulare	The Kings River experienced a flood from February 13 through February 19. The peak day natural flow at Pine Flat on the Kings River occurred on February 18, 1986 at 25,060 cfs. Damage was much greater in Fresno County than in Tulare County. The floods created several large logjams along the Kings River as well as along other water courses in the national parks. Rains, winds, flooding and mudslides. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area.*	1310000	Fresno, Tulare					Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf http://quake.abag.ca.gov/wp-content/documents/ThePlan-Chapters-Intro.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Tulare Lake	1986	March	10	Fresno		Fresno, White River - Highway 98 between Earlimart and Delano	On March 10, an intense thunderstorm struck Fresno during the height of the evening commute. About an inch of rain fell in downtown Fresno, resulting in widespread flooding, stranding dozens of cars, some with water up to the rooftops. The deluge flooded basements in a number of buildings in downtown Fresno and caused part of the roof to collapse on a store. Locally heavy rain fell farther south, causing the White River to surge over its banks and flood Highway 98 between Earlimart and Delano. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Flash	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1986	March-May	Spring	Fresno, Kern, Kings, San Benito, Tulare		Caliente, Tejon, Sycamore, El Paso Creeks, Tulare Lakebed	Heavy rain during the spring caused flooding in the Caliente Creek, Tejon, Sycamore, and El Paso creeks in the southern Valley, flooding Lamont and the area around Highway 99/Herring Road. Constant rain and runoff caused lower water sales and impeded delivery of water. Spring snowmelt was heavy enough to cause flooding in the Tulare Lakebed. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin;* Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012;* Kings County, September 2007, *Kings County Multi-Jurisdictional Multi-Hazard Mitigation Plan.*							Debris Flow, Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1988			Fresno, Kern, Kings, Tulare			Flooding in Fresno. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1993	January	9 and 13	Fresno, Kings, Tulare	Late Winter Storms	Highway 33 near Coalinga, Orosi, Horse Creek Dam - Sand Canyon in the Tehachapi Mountains	Regionwide: Snow, rain and high winds. Horse Creek Dam in Sand Canyon in the Tehachapi Mountains failed on January 9, causing localized flooding. On January 13, a series of winter storms brought between 1 and 2 inches of rain, flooding numerous farm fields in Fresno County. A debris flow occurred on Highway 33 near Coalinga. A levee collapsed north of Orosi. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*; Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area*.	$ 600,000,000	(Statewide)	(1993)	(20)	(Statewide)	X	Engineered Structure Failure, Debris Flow, Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf http://quake.abag.ca.gov/wp-content/documents/ThePlan-Chapters-Intro.pdf
Tulare Lake	1995	January-March		Fresno, Kern, Kings, San Benito, Tulare	1995 Christmas Floods	Fresno County; Kern County near Frazier Park and Highway 66 near Maricopa, Lamont, Caliente Creek, Arvin, Loraine, Tulare Lakebed, Manning Road: Kern County Western Fresno County, Caliente Creek - Lamont, Kelso Creek - Weldon, Mendota, Huron, Lamont, Arvin	An El Niño year contributed a string of subtropical storms that struck the region. This series of strong storms caused flooding that resulted in multiple road closures, destroyed a bridge on Interstate 5, displaced 300 to 400 people, damaged crops, and caused the deaths of 7 people. Most flooding occurred in the western portion of the county. A local, State, and Federal disaster was declared for the county. Twenty homes were damaged; 150 acres submerged. Losses to public facilities were estimated at $5 million. Agricultural damage and crop losses exceeded $8.6 million. There was an estimated $9 million in economic and other damage to businesses. Additionally, Huntington Lake Road and Highway 168 were closed due to snowfall, Highway 180 was closed due to a rockslide, a bridge on Interstate 5 over Arroyo Pasajero drainage was washed out (causing the seven deaths), 15 to 20 other county roads were closed at least temporarily, 20 to 40 water systems were unable to serve potable water for various periods of time, and an estimated 300 to 400 people were displaced by flooding. On January 10, heavy rain of up to 4 inches caused creeks to swell, which washed out several roads in Kern County near Frazier Park and Highway 66 near Maricopa. On January 24, strong thunderstorms moved through the Central California interior, causing flooding in Lamont. On January 25, Kern County was drenched by heavy rain. Up to 5 feet of water surged out of Caliente Creek washing out roads. Parts of Interstate 5 flooded. Numerous crops were damaged in Arvin, and up to 30 chickens drowned in Loraine. On the evening of March 9 (sometimes reported as March 10), extremely high flows in Arroyo Pasajero collapsed the two Interstate 5 bridges near Coalinga, killing seven people. The peak flow in the arroyo was 33,000 cfs, delivering a flood volume of 33,500 acre-feet. In 1995, Highway 269 was closed for 72 days near Huron. Mendota experienced flooding and road damage. Los Gatos Creek ruptured an 18-inch oil line, and Zapato Chino Creek washed out a 66-inch irrigation line. Caliente Creek flooded Lamont, and crops were damaged at Arvin. Flooding occurred in the Tulare Lakebed; this was the first significant flooding since 1986. Parts of Manning Road were under nearly 2 feet of water where it crossed the normally dry lakebed. Total damages:**Fresno** - $21,236,000, **Kings** - $2,484,000, **Tulare** - $48,515, **Kern** - $22,966. **3/12/1995** - Flood and Wind: 1995 Late Winter Storms. $57.3 million in damages. **Source**: *DWR, 2009, California Water Plan Updated 2009;* Fresno County OES, January 2009, *Fresno County Multi-Hazard Mitigation Plan;* Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*; Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012.*	$22,600,000; $95,201,000 (All); $6 million (Kern)	Fresno, Kings, Tulare, Kern		7	Coalinga	X	Flash, Stormwater, Slow Rise	http://hazardmitigation.calema.ca.gov/docs/approved_lhmps_under_2008_fema_guidance/Fresno_MHMP.pdf; http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf http://www.water.ca.gov/floodmgmt/docs/Bul69-95/00-bul69-95front.pdf http://hazardmitigation.calema.ca.gov/docs/approved_lhmps_under_2008_fema_guidance/Fresno_MHMP.pdf
Tulare Lake	1996	April, May	16; 17	Fresno		Fresno, Pine Flat	**April 16.** Small hail that fell in association with this thunderstorm caused $600,000 in crop damage, mainly to grapes. Heavy rain fell in Fresno, stranding motorists in their cars. One report had as much as 0.73 inches of rain falling in just 25 minutes. The Kings River flooded again in May. Peak flow at Pine Flat was 28,705 cfs on May 17. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.	$ 600,000	Fresno					Slow rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	1997	January, July, September		Fresno, Kern, Kings, Tulare, San Benito	January 1997 Floods	A bridge on Interstate 5 over the Kings River. Cedar Grove Bridge. Interstate 180, Tenmile Creek. Sequoia and Kings Canyon National Parks, Tule River, Earlimart. Highway 99. Poso Creek levee. King County. Tulare. Lakebed. General Highway. Mineral King Road. Lake Isabella	A regionwide rain-on-snow event in high elevations caused local flooding and flooding downstream in the valley. Homes, bridges, roads, and other infrastructure near Fresno County waterways were damaged. A bridge on Interstate 5 over the Kings River was washed out. Losses to infrastructure were estimated in the hundreds of millions. Other impacts included damage to fisheries and wildlife. As a result of severe storms and flooding, a major Federal disaster (DR-1155) was declared on January 4, 1997, for the period December 28, 1996 extending through April 1, 1997. The disaster area covered 49 counties including Fresno, Kings, and Tulare. Flows were very high on the South Fork Kings River in Cedar Grove as well. Significant quantities of fill and riprap were required to repair damage done to the left embankment of the Cedar Grove Bridge during this flood. A 7-mile section of Highway 180 from Boyden Cave to the boundaries of the national parks was also badly eroded. About 100 yards of the Grant Grove approach was washed out. Large-scale flooding in the Tenmile Creek area in January damaged flood facilities at Hume Lake Christian Camp in Sequoia National Forest. Heavy rains contributed to high runoff and flooding throughout Sequoia and Kings Canyon National Parks, resulting in significant road, bridge, and trail damage. Eleven inches of rain fell at Hockett Meadows at the 8,500-foot elevation in a 24-hour period. Bill Tweed recalled that the 1997 flood caused a rockslide that damaged the piping feeding the Sycamore Creek stock tanks on Shepherd's Saddle Road. This was a major flood on the Tule River. It peaked in early January, resulting in significant flooding. Success Dam filled and emptied twice during the flood. A levee broke on the Tule River. State and Federal disaster assistance was granted to the town of Earlimart, which suffered millions of dollars of damage to homes and other structures. Highway 99 was closed for more than a week due to the flooding. A breach in Poso Creek levees on January 4–5 put water onto the valley floor near Wasco. The Kern River peaked late on January 2 at about 42,000 cfs near Kernville. That was the peak hourly flow—the peak average daily flow was 18,780 cfs on January 3. Agricultural damage was particularly high in Kings County; flooding of the Tulare Lakebed kept acreage from being farmed during the 1997 crop year. Damages incurred January 2 through January 5, 1997: Fresno - $5,414, Kings - $38,857, Tulare - $8,836. In Sequoia National Park, the rain brought rock falls and debris flows. Damage to the Generals Highway occurred just below Giant Forest at 4:30 p.m. on January 23. There was a flash flood on the creek west of Silver City in the Mineral King area. Water washed over the Mineral King Road, but only minor road erosion occurred. On September 2, thunderstorms brought 1-inch-diameter hail to Mount Mesa near Lake Isabella. On September 3, a thunderstorm east of Lake Isabella resulted in flash flooding in Scodie Creek, causing water to flow over Highway 178 at Onyx. About 48,000 acres of agricultural land were submerged in the Tulare Lakebed. Apparently, the western edge of the lake came to about the intersection of 10th and Pueblo on the west side of Corcoran. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*; Fresno County OES, January 2009, *Fresno County Multi-Hazard Mitigation Plan.*	$1.5 billion	Statewide				X	Slow Rise, Flash, Debris Flow, Engineered Structure Failure	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf; Fresno County MHMP http://pubs.usgs.gov/fs/1999/0073/report.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Tulare Lake	1998	January-June	February 1, 1998 - June 1998	Fresno, Kern, Kings, San Benito, Tulare	El Niño Floods	Valley region	La Niña conditions produced flooding throughout the spring. Coast Range runoff inundated farmland around Mendota and Cantua Creek. Accumulated stormwater ponded on many roads in Bakersfield. In 1998, a heavy snowpack and warm rains produced flooding in the White River, inundating the City of Earlimart and closing U.S. 99 for a week. Devastating flash flooding occurred along the Tres Pinos Creek in San Benito County. On **February 2** , heavy rainfall led to flash flooding and water over Highway 166 southwest of Bakersfield. Runoff from the Coast Ranges caused flooding in west Fresno County affecting agricultural areas around Mendota, Firebaugh, and Cantua Creek. Approximately 9,300 acres of farmland were flooded. Some of the worst flooding was approximately 15 miles southwest of Mendota. Cantua Creek and Arroyo Hondo combined to flood 240 acres of farmland. In Bakersfield, significant rain on the evening of **February 7** led to ponding water and flooding on many secondary roadways. The same storm system impacted the west side of Fresno County that evening and the following day. Stream flow from Panoche and Silver creeks crested at 13,000 cfs at 10:00 p.m. on February 7. The resultant flooding downstream peaked in Mendota on the evening of February 8. Flooding affected Highway 198 west of Interstate 5 in far western Fresno County. A second major storm struck on **February 23** . The impact of that storm was focused on the southeast side of the Tulare Lake Basin from the vicinity of Lindsay south to the Tehachapis. Lewis Creek near Tonyville and Frazier Creek near Strathmore both overflowed early on February 24, causing an estimated $1.5 million in damage to area homes and businesses. Rainfall in the 24 hours prior to the flooding was estimated to be 1 inch to 1.5 inches in the lower Tulare County foothills. The White River breached a levee at 1:30 a.m. on February 24 and flooded the town of Earlimart. Poso Creek breached its banks late on the night of February 23 with a peak flow estimated to be 7,000 cfs. The creek flooded 112 homes in the town of McFarland; damage was estimated to be $2.5 million. Poso Creek floodwaters also threatened some rural homes downstream near Wasco later on February 24. Caliente Creek progressed from nuisance flow to flooding . Farther downstream of Lamont, water from Caliente Creek flooded and closed the northbound lanes of Highway 99 at Herring Road. Fresno Property Damage (millions): $1.6; Agricultural Damage (millions): 1.8; Kings $0.02, 1.01; Tulare: $13.9, 1.5; Kern: $12.5, 5.42. On **April 1** , Lewis and Frazier Creeks swelled due to heavy rains and snowmelt, resulting in flooding in Lindsay, Strathmore and Tonyville, damaging 32 homes. On **May 2,** thunderstorms unleashed locally heavy rain over rugged terrain northeast of Bakersfield. A spotter reported 1.5 inches of rain falling in about an hour. The rapid runoff from those storms resulted in flash flooding on several streets in the Bakersfield area, including Highways 178 and 58. About 32,000 acres of agricultural land were submerged in the Tulare Lakebed in 1998. Fresno County experienced extreme amounts of rain, resulting in local, State, and Federal emergency declarations. Thirty-three days within a 42-day period experienced significant rainfall. Flooding damaged buildings and crops in the area. Property damage included major damage to five buildings and minor damage to six buildings for a cost of $378,000 and $80,000 in damage to public facilities. There was an estimated loss of $17 million to the farming industry. The primary damage was to tree fruit and row crops. Estimated economic impacts to the community were $38 to 48 million. An estimated 15,000 to 20,000 agricultural workers were out of work or on limited work schedules. Kern County: 2/6/1998 - Flood: El Nino '98. Declared Federal disaster. $35.5 million in damages. **Source:** Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*; Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*; Fresno County OES, January 2009, *Fresno County Multi-Hazard Mitigation Plan;* Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area*; Kings County, September 2007, *Kings County Multi-Jurisdictional Multi-Hazard Mitigation Plan*.	$41.12 million; $17,458,000	Fresno, Kings, Tulare, Kern; Property damage - $378,000, public facilities - $80,000, farming industry - $17 million, economic impacts to the community - $38-48 million.					Slow Rise, Flash	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf; Fresno County MHMPhttp://quake.abag.ca.gov/wp-content/documents/ThePlan-Chapters-Intro.pdf
Tulare Lake	1998	October	1	Kern	Winter Storms		Winter storms and flooding. Declared disaster by USDA. **Source:** Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012.*							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf; Kern County HMP 2012
Tulare Lake	2000	January, October	23-25; 10	Fresno, Tulare		Northeast Fresno, East Visalia	From January 23–25, a 3-day storm brought locally heavy winter rains. Valley urban areas had significant ponding of water, and mountain streams exhibited moderately large amounts of flow. There was some flooding along the valley floor and foothill interface. Northeast Fresno received 2.29 inches of rain. East Visalia received 2.20 inches of rain. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	2001	March	4-6	Fresno, Kern		Western Fresno County, Coalinga, Kern Hot Springs,	Western Fresno County experienced heavy rain betweenMarch 4 and 6; Coalinga received 2.99 inches. Several roads in the area were washed out, including Highway 33/198. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin* .							Flash, Debris, Slow Rise, Alluvial Fan	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	2001	August	9	Fresno, Kern		Western Fresno County, Coalinga, Kern Hot Springs,	An intense thunderstorm struck a large portion of the Rock Creek Basin on**August** 9. This caused Rock Creek to quickly flash flood, sending a large quantity of water onto the Kern Valley floor about 2 miles north of Kern Hot Spring. It is unclear whether this event was a debris flow or a flash flood that carried large quantities of debris. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Flash, Debris, Slow Rise, Alluvial Fan	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	2002	May, November	30; 7-9	Kern, Kings, Tulare		Hanford, Tulare and Kern foothills	Thunderstorms dropped 1.01 inches of rain at the Hanford Airport in just 21 minutes on the afternoon of May 30 (a rate of 2.9 inches per hour), resulting in street flooding in that city. Hurricane Huko (the Hawaiian equivalent of the name Hugo) combined with a major trough from the eastern Pacific to bring copious amounts of precipitation and gusty wind to the Tulare Lake Basin from November 7 until November 9. The flood covered a number of locations in the foothills and mountains of Tulare and Kern counties. Flooding problems were most pronounced in the Tulare County mountains and the higher foothills. Fresno set a new rainfall record on 0.98 inches on November 8. During the storm event, a landslide dam formed on a very small stream on the north side of Shepherd's Saddle in the national parks. When that dam failed, a huge wall of water came down this small drainage, washing out Shepherd's Saddle Road and placing three huge rocks at a surprisingly high elevation. The road was washed out, but the park was able to repair it the following year for about $90,000. That storm also caused Sycamore Creek, a normally very small stream, to wash away two stock tanks that sit beside Shepherd's Saddle Road. Mineral King Road and Generals Highway sustained significant damage and required $1.25 million to repair. Several roads were flooded in Kern County. Three roads were washed out in southeast Tulare County—Parker Pass Road, the road below Durwood Resort, and the road that leads from Johnsondale southward to Kernville along the North Fork Kern (Mountain 99, aka Kern County SM99). Rock falls and debris flows occurred on Highway 168 and Highway 180 in the Southern Sierra foothills. Flooding and debris flow problems occurred along Highway 178. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Flash, Slow Rise, Debris Flow	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	2003	February, August, December		Fresno, Kern, Tulare		Kernville, Tehachapi, Johnsondale, Sherman Pass Road, Lake Wishon, Lodgepole, Mineral King Road, Sequoia National Park, Bakersfield	An intense storm struck northwest Fresno on **February** 13, dropping 3.40 inches of rain in just 2 hours. Up to 3 feet of water flooded parts of the area. There were monsoonal influences over the Central and Southern Sierra throughout **August,** resulting in periods of heavy rain, localized flooding, and brief road closures. Multiple flash floods occurred around Kernville, Tehachapi, Johnsondale, and along the Sherman Pass Road. Estimated rainfall rates of 3 to 4 inches per hour occurred in an area from near Lake Wishon (near Shaver Lake) south to near Lodgepole on the afternoon of August 2. The Mineral King Road flooded in Mineral King from heavy rain. Roads were closed in parts of Sequoia National Park and in the Kern Plateau. On**December** 25, locally heavy rain on the Southern San Joaquin Valley floor and adjacent foothills led to flooding in Bakersfield. On December 25, there were four indirect deaths in vehicles caused by the heavy rainfall southeast of Bakersfield. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.				4	Southeast of Bakersfield		Flash	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	2005	January-February		Kern		Cuddy, Rosamond, Caliente Creek	**2005 Rosamond/Caliente Creek Flooding** : Heavy rains that began in late December 2004 and continued into February 2005 caused widespread flooding. Impacts sustained to the desert community of Rosamond resulted in a FEMA Federal Disaster Declaration for Individual Assistance (IA). Rosamond was impacted by flooding of residences, school and road closures. Several homes were flooded in Arvin and a road washed out on the Wheeler Ridge Road. The Rim Ditch near Herring Road and Hwy 99 suffered approximately $22,000 in damage California City incurred approximately $3 million in damage to a fire station, police facility, airport terminal and golf course, in addition to roads and culverts, and could receive an estimated $1 million in FEMA disaster relief funds.**2005 Cuddy Creek Flooding:** Heavy snows followed by a tropical storm led to runoff which caused high flows and erosion to the banks of Cuddy Creek during January and February in the vicinity of Frazier Park. Kern County Roads Department worked to protect bridges. **Source:** Kern County, November 2005, *Kern County, California, Multi-Hazard Mitigation Plan;*							Flash, Slow Rise	Kern County LHMP 2005
Tulare Lake	2005	April	28	Fresno, Kings	Parlier Flood	Kings County, City of Parlier	Severe thunderstorms struck in the afternoon hours of April 28, 2005, dropping hail as large as 1.25 inches in diameter in Kings County, damaging crops, including 20% of the cherry crop. A number of streets were flooded in Fresno, and 3.57 inches of rain fell in Parlier. A cell of severe weather passed over the City of Parlier dropping up to 3 inches of rain in 20 minutes. The drainage system could not handle the flow, and approximately 25 homes and businesses were flooded. The City of Parlier declared a local disaster, as did Fresno County. Damage was estimated at $700,000. Homeowners had little or no insurance coverage. In addition, J Street was closed for one day. **Source:** Fresno County OES, January 2009, *Fresno County Multi-Hazard Mitigation Plan*; Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin.*	$ 700,000	City of Parlier					Flash	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf; Fresno County MHMP

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Tulare Lake	2005	May	5	Fresno, Kern		Highway 99 and Interstate 5, Coalinga	Heavy rainfall from thunderstorms on the afternoon of May 5, 2005, parts of Highway 99 and Interstate 5 experienced flooding in Kern County. All the roads in Coalinga were flooded with some described as impassible. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Flash	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	2005	October	17	Kern		Tehachapi to Taft, Frazier Park, Cuddy Creek	Weak low pressure off the Southern California coast entrained tropical moisture that resulted in an intense storm striking the Tehachapi Mountains from the evening of October 17 into the morning of October 18. Numerous locations from Tehachapi to Taft experienced flash flooding, but the Frazier Park area was especially hard hit. Cuddy Creek overflowed in that community, flooding some areas 4 feet deep and resulting in the evacuation of at least 20 people. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Flash	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	2005-2006	December-January	December 17-January 12	Fresno	New Year's Eve Flood of 2006	Cities of Fresno and Clovis	Heavy rainfall fell in the San Joaquin Valley on the first 2 days of January. Flooding occurred in the City of Fresno when 15 ponding basins overflowed. More than 150 houses were damaged in Fresno County. Rainfall in excess of 2.5 inches in just over 30 hours on January 1 and 2 led to water-covered roadways in several locations around Kings County. Ponding basins overflowed in Lemoore, and flooding occurred in Huron and Corcoran. Consistent rains led to more than 3 inches of rain in a 30-hour period from mid-day on January 1 to the evening hours of January 2 around Visalia and over 3.5 inches of rain in the city of Tulare. More than 2 feet of water flooded portions of West Visalia and areas just east of Tipton. Property and agriculture damage for Fresno, Kings, Tulare, Kern counties: $1.5, $0.1, $5.72, $.025, respectively in millions. Flood control basins were overflowing in several areas, including the cities of Fresno and Clovis. Property damage included damage to approximately 180 businesses and homes estimated at $1.4 million within unincorporated Fresno County. Damage to other jurisdictions was estimated at $611,307. Damage to crops was minimal because of the time of year. Flooding further resulted in a number of road closures, which were 1 to 2 weeks in duration. **Source:** Fresno County OES, January 2009, *Fresno County Multi-Hazard Mitigation Plan*; Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.	Fresno, Kings, Tulare, Kern: $1.5, $0.1, $5.72, $.025, respectively in millions; $2,011,307 (Fresno)	See column to the left	2006			X	Flash, Slow Rise, Debris Flow	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf; http://hazardmitigation.calema.ca.gov/docs/approved_lhmps_under_2008_fema_guidance/Fresno_MHMP.pdf
Tulare Lake	2005-2006	December-April		Kern, Tulare			**Tulare County:** The series of storms brought unusually heavy rains that caused flooding, mudslides, debris accumulation, damaged roads, and loss of human life in 40 California counties, including Tulare County. **Kern County:** 2/4/2005 - Floods and mudslides 12/27/2004 through 1/11/2005. Declared disaster by State and Federal. 4/14/2005 - floods 2/16-23/2005. Declared disaster by State and Federal. 4/14/2005 - Severe storms flooding, landslides, mud and debris flows. Declared disaster by Federal. $92,772, 575 in damages. **Source:** Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012;* Tulare County OES, August 2011, *Local Hazard Mitigation Plan*.	$92,772, 575 (4/14/2005)	Kern County and Others				X	Flash, Debris Flow	Tulare County HMP 2011
Tulare Lake	2006	March-May		Fresno, Kings, Tulare			State Declared Disaster for Severe rainstorms and flooding. **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013.							Flash	http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf
Tulare Lake	2006	April	5	Fresno		San Joaquin, Kings Rivers	Above-average rainfall and snowmelt created excessive runoff into the San Joaquin and Kings River drainages on the west side of the County. Levees and river channels were in jeopardy of failing, but held. DWR sent a flood-fight team to coordinate the effort to shore up the system. Construction crews and hand crews were used to shore up the system, make sandbags, and repair leaks. Property and crop damage was minimal due to limited flooding. The most notable damage to cropland was to 200 acres affected by a levee break in the Tranquillity Irrigation District. There was, however, extensive damage to the levee system, canal system, and river channel in that area. Local and State disasters were declared for Fresno County based on the potential damage if the levees, canals, or river channel failed. Extensive work was done on the system during the event by locals and the DWR. **Source:** Fresno County OES, January 2009, *Fresno County Multi-Hazard Mitigation Plan*.							Flash, Slow Rise, Engineered Structure Failure	http://hazardmitigation.calema.ca.gov/docs/approved_lhmps_under_2008_fema_guidance/Fresno_MHMP.pdf
Tulare Lake	2006	May	10	Kings, Tulare			Roadway damage. **Source:** Association of Bay Area Governments, 2005 and 2010 Update, *Multi-Hazard Mitigation Plan;* Association of Bay Area Governments, 2010, *Taming Natural Disasters Multi-Jurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area*.							Flash	http://quake.abag.ca.gov/wp-content/documents/ThePlan-D-2011.pdf; http://quake.abag.ca.gov/wp-content/documents/ThePlan-Chapters-Intro.pdf
Tulare Lake	2006	July	20	Kern		Silver City, Mineral King, Cabin Cove	A cloudburst occurred above Silver City in the Mineral King area on or about July 20, 2006. The flood damaged some of the cabins in Cabin Cove and washed out the Mineral King Road. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Flash	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	2007	October	29	Fresno, Tulare		Fresno, Visalia, Lake Kaweah, Sequoia National Park	Flooding in 2007 occurred during October 29. Hardest hit was the northwest side of Fresno where rainfall totals of 1 to 2 inches were reported and a number of streets flooded quickly during the evening rush hour resulting in a good many stalled vehicles. Some streets in northwest Fresno were still covered with several feet of water nearly 4 hours after the thunderstorms had ended. In addition, hail up to an inch in diameter fell. The combination of the heavy rain and hail resulted in the collapse of the roof on an 80,000-square-foot warehouse. Thunderstorm winds knocked out power to 18,000 customers in Fresno. Two houses in Visalia had trees fall on them, and about 200 boats were damaged at a boat dock on Lake Kaweah. Downed trees were reported in the valley from Merced County to Tulare County and eastward into the Sierra at Yosemite and Sequoia National Parks. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Flash	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	2008	January	5-14	Kings	2008 Winter Storms		Extreme winds and heavy rains flooded the region. State Declared flooding disaster. **Source:** "Chronological List of Governor-Proclaimed Disasters for Property Tax Purposes," 2013.						X	Flash	http://www.boe.ca.gov/proptaxes/pdf/Disasterlist.pdf
Tulare Lake	2008	July	12-15	Kern, Tulare		Erskine Creek, Lake Isabella, Thompson Creek, Clear Creek, Tehachapi, Countywide	There were multiple bouts of flash flooding in the Kern County foothills and mountains during the July 12–15 time period. Heavy rain hit the Piute Fire area for 3 days in a row (July 12–14). On July 15, heavy rain occurred just south of the fire area. The intense rain caused at least seven debris flows and flash floods in the area plus one in the town of Tehachapi. The most impressive of those was the July 12 Erskine Creek debris flow. Erskine Creek also experienced what the National Weather Service characterized as debris flows on July 13 and July 14. The Erskine Creek debris flow was generated by flows from within the South, Middle and East Forks of Erskine Creek. Erskine Creek flash flooded on 3 consecutive days (July 12–14). The debris flood of July 13 was very powerful. In places, the floodwaters were 100 yards wide and 18 to 24 inches deep. The three debris flows / flash floods in the town of Lake Isabella resulted in $1.5 million in property damage. There were a number of other flash floods and debris flows in the Kern Mountains during the July 12–15 period. On July 12, a debris flow passed down Thompson Creek, a tributary of Walker Basin Creek. Thompson Creek Basin adjoins that of Erskine Creek. A number of residences were impacted by this debris flow. On July 12, a debris flow passed down Clear Creek, a tributary of Havilah Canyon Creek. The Clear Creek Basin adjoins that of Erskine Creek. There are no roads or other infrastructure in the bottom of Clear Creek, so there was no damage from this event. On the afternoon of July 14, a flash flood / debris flow occurred on Johns Road between Caliente Creek and Walsher Road. On July 14, flooding occurred in the town of Tehachapi. An apartment complex in that town sustained significant damage. On the afternoon of July 15, Thompson Creek Road was washed out, stranding 40 homes about 10 miles south of Lake Isabella. Thunderstorms formed over the Tulare County mountains early on the afternoon of July 12 and remained in the region through July 15. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.	1.5 million	Lake Isabella					Slow Rise, Flash, Debris Flow	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	2009	October		Fresno, Tulare		Dinkey Creek, Halstead Meadow, Mineral King Road, Sequoia National Park	Dinkey Creek experienced a flash flood. Grant Grove received 7.7 inches of rain during the October 12–13 storm event. The resultant flooding caused significant erosion in the newly restored Halstead Meadow and elsewhere in the national parks. The October 2009 storm caused many small-scale debris flows in the Mineral King Valley, which clogged a number of the culverts on Mineral King Road. The storm caused significant trail damage, including to the High Sierra Trail west of Bearpaw. For example, the bank gave way under a large boulder at the Buck Creek crossing, causing that boulder to fall into Buck Creek, leaving a lot of rocks and debris on the trail. The flood also washed out several hundred yards of the Cliff Creek Trail below Pinto Lake. The flood deposited rocks and debris on the trail and caused some bank erosion. The worst damage on the High Sierra Trail occurred at Hamilton Gorge. The debris flow picked up a large mass of rocks and deposited them on the trail several hundred yards downstream. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Flash, Debris Flow	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Table C-B-1. Historical Flood Events

Hydrologic Region	Flood Year	Flood Month	Flood Date	County	Flood Name	River/Stream/Region Flooded	Notes	Damages	Damages Location	Original Year $ in Damages	Loss of Life	Loss of Life Location	Major Flood	Type of Flood	Comments
Tulare Lake	2010	January	17	Kern	Winter Storms	Kern County	Winter storms and flooding. Declared disaster by Federal. **Source:** Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012.*							Slow Rise	Kern County HMP 2012
Tulare Lake	2010	June	6-8	Fresno		Kings River	Flow in the South Fork of the Kings River peaked between June 6 and June 8, 2010. That high-water event brought ponding/flooding and lapping of water along roads at various locations throughout Kings Canyon, including the Motor Nature Trail, the North Side Road, and the main highway. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf
Tulare Lake	2010-2011	December-January	Dec 17 - Jan 4	Kern, Kings, Tulare	Winter Storms	Generals Highway at the Ash Mountain Entrance, Visalia, Linwood Street, Mineral King Avenue, Fresno, Tulare, Porterville, Weldon, Lamont, Dry Creek, McFarland, Poso Creek, Seville, Garnet Dike Road, Kings Canyon National Park, Tehachapi Mountains, Orestimba Creek	The winter of 2010–11 brought one of the strongest La Niña events ever. As a result of winter storms, flooding, and debris flows, a major Federal disaster (DR-1952) was declared on January 26, 2011, for the period December 17, 2010 through January 4, 2011. It covered 10 Southern California counties including Kings, Tulare, and Kern. The **December 2010** flood was marked in the Tulare Lake Basin by two pulses of moisture; the first came December 16 through December 20, followed by a smaller one on December 28 to December 29. On December 19, flooding, landslides, rock falls, and debris flows forced the national parks to close the inbound lane of Generals Highway at the Ash Mountain Entrance Station. The biggest challenge Visalia officials faced during the December 17–20 storm event was overflowing ponding basins. Basins built to accept stormwater filled to capacity and spilled over, flooding nearby areas. Highway 198 is below grade through much of Visalia. The rain was so intense that the ponding basin at Linwood Street and Mineral King Avenue began overflowing. The December 17–20 storm caused numerous, mostly minor, flooding problems across the valley, including Fresno street flooding, streets in and around Visalia flooded, ponding basins in Tulare filled or overflowed, streets and roads in the Tulare area flooded, streets and roads in the Porterville area flooded, creeks flooded in Weldon (near Lake Isabella), and extensive areas in the Lamont area flooded. Dry Creek flooded in south Tulare County. In McFarland, high water in Poso Creek caused the evacuation of about 2,000 people on December 20. The brunt of this storm's effects was felt in Tulare County. The community of Seville (northwest of Woodlake) was hit particularly hard by flooding on the night of December 28. By the morning of December 29, the surrounding area was described as looking like the Nile River. A section of Mineral King Road 0.25 mile above the Hammond Fire Station collapsed on the morning of December 29 due to erosion and undermining. The wet winter of 2010–2011 caused a number of debris flows in the Kings River Special Management Area along the Garnet Dike Road. Kings Canyon National Park also experienced about five times the average number of trees falling across trails during the winter of 2010–11. The Tulare Lake Basin experienced a major precipitation event in **January** that consisted of five distinct storms. The storm series started on January 17 and continued for a week. On January 19, Tehachapi Mountains runoff resulted in some road flooding, and creeks in rural areas ran high. A flooded road near the Merced-Stanislaus County line had been flooded by Orestimba Creek, and a driver was swept away by the fast current. Many other roads were flooded in portions of Kings, Fresno, and Kern counties. Severe winter storms, flooding, debris and mud flows. 163 residents were impacted. Damage to roads and bridges. Tulare County experienced severe rainstorms between December 2010 and January 2011. For Tulare County the constant rainfall caused major flooding and millions of dollars in damage to agriculture crops, infrastructure, roads and homes. Kern County: 1/26/2011 - Winter storms and flooding. Declared disaster by Federal. **Source:** Kern County, September 2012, *Kern County, California, Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012*; Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*; FEMA, January 26, 2011, *FEMA DR-152: California – Severe Winter Storms, Flooding, and Debris and Mud Flows;* Tulare County OES, August 2011, *Local Hazard Mitigation Plan.*	$77 million for whole event	Total Individual Assistance cost estimate: $1,909,557 Total Public Assistance cost estimate: $75,414,223	2011			X	Debris Flow, Slow Rise	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf Tulare County HMP 2011 Kern County HMP 2012
Tulare Lake	2011	July	15	Kern		Rock Creek, Cedar Grove / Canyon View area of Kings Canyon National Park	Flooding in 2011 occurred in July. It was caused by a series of individual storm events, but could be thought of as one event that occurred in multiple locations. The rains ended on the evening of July 30, and Rock Creek receded to near-normal levels by late on the afternoon of July 31. The flash flood did significant damage to the trails in the Rock Creek Basin. The flooding was so intense that it made significant changes to the channel structure of the creek. Another of the July 30 thunderstorms occurred in the Cedar Grove / Canyon View area of Kings Canyon National Park. A number of small to moderate debris flows occurred toward the latter part of the storm. **Source:** Austin, J.T., 2012, *Floods and Droughts in the Tulare Lake Basin*.							Flash	http://tularebasinwatershed.org/sites/default/files/sites/all/default/files/pdf/Floods-Droughts-Tulare-Lake-Basin_JAustin_20130109.pdf

Note: The date provided for a flood event reflects the entire length of the event in the hydrologic region, but the actual date of occurrence may vary by county.

Appendix C: Detailed Historic Flood Information

The historical events in this appendix were compiled as part of a separate effort by DWR in 2012.

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Detailed Historic Flood Information

C.1 Central Coast Hydrologic Region

Slow rise flooding is predominant in the Central Coast Hydrologic Region. Debris flows occur in most major storms, particularly when forest fires from the previous season have damaged vegetation. Tsunamis are infrequent but can cause major devastation. Flash floods and coastal flooding also cause damage. Flood damage has been observed in the Central Coast Hydrologic Region since at least 1861. Major floods are summarized below. Table C-14 lists all documented flood events in the region.

The "Great Flood." The region was included in the Great Flood of 1861-62. In Santa Barbara County, the narrow coastal plains were flooded. In San Luis Obispo County, many creeks overflowed, including Villa, Cayucos, Morro, Little Morro, Chorro, Los Osos, and San Simeon creeks. Up to 4 feet of floodwater was sustained in downtown San Luis Obispo, and widespread flooding damaged 142 homes, 110 businesses, 16 bridges, 1,800 acres of agricultural land, and many schools, parks, and other public properties, as well as utility and rail lines.

Other Early Floods

- In December 1812, a tsunami damaged missions, moved a ship inland, and inundated lowlands along the Santa Barbara Coast.
- In November 1878, a tsunami drowned one person and destroyed a wharf at Point Sal, destroyed a wharf at Avila, and damaged a wharf at Cayucos.
- In December 1896, a tsunami washed away part of the embankment and main boulevard of Santa Barbara.
- In 1937, Llagas Creek overflowed and damaged the Gilroy-Morgan Hill-San Martin area.
- In February and March 1938, regional inundation caused $1.2 million in damage.
- In April 1946, a tsunami drowned one person in Santa Cruz and damaged cars, boats, and houses.
- In November 1952, a tsunami damaged a boat and eroded the beach at Santa Cruz.
- In December 1955, flood conditions and flood damage were experienced in portions of Monterey County. In March and April 1958, flood damages occurred statewide totaling $24 million dollars and causing 13 deaths.

December 1966-January 1967. In the Salinas Valley, the Salinas River overflowed and damaged farmlands, industry, and public facilities, businesses, homes, and its own banks. One life was lost and USACE estimated $6.1 million in damages.

In Goleta, flood damage included the following:

- Tecolotito, Carneros, and San Pedro creeks combined to flood the Santa Barbara airport.
- Tecolotito Creek damaged a railroad and dislocated a water main.
- Carneros, Atascadero, San Jose, Maria Ygnacio, and San Antonio creeks damaged their channels and banks with erosion or deposition, and deposited debris in channels, streets, or other property.
- Atascadero Creek flooded a trailer court and a motel, damaged a bridge and an orchard, and breached a levee.
- San Pedro Creek washed out a bridge, disrupted utilities, and flooded homes and businesses.
- San Jose Creek damaged an orchard and a bridge.
- Las Vegas Creek inundated roads and a golf course.
- Maria Ygnacio Creek overtopped a levee and washed it out, flooding agricultural and undeveloped lands.
- San Antonio Creek washed out a drop structure, a timber bridge, and a sewer main bridge.
- Hospital Creek flooded farmland and the County Hospital.
- Cieneguitas Creek flooded 17 homes and agricultural lands.

In Santa Barbara, Arroyo Burro damaged its channels and banks. Mission Creek eroded its banks and overflowed, damaging businesses and homes and depositing debris in streets and yards. Sycamore Creek flooded municipal tennis courts, depositing debris, and eroded banks and revetment.

In Montecito, Montecito Creek eroded banks and revetment; Oak Creek undermined a building foundation, and debris was deposited in San Ysidro Creek.

In addition, erosion damage to flood channels or flood protection works or debris (usually mud) deposition in channels or debris basins occurred on all the listed watercourses and East Branch Las Vegas Creek, Carpinteria Slough, Santa Monica Creek, Franklin Creek, and Carpinteria Creek. USACE estimated $1.1 million damages in Santa Barbara County.

January-February 1969. A series of Pacific storms brought widespread damage to central and southern California. In the Central Coast region, damage was most severe in the Salinas River and Santa Ynez River basins and in the Carpinteria-Montecito area.

In January, both sides of the Salinas River flooded from San Ardo to Spreckels, destroying roads and bridges, flooding sewage treatment plants, and eroding farmland. The Carmel River overflowed and washed out a local bridge. Flash flooding of Salinas River tributaries from Lockwood to Santa Margarita occurred. The Salinas River overflowed in places from San Lucas to Monterey Bay.

In San Luis Obispo County, flooding in Morro Bay, San Luis Obispo, Pismo Beach, Arroyo Grande, Cambria, Avila Beach, and Nipomo included the following damage:

- In San Luis Obispo, businesses were damaged when San Luis Obispo Creek clogged with debris and overflowed.
- Highway 101 was flooded at Shell Beach.
- Cambria water and electricity supplies were damaged.
- At Morro Bay and Avila and Pismo Beaches, sewage treatment plants were inundated.
- The Santa Maria River flooded lowlands west of Santa Maria.

Santa Ynez River flooding damaged Lompoc and Solvang extensively and inundated farmland. In February, Sisquoc River overflow damaged farmlands. The Santa Ynez River system damaged the National Aeronautics and Space Administration site at Vandenberg Air Force Base in January and again in February.

Santa Monica, Franklin, and San Ysidro creeks overflowed causing heavy sedimentation and flood damage in Montecito and Carpinteria.

January-February 1978. In San Luis Obispo County, homes and infrastructure were damaged, notably in Corbit Canyon where 20 homes were damaged and on Arroyo Grande Creek. Damage also occurred on Pismo, Suey, Tar Spring, Prefumo, and Davenport creeks.

In Santa Barbara County, erosion and deposition damaged channels and farmland along the Santa Maria River and other streams of the Central Coast region. A flash flood washed away nine buildings, damaged infrastructure, and left debris deposits in Hidden Springs. Damage to roads, bridges, and farmland was extensive on the Cuyama River. San Antonio Creek damaged flood works at Los Alamos and farmland elsewhere. Agricultural areas, parks, and infrastructure were damaged in the Santa Ynez River, notably at Lompoc. Santa Agueda Creek washed out a bridge. Vandenberg Air Force Base suffered road and bridge damage. Slides blocked Mission Creek, which overflowed, damaging Santa Barbara streets and an apartment building. Further damage occurred on San Ysidro, Romero, San Pedro, Atascadero, Tecolotito, Carneros, Gobernador, and Santa Monica creeks and Arroyo Paredo.

January-April 1982. Flood damage in the region in January 1982 included the following:

- Mudslides in the San Lorenzo basin destroyed 39 homes and damaged nearly 400 more, particularly in Felton, Ben Lomond, Brookdale, Lompico, and Boulder Creek.
- The San Lorenzo River washed out a bridge in Santa Cruz, damaging three main telephone cables, and a tributary ruptured a 24-inch water main serving the city.
- Local streams overflowed in Soquel and Aptos, damaging homes, businesses, and infrastructure. The Pajaro River inundated part of Watsonville and adjacent agricultural land.
- The Salinas River flooded residences along Highway 101 north of Salinas.

- In the Gilroy area, Llagas Creek breached levees of 10 sewage percolation ponds, and mudslides and washouts closed Highways 101, 129, and 152.
- Clogged culverts caused road flooding in San Luis Obispo.

November 1982-March 1983. Flood damage in the region in November 1982-March 1983 included the following:

- The San Lorenzo River and Carbonera Creek overflowed and damaged Scotts Valley and other areas.
- High stages in the Pajaro River blocked Watsonville drainage.
- The Carmel River overflowed, flooded golf courses, and closed roads.
- Palo Colorado Canyon caused mudslides and washouts and damaged homes.
- A water supply line washed out at Hollister.
- The San Benito River overflowed and damaged farmland; Lopez Dam spilled, causing Arroyo Grande Creek to overflow onto farmland.
- San Luis and Carpenter Creeks overflowed, flooded pastures, and damaged a beach park.
- A flash flood in San Juan Canyon cut a main road for Hollister and San Juan Bautista.
- Debris flows damaged Hurricane Point closed Highway 166 and limited Highway 101 to one-way traffic.
- High tide and runoff damaged roads coast beaches at Santa Cruz and homes and businesses in Aptos and Capitola, including the Capitola city wharf.
- Tides caused the Carmel River to flood coastal homes and damaged beaches and structures at Pismo.
- Waves damaged waterfront property in San Luis Obispo, sank boats at Port San Luis, damaged the breakwater at Morro Bay, and flooded part of Los Osos.
- High tides and runoff damaged roads, railroads, and beaches in Santa Barbara County, including 41 beach front structures in Montecito and others in Santa Barbara and Carpinteria.
- Stormwater flooded streets in Paso Robles with extensive damage.

March 1995. Flood damage in the region in March 1995 included the following:

- A levee failed on the Pajaro River, causing agricultural crop damages estimated at $67 million for the 3,280 acres that were flooded. Urban damages in Pajaro were estimated at $28 million. Two persons drowned.
- The Salinas River inundated thousands of acres of farmland.
- The Carmel River washed out a bridge on Highway 1 and combined with the Pajaro and Salinas Rivers to isolate the Monterey Peninsula.

- Cambria was damaged by stormwater.
- Santa Barbara streams, including San Antonio Creek and Sycamore Creek, damaged many homes and businesses and caused loss of one life. Mudslides were common.

C.2 Colorado River Hydrologic Region

Flash floods, often accompanied by debris flows, are the predominant source of flood damage in the Colorado River Hydrologic Region. Slow rise floods occur mostly on the main rivers. Stormwater floods and structure failures may also occur. Flood damage has been observed in the Colorado River Hydrologic Region since at least 1905, when the Salton Sea was formed. Major floods are summarized below. Table C-49 lists all documented flood events in the region.

The "Great Flood." Little direct information is available about the effects of the Great Flood of 1861-60 in the Colorado River region. The Colorado River overflowed into the Alamo and New rivers and created a lake in the Salton Sink 60 miles long and 30 miles wide. Ephemeral lakes formed in the Mojave Desert. To the north in the South Lahontan region, the Mojave River rose 20 feet. Rainfall was 300 percent above normal in San Diego.

February 1905-January 1907 (Salton Sea). In the distant geologic past, the Salton Sink was part of the Gulf of California. The Colorado River, while carving the Grand Canyon and other incised channels upstream, formed a delta that eventually bisected the Gulf of California, making the Salton Sink a landlocked basin. After that time, the river alternately flowed south into the Gulf of California or west into the Salton Sink, changing channels on the delta alluvial fan during large runoff events. Several times, the outflow formed ancient Lake Cahuilla, extending nearly 100 miles from Mexico to the vicinity of present-day Indio.

By 1600, the river had shifted to the south again and the latest version of the lake was dry, except for local winter runoff and Colorado River incursions through the Alamo and New rivers most recently in the wet years of 1884, 1891, 1892, and 1895, all of which quickly evaporated.

At the turn of the 20th century, the Colorado Desert had become the first agricultural dream of the century under the promise of irrigation for hundreds of thousands of acres. The California Development Company first turned the river water to irrigation and developed canals in 1901. Water was supplied through "headings," or ungated openings in the riverbank, which were closed in the winter.

Shortly after 1901, water began to accumulate in the Salton Sink, forming a shallow lake 20 miles by the end of 1904. Within 2 years of the first diversion, the Colorado River had filled the canals with silt in quantities that defied remedy, greatly reducing the water flow. The California Development Company cut new headings in the riverbank, including a notably large "Lower Mexican Heading" in Mexico.

While the Colorado Development Company was seeking approval from the government of Mexico for constructing a headgate, the floods of 1905 came repeatedly in amounts exceeding all recent history. The full flow of the river turned through the headings, widening the lower one from 60 feet to 160 feet and traversing the new farmlands to reach the Salton Sink. All attempts to close the gap failed, and it was still open when the floods of 1906 came. It was closed in November 1906, but a severe flood on the Gila River swelled the Colorado River and reopened the gap.

By then, the flooding was threatening the Southern Pacific Railroad and the U.S. government construction of Laguna Dam on the river. Resources of both entities were applied to the situation, and the flow was finally stopped in January 1907 after the Southern Pacific Railroad had dumped nearly 2,500 carloads of material into the breach.

The Salton Sea occupied all developed land up to 76 feet above its dry bed, and floodwaters submerged Salton, tracks for the Southern Pacific and Inter-California railroads, and thousands of acres of planted croplands. Thousands of acres more were eroded by the flows to a condition beyond further use.

Other Early Floods

- In January 1916, runoff from 9 inches of rain inundated Indio, Coachella, and Mecca, and the Colorado River flowed through the New River, flooding Brawley.
- In January 1922, floods washed out a levee at Palo Verde Lagoon and flooded the southern end of the Colorado River Valley.
- In April 1926, flash floods occurred on the San Gorgonio and Whitewater rivers.
- In February 1927, Palm Springs flooded, 3 miles of state highway and rail lines were destroyed, the highway between Beaumont and Banning was washed out, and the Whitewater River breached a levee at Coachella and destroyed a rail bridge.
- In March 1938, the Whitewater River destroyed Highway 60 near Palm Springs, and the bridge at Banning was washed out.

September 1939. The tail end of a hurricane came inland, bringing with it heavy tropical rainstorms to desert locations in Riverside County. Toward the end of the month, a tropical storm, referred to as "El Coronado," moved into the area and brought heavy rainfall over Southern California. The desert areas received twice as much rain as they generally receive in 2 years. Brawley's Main Street flooded curb to curb. Three bridges were destroyed north of Brawley, and five more had serious damages. The county jail was flooded by 1.5 feet of water, and public schools were closed. One person died as a result of electrocution. There was damage to the All American Canal and drainage system. Debris from the storm was deposited on Highway 98. The estimated cost of damages to the irrigation works was $110,000.

November-December 1965. Floods along the Whitewater River washed out 22 county roads. There were scour and damage to 13 miles of channel between Cathedral City and the Salton Sea, and 2,000 acres of agricultural lands near Thermal were flooded with erosion or silting. Citrus and date groves suffered heavy damage. Whitewater River flooding caused three fatalities and $3 million in damages. Flooding of Tahquitz Creek washed out many roads and damaged bridge abutments on Highway 111. Floodwaters swept 50 cars into streams and drainage channels of Tahquitz Creek and Whitewater River. Flooding of Big and Little Morongo washes eroded roads at dip crossings, damaged homes, and swept away cars. Flood damage occurred in Desert Hot Springs.

January-February 1969. In January, a flow of wet, tropical air from Hawaii to Southern California caused intense rainfall and consequent flooding in the Whitewater River basin, culminating in severe damage to roads and property in the Palm Springs area.

In February, a flood struck Riverside County, causing widespread inundation. Severe residential and highway damages occurred along the Whitewater River and the San Gorgonio River at Cabazon. Much agricultural damage was caused by flooding of the Whitewater River. The most business losses were at Cabazon and along the Whitewater River area. Banning suffered extensive damages. Utilities in the Whitewater River areas were destroyed when the bridge at Highway 111 washed out at Thermal. Water, sewer, electrical, natural gas, and telephone lines were damaged or washed out along Whitewater River. Water lines repaired after January were washed out again in February.

September 1976. Tropical Storm Kathleen brought heavy rains of 10 inches to desert areas. This flood event caused an estimated $20 million in damages in Imperial County and $39 million in Riverside County. Flood damage included the following:

- San Felipe Creek overflowed and damaged 390 acres of agricultural land, irrigation works, and roads.
- Carrizo Wash washed out roads and rail lines.
- Ocotillo was flooded by Myer Creek, which left behind 1 to 3 feet of silt and mud and damaged many homes and other structures. Three fatalities occurred in the Ocotillo area.
- Major flood damages occurred to Interstate 8, Highway 98, and the San Diego and Arizona Eastern Railroad lines. Two people died on Interstate 8 when it washed out.
- The bridge at Myer Creek washed out.
- Six homes were destroyed, and 55 homes and 1 business were damaged.
- Coyote Wash and Yuma Wash overflowed and damaged 2,000 acres of agricultural lands. The railroad trestle at Coyote Wash washed out.
- Pinto Wash and Westside Main Canal overflowed and caused extensive damages to about 1,750 acres of agricultural lands.
- Nine hundred homes were damaged in Palm Desert, Rancho Mirage, Indian Wells, and Indio.
- Dikes failed at Dead Indian Canyon and in the Deep Canyon area west of Palm Desert, causing an estimated $10 million in property damages in Palm Desert alone.
- Roads were damaged, and telephone and power failures occurred.
- McCoy Wash overflowed and inundated agricultural land.

August 1977. Tropical Storm Doreen ravaged 300 homes, wiped out portions of Interstate 8, and caused three fatalities and $15 million worth of damage to crops. It

produced flooding and damage to residences, businesses, and public property, including the following:

- Washouts and flooding closed Interstate 8, Highway 86, 25 major county roads, and the main Southern Pacific Railroad line near Niland.
- Severe flooding inundated agricultural lands.
- Irrigation systems were destroyed at Niland, and Westside Main Canal was out at Westmorland.
- Niland flooded, and, in Holtville, the sewer plant was damaged and a house was flooded.
- In Calexico, streets and the city council chambers were flooded.
- In El Centro, roads, sewers, and homes were flooded.
- In Calipatria, a ditch overflowed, and the city was flooded with 2 feet of water. Sixteen houses were flooded.
- Damage occurred in Imperial and Brawley.
- In Riverside County, Indio, Palm Desert, Thousand Palms, and Desert Hot Springs were damaged.
- The flood damaged 60 homes in the Borrego Springs area and washed out six of seven flood control basins in Henderson Canyon.
- In San Bernardino County, a mile of Interstate 15 was washed out in a mud and rock flow.

C.3 North Coast Hydrologic Region

Major floods occur regularly in the North Coast Hydrologic Region. These are predominantly slow rise floods, although tsunamis have damaged the coastal areas and debris flows are not uncommon. Flood damage has been observed in the North Coast Hydrologic Region since at least 1861. Major floods are summarized below. Table C-4 lists all documented flood events in the region.

The "Great Flood." Devastating floods recorded on the North Coast in the winter of 1861-62 were part of an event known as the Great Flood. Flooding in the region destroyed Fort Turwar on the Klamath River and washed away bridges in Trinity and Shasta counties.

Other Early Floods

- In December 1937, flooding throughout the region damaged or destroyed roads and bridges in Mendocino County and agricultural development in Humboldt and Lake counties. The Russian River flooded a resort area in Sonoma County and farmland near Healdsburg.
- In April 1946, a 7.9-foot-high tsunami was recorded at Arena Cove west of Point Arena; the tsunami threw 100 fishing boats onto the shore at Noyo Harbor and was observed at several points northward to Crescent City.

January 1953. The Smith River flooded 7,600 acres of farmland, scouring pasture and depositing debris. Highway 101 was closed at Tryons Corner and just south of the Oregon border. Rowdy and Dominie creeks inundated a lumber mill at Smith River. Many roads were flooded or washed out in Del Norte County. The Klamath River inundated Klamath Glen, and Klamath. Redwood Creek flooded Orick and severely eroded its bank, undercutting the Highway 101 bridge. Both inundations damaged homes, and businesses, contaminated water supplies, and disabled sanitary disposal systems. Two deaths were attributed to the flood. Damages from this flood also included the following:

- Minor streams damaged Crescent City, Hydesville, and Fortuna.
- A railway bridge failed on Yager Creek at Carlotta because of pressure from flood-borne debris.
- Lumber mills were damaged, and many logs were lost because of bank erosion, particularly at Klamath and Blue Lake.
- Grizzly Creek undermined a redwood tree, which fell and destroyed a bridge.
- Highway 101 washed out at the Humboldt-Del Norte county line.
- Bank protection failed at Scott Valley, and the embankment was severely eroded.
- Agricultural lands were damaged by river meandering and debris deposition.

USACE estimated $6 million in flood damages regionwide.

March 1964. The region was struck by a tsunami resulting from the largest earthquake in North American history, an 8.4 on the Richter scale, which hit Prince William Sound (south coast of Alaska). The tsunami was recorded along the California Coast and was 15.7 feet high when it hit the North Coast. The tsunami devastated a 29-block area in Crescent City. Parts of Citizens Dock, a major distribution hub for the city's natural resources industry, were wrecked, and several fishing vessels were capsized. The tsunami damaged or destroyed 275 homes and businesses and 21 boats. Ten people were killed, 35 were injured, and 3 were never found. The tsunami had a recorded height of 13.3 feet at Smith River and Trinidad and 12.5 feet at Noyo Harbor. Flood damage also included the following:

- At Klamath, docks and boats were damaged and one person drowned.
- At Noyo Harbor, more than 10 boats were sunk and 100 damaged.
- At Bodega Bay, navigational aids were damaged.

The National Oceanic and Atmospheric Administration (NOAA) estimated regional damage at more than $7 million.

December 1964-January 1965. A major flood resulted from high rainfall estimated to be comparable in this region to rainfall causing the Great Flood of 1861-62. The Eel River's peak discharge near Scotia was greater than the Mississippi River discharge north of St. Louis during the floods of 1993. Virtually every structure on the flats along the lower Eel canyon was swept away. Whole towns were destroyed, including Klamath, Camp Klamath, Requa, Klamath Glen, Orleans, Myers Flat, Weott, South Fork, Shively, Alton, Pepperwood, Stafford, and Ti-Bar. Floodwaters, sediment deposits, and timber washed off upstream lumber yards caused major damage in Metropolitan, Rio Dell, Scotia, Orick, Hoopa, Willow Creek, Sawyers Bar, Hyampom, Gasquet, Holmes, Happy Camp, Weitchpec, Guerneville, and Healdsburg. Throughout the region, homes, businesses, industry, infrastructure, and agricultural lands were damaged. Flood damage included the following:

- More than 8,400 head of livestock were lost in the Eel River delta and elsewhere.
- Virtually all lumber mills in floodplains were damaged. Logs representing millions of board feet of lumber were swept downstream. Pacific Lumber Company alone lost 23 million board feet of finished lumber and 18 million board feet in logs.
- Streambank erosion damaged more than 4,000 acres of land.
- The North Coast from Scotia to Crescent City was isolated from ground transport because of highway, railroad, and bridge damage. In the region, 27 state highway bridges and 132 county bridges were destroyed. Highways 101 and 299 were impassable. Flooding washed out Highway 169 west of Weitchpec, Highway 208 west of Leggett, and Highway 96 between Willow Creek and Weitchpec. The Northwestern Pacific Railroad track was twisted and uprooted for 30 miles in 100 miles of the Eel River canyon, and three major bridges were destroyed.

Preliminary estimates for the six North Coast counties in early January 1964 included 24 deaths and 1,653 injuries and destruction or damage to 4,784 houses, 374

businesses, and 800 farm buildings. Twenty-six United States Geological Survey (USGS) stream gauges were destroyed. Total damage for the event was estimated to be $175 million and included the following:

- Smith River damage included 9,300 acres of agricultural land flooded, 15 miles of Highway 199 damaged or destroyed, and lumber mills inundated with loss of finished lumber and logs.
- The Klamath River and its tributaries, including the Trinity River, destroyed small communities; destroyed or damaged 14 state bridges, including the Golden Bear concrete arch at Klamath; and damaged lumber mills and washed away lumber and logs. Four lives were lost.
- Redwood Creek inundated Orick under 5 feet of water.
- The Mad River flooded 6,400 acres of agricultural land, caused slides on Highway 299, and damaged lumber mills and washed away logs.
- The Eel River and its tributaries, the largest system in the region, destroyed or severely damaged many small communities, flooded agricultural lands, and damaged lumber mills and washed away lumber and logs. Nineteen lives were lost.
- Coastal streams, including the Bear, Mattole, Ten Mile, Noyo, Big, Navarro, Garcia and Gualala rivers and Usal, De Haven, Wages, and Alder creeks, flooded agricultural lands, lumber mills, and infrastructure.
- The Russian River inundated large swaths of Santa Rosa, damaged 1,000 homes, and rendered 500 people homeless in Guerneville. It also damaged infrastructure including Highways 101 and 16 and flooded agricultural land near Sebastopol when high flows backed up into Mark West Creek. One life was lost.

January 1974. Major flooding and heavy damage occurred, particularly on the upper Klamath and upper Trinity rivers and at Klamath Glen. Flood damage included the following:

- On the upper Klamath River, numerous highways, roads, and bridges were inundated and damaged by slides. Farmlands were covered with debris. A levee at Seiad Valley was obliterated. Happy Camp was isolated. Trailer parks were damaged near Turwar Creek.
- Tributaries to the Trinity River damaged roads and bridges. East Weaver Creek washed out Highway 299 east of Weaverville. A levee at Coffee Creek breached in two places, flooding a trailer park and two homes. Hyampom was isolated. Low-level areas at Willow Creek flooded. Lost Man and Prairie creeks flooded the Prairie Creek Fish Hatchery, destroying a crop of young salmon.

- The Eel River damaged county roads and Highway 101 from Garberville to Cummings. The Northern Pacific Railroad was out of service due to slides. Six mobile homes were washed away at Myers Flat. A log jam blocking Bridge Creek broke loose and damaged a home. The Eel River delta flooded, damaging lands with debris in places and eroding others.
- The Noyo River washed out a bridge and tracks of the California Western Railroad over an 18-mile reach.
- Flooding on the Garcia, Gualala, and Ten Mile rivers blocked roads.
- The Russian River inundated Guerneville, flooding 70 homes. Agricultural lands in Alexander Valley, Dry Creek Valley, and the Santa Rosa Plains were flooded.

February 1986. The "St. Valentine's Day Storm" fueled floodwaters from the Klamath, Mad, Eel, and Russian rivers, which washed out highways and isolated residences throughout the region. There was coastal flood damage at Crescent City. The Mad River rose and flooded roads and farms. A bridge on Highway 101 was washed out at Rio Dell. More than 100 redwood trees were damaged in Humboldt Redwoods State Park at Weott. A landslide blocked the Eel River at Richardson Grove, flooding campgrounds, and a wave washed away park facilities. Highway 162 was washed out near Dos Rios. Homes flooded near Middletown. The Russian River flooded Guerneville. The Office of Emergency Services (OES) estimated damages at more than $28 million for the region, with 737 homes and 80 businesses damaged.

C.4 North Lahontan Hydrologic Region

Major floods occur less frequently in the North Lahontan Hydrologic Region compared with the rest of the state. The floods are predominantly of the slow rise type, but streams rise relatively fast because of steep watersheds. Stormwater flooding and occasional flash floods or debris flows may occur. Recordkeeping came late to the North Lahontan Hydrologic Region, with stream records beginning around 1900. Flood damage has been observed there since at least 1937. Major floods are summarized below. Table C-39 lists all documented flood events in the region.

The "Great Flood." No direct comments on the impact of the Great Flood of 1861-62 in the North Lahontan region have been found. In Nevada, Dayton, on the Carson River just east of Carson City, was flooded, and Aurora, east of Mono Lake, sustained floods that melted adobe buildings.

December 1962-February 1963. The Truckee River washed out the main water supply for Truckee. Sheet flow from Negro Canyon deposited debris at Donner Lake. Floods damaged water diversion facilities on the West Carson River between Woodfords and Paynesville. In Antelope Valley near Topaz, Slinkard Creek blocked Highway 395 and covered agricultural lands with silt. Flash floods on Mill Creek and Little Lost Cannon Creek flooded Walker. In Bridgeport, sheet flooding damaged public works and left debris deposits.

January 1997. An intense rainstorm falling on a large snowpack caused catastrophic flooding throughout the region. The West Fork Walker River damaged approximately 6 miles of Highway 395 and 100 homes in Walker and Walker Valley. A swollen Truckee River destroyed sewer and power lines leading to ski resorts, inundated residences and stores in Truckee, and damaged 20 bridges and several stream gages. In Alpine County, floodwaters washed out road shoulders, destroyed bridges, and damaged Highways 4, 88, and 89. Damages in Alpine County were estimated at $8.4 million.

C.5 Sacramento River Hydrologic Region

Major floods are common in the Sacramento River Hydrologic Region. Slow rise flooding would be nearly the exclusive cause of floods, but many miles of old and new levees, the older ones often raised by using materials at hand, has resulted in a high incidence of structure failure floods. Coastal flooding, caused by inundation due to water-level rise, occurs in the Delta and at Clear Lake. Some of the least substantial levees are in the Delta, where they are subject to continuous waterside inundation. Delta floods have been listed as coastal when levee failure is not a contributor, and as structure failures when levees breach. Flood damage has been observed in the Sacramento River Hydrologic Region since at least 1805. Since the era of building levees began, floods have become less frequent and more damaging. Major floods are summarized below. Table C-24 lists all documented flood events in the region.

The "Great Flood." The Great Flood of 1861-62 was remarkable for the exceptionally high stages reached on most streams, repeated large floods, and prolonged and widespread inundation in the Sacramento River basin. Lower elevations experienced heavy rain, while upper elevations saw continuous snowfall. The regional event was only part of a deluge that encompassed all of California, much of Oregon, and parts of Utah and Nevada (Utah Territory), Arizona (New Mexico Territory), and Idaho (Washington Territory). The floods in the region came in four distinct periods beginning on December 9, 1861, and ending January 17, 1862.

Captain William Brewer, a Yale University geologist, described the Central Valley as a body of water 250 to 300 miles long and 20 miles wide. Captain Brewer surmised that "over one-fourth of all the taxable property of the State has been destroyed," and as a result the state went bankrupt.

Sacramento was a focus of the damage, as early-day levees failed. Governor-elect Leland Stanford was forced to travel to his inauguration by rowboat, and at one time, the State Treasurer's office had 3 feet of water in it. The State legislature left Sacramento and reconvened temporarily in San Francisco. A contemporary newspaper report characterized the Sacramento flooding as the "most destructive ever witnessed by the American residents" that "destroyed an immense amount of property and not a few lives" (Placerville's *Mountain Democrat*).

Deaths in Sacramento were reported at "ten to forty persons" (*The "Republican*). In Chinese mining camps along the Yuba River, there were 50 deaths at Long Bar and 100 deaths at Ousley's Bar (Marysville's *Appeal*). Other reports noted "100,000 sheep and 500,000 lambs have perished" (Wool Growers' Association), and 10,000 cattle died in Yolo County alone (Joseph A. McGowan, *History of the Sacramento Valley*).

This flood provided the impetus for raising the levees around Sacramento.

Other Early Floods

- In 1805, a flood inundated the entire valley floor.
- In 1846, a *New York Times* article noted that in Sacramento "in 1846, the water was seven feet deep for sixty days. The city was flooded in 1849, in 1850, in 1851, and twice in the winters of 1852 and 1853."
- In December 1937, many places in the region suffered damage, including Chester, Downieville, Gerber, Tehama, and agricultural areas in Tehama, Glenn, and Colusa counties. The Feather River levee breached at Hamilton Bend and inundated Biggs.
- In the floods of January-February 1942, a Sutter County levee failed, inundating developed lands. The Sacramento River flooded farmland near Tehama and Vina, and the Feather River flooded lands between Oroville and Marysville. Overflow of the American River, Colusa Trough, and various creeks damaged communications lines. Cache Creek levees breached, flooding areas between Capay and Yolo. Putah Creek damaged lands near Winters. Liberty and Prospect Islands and Egbert Tract flooded in the Delta. Little Holland Tract in the Delta flooded about 1,500 acres.
- In the floods of November 1950-January 1951, a Yuba River levee breach flooded 43,000 acres of suburban and developed lands south of Marysville, damaging homes in Olivehurst and closing Highway 99 East. The American River flooded farms east of Sacramento, closed the Western Pacific Railroad, and joined the Sacramento River in flooding Del Paso Heights.

December 1955. The flood was characterized by large flows, including record flows at some locations. Most damage was along unregulated streams, which then included the Feather River. A levee failed on the west side of the Feather River, inundating Yuba City and vicinity and causing severe damages. A levee failure near Nicolaus also caused widespread flooding. Portions of other towns and agricultural lands were also flooded, 38 people died, and total damages were estimated by USACE at $63 million. Delta levees breached and flooded Dead Horse Island, McCormack-Williamson Tract, and an area east of McCormack-Williamson Tract and west of Galt, a total of about 7,700 acres.

February-April 1958. The Sacramento River flooded areas and caused bank erosion from Keswick to Butte City. The Sacramento River flood protection system sustained levee erosion in many places. Stony Creek flooded agricultural lands and eroded its banks at the Sacramento River, and 94,000 acres flooded in the Colusa Trough from flow in west-side streams. Clear Lake rose and its tributaries flooded, causing more than $1 million damage. Cache Creek overflowed and damaged property in locations from Rumsey to Yolo. In the Delta, Prospect Island and Liberty Island overtopped and flooded. In February, the levee at Little Holland Tract overtopped and breached and the area flooded. Total Delta flooding was about 7,300 acres.

December 1962-February 1963. Thomes, Mill, Cottonwood, and Deer creeks damaged levees and left debris deposits. A levee breached, and Stony Creek cut

2 miles of new channel through agricultural lands. Middle Creek and Clover Creek damaged levees in Lake County. Extensive flood damage to public works occurred in Plumas County. Numerous communities were flooded and damaged in the American and Yuba River basins. Daguerre Point Dam was breached. Cold Stream overflowed, damaging Sierraville, Highway 89, and property in the area. In the Delta, Prospect Island, Liberty Island, and Little Holland Tract flooded, a total of about 7,300 acres.

December 1964-January 1965. During the flooding in December 1964-January 1965, most damage was to agricultural property and livestock and included the following:

- The Pit and McCloud rivers inundated pasture, alfalfa, and meadow hay lands.
- The Sacramento River damaged Dunsmuir and residences, agricultural land, and riverside businesses from Shasta Dam to Colusa.
- Churn Creek overflowed and flooded land and rural residences.
- Heavy damage occurred along Thomes Creek near Paskenta and Richfield, involving residences; lands used for agricultural, commercial, and industrial purposes; and utilities.
- Mill Creek invaded trailer courts and fishing resorts.
- Stony Creek damaged pasture and cropland, mostly near Stonyford.
- Jack Slough and Simmerly Slough flooded lands north of Marysville.
- A county road bridge across Cache Creek washed out, and the creek inundated farmland from Rumsey to Yolo. Dry Creek flooded rural land and residences at Rio Linda.
- Severe flooding occurred in Chester, Downieville, and Coloma. Mountain highways, roads, bridges, public recreation areas, and cabins were damaged. Substantial damages occurred on Cottonwood Creek, on tributaries to Clear Lake, on the North Fork Feather River at Chester, and on Hat and Burney Creeks. Downieville flooded when the North Yuba River overflowed and backed up the Downie River.
- The Southern Pacific Railroad suspended service over the Sierra Nevada due to flood damage.
- Highway damage closed Interstate 5 at the Oregon line and north of Redding; Interstate 80 at Cisco; Highways 20 east of Nevada City, 36 west of Red Bluff, 49 in many places, and 70 in the Feather River Canyon and east of Jarbo Gap; Highway 99 East between Roseville and Lincoln and Highway 99 West south of Red Bluff; and many county and local roads.
- Daguerre Point Dam, a debris dam on the Yuba River, underwent a partial failure.
- Hell Hole Dam, under construction on the American River, collapsed.

- Two levee breaches occurred on Deer Creek near Vina.
- In December, Prospect Island, Liberty Island, Little Holland Tract, Egbert Tract, and McCormack-Williamson Tract flooded, a total of about 14,100 acres. The levees of Franks Tract, then being developed as a state park, were seriously damaged.

USACE estimated 383,500 acres in the region were flooded by stream overflow and estimated $39 million in flood damage in the Sacramento River basin.

December 1969-March 1970. About 550,000 acres were flooded in the region, of which 82 percent was valley floor areas and 50 percent was in dedicated floodways and natural overflow basins. Agricultural damage was extensive. Community damage was sustained in Adin, Alturas, Anderson, Burney, Chester, East Red Bluff, Fairfield, Hamilton City, Nubieber, Lakeport, Red Bluff, Redding, and Tehama. Damaged property included residences and infrastructure and included the following:

- The Pit River washed out bridges, flooded roads, and isolated Big Bend. A Pit River levee breach inundated Nubieber.
- The Sacramento River flooded parts of Anderson, Redding, Red Bluff, Hamilton City, and Tehama.
- Burney Creek overflowed and inundated Burney.
- The North Fork Feather River damaged property due to bank erosion in Chester.
- Clear Lake inundated shoreline property, particularly in Lakeport.
- High flows on Putah Creek above Lake Berryessa flooded resort areas and local roads in the region.

USACE estimated more than $28 million in flood damage.

January 1974. From Mount Shasta City to Lakehead, the Sacramento River and tributaries caused damage to infrastructure, homes, and a railroad. Dunsmuir and Castella bore the brunt of the flood. In Dunsmuir, homes, other structures and infrastructure were destroyed or damaged. In Castella, Castle and Little Castle creeks damaged homes, a bridge, and a water service company. A county bridge washed out at Sweetbriar, and homes were damaged or destroyed. Flood damage included the following:

- The Sacramento River damaged the Southern Pacific Railroad for 30 miles from Shasta Lake to Dunsmuir.
- Squaw Valley Creek damaged roads near McCloud.
- The Pit River damaged power facilities.
- Burney Creek flooded Burney and agricultural areas, Clear Creek flooded French Gulch, and Cow Creek flooded Montgomery Creek, Round Mountain, and Ingot.
- Ranches lost orchards, buildings, and soil near the mouth of Cottonwood Creek.

- The Sacramento River overflowed to damage properties from Deschutes Bridge to Balls Ferry and north of Hamilton City, where a levee also breached and flooded homes. Another breach on Elder Creek sent floodwaters to surround Tehama. Several local levees also breached along the river from Vina to the Butte Basin. Scotts Creek at Clear Lake breached local levees, damaging homes, orchards, and roads. Anderson and Redding also sustained flood damage.
- In the Delta, about 6,100 acres on Liberty Island and Little Holland Tract flooded when the levees overtopped and breached.

March-April 1974. Flood damage in the region in March-April 1974 included the following:

- Local runoff flooding returned to Dunsmuir.
- Slides and washouts damaged the Southern Pacific Railway and caused closures.
- Riverbank homes flooded in the Balls Ferry, Redding, and Anderson areas. Agricultural damage included erosion, deposition, and breached local levees.
- A water line and a sewer line ruptured at a Sacramento River crossing in Red Bluff. Flooded farmlands amounted to 44,000 acres from Red Bluff to Colusa. Thousands of walnut and other orchard trees died from oxygen deprivation due to prolonged ponding.
- A trailer park flooded at Tehama.
- Olney Creek and Little Cow Creek damaged bridges.
- Antelope Creek damaged orchards, Mill Creek inundated a trailer park, and Deer Creek levees breached and flooded farmland.
- At Clear Lake, Clover and Alley creeks damaged orchards.
- In the Delta, Liberty Island and Little Holland Tract had been repaired but the levees washed out again, re-flooding about 6,100 acres.

December 1982-March 1983. In January, Clear Creek severely damaged a park at French Gulch. Stream overflow caused flooding and road closures throughout Glenn County, damaged stores and homes at Oroville, and flooded homes and businesses on Highway 20 at Colusa. Cache Creek overflow damaged properties in Capay Valley. A mudslide killed an equipment operator and crushed a bus in Shasta County. Stormwater flooded streets in Roseville. A Cache Creek levee breached east of Woodland and flooded 600 acres of farmland. Prospect Island levees failed in the Delta, flooding 1,228 acres.

In February, high outflow of Lake Berryessa damaged roads and parks. Stormwater inundated 80,000 acres of farmland in Butte County, invaded homes in Nord, flooded homes and businesses in the north part of Sacramento, and overflowed drains in Rocklin and Loomis, flooding streets and closing four major roads. Mudslides destroyed homes in Lake County; closed Highways 20, 29, 53, and 175 and many county roads; and took one life. Clear Lake flooded many homes.

In March, floods overtopped Hamilton City levees, flooding farmland and closing nearly every road in Colusa County. Cache Creek overflow again damaged Capay Valley and washed out a bridge. Local sloughs overflowed near Knights Landing and Zamora and flooded several homes. The Knights Landing Ridge Cut backed up, flooding areas to the south and west. Stormwater flooded Redding streets, inundated thousands of acres of fruit trees in Yuba and Sutter counties, overwhelmed Yuba City and Live Oak drainage systems, and flooded streets in Davis and Sacramento.

February 1986. The floods caused extensive damage to the flood management system of the Sacramento Valley and led to a substantial reassessment of and repairs to flood management infrastructure. Record high tides and record Sacramento River inflow both occurred. Flood damage included the following:

- Maximum releases from Keswick Dam near Redding caused flooding downstream.
- Local runoff flooded streets in Alturas.
- Highway 70 and the Union Pacific Railroad were both closed in the Feather River Canyon.
- The Yuba River levee at Linda failed, spreading floodwaters over 30 square miles, inundating Linda and Olivehurst, and causing an estimated $50 million in damage.
- The Amtrak bridge near Wheatland washed out.
- A levee on Yankee Slough and a private levee of the East Side Canal also failed, the latter flooding Pleasant Grove.
- A cofferdam at the Auburn Dam construction site caused backwater that flooded Highway 49 between Auburn and Cool until the cofferdam failed.
- Local stormwater flooding was widespread north and east of Sacramento because of high flows in American River tributaries.
- Dry Creek flooded the business district of Roseville, damaged 200 homes in Rio Linda, and inundated Elverta.
- Arcade Creek overtopped, flooding the Strawberry Manor section of Del Paso Heights and inundating 500 homes.
- Pumping facilities proved inadequate to evacuate floodwaters in the Arden district, resulting in flooded stables at Cal Expo and the death of one horse.
- Badger Creek washed out a bridge on Highway 99.
- The Mokelumne River flooded and closed Interstate 5 near Point Pleasant.
- Stormwater flooded streets in Dixon, Vacaville, and Rio Vista.
- Levees protecting Tyler and Dead Horse Islands and McCormack-Williamson Tract failed, inundating 11,802 acres in the Delta.

December 1996-January 1997. Storms caused one of the worst floods of the century. There was widespread flooding and flood damage in the region from the major rivers and creeks in the Sierra Nevada. Flood damage included the following:

- The west levee of the Sutter Bypass breached south of Meridian, flooding Reclamation Districts (RDs) 1660 and 70 and farmland around and south of the town and damaging 84 homes.
- Highway 113 was closed near Knights Landing.
- The east levee of the Feather River breached at Arboga, flooding homes and farmland of RD 784.
- Overflow of Cow, Cottonwood, Battle, and Thomes creeks damaged adjacent properties.
- Deer Creek overflowed near Vina, flooding farmland.
- The Sacramento River exceeded flood stage at Tehama Bridge, flooding Tehama, local roads, three mobile home parks, and orchards and fields in the area and leaving deep deposits of debris.
- The Feather River inundated a trailer park and sewage treatment ponds at Gridley.
- Dry Creek flooded homes in Roseville and Rio Linda.
- In the Delta, McCormack-Williamson Tract and Dead Horse Island levees failed again, flooding 1,865 acres. The flooding caused five deaths in the region and damaged more than 587 homes.

Widespread levee failures and damages exceeding $301 million from this event highlighted the need for a concentrated effort to rehabilitate the flood management system.

C.6 San Francisco Bay Hydrologic Region

Major floods occur regularly in the San Francisco Bay Hydrologic Region. They are predominantly slow rise floods, but shallow flooding associated with local stormwater runoff occurs often. Debris flows, coastal inundation, flash floods, and structure failures also cause damage at times. Flood damage has been observed in the San Francisco Bay Hydrologic Region since at least 1861. Major floods are summarized below. Table C-9 lists all documented flood events in the region.

The "Great Flood." The Great Flood of 1861-62 inundated large areas of the West Coast, including the San Francisco Bay Hydrologic Region. The January 1862 rainfall at San Francisco was five times average. For a week, there was no tidal inflow at the Golden Gate, only an outflow of river water 18 to 20 feet deep, floating on the salt water. There was property destruction at many locations. At Moraga, whole meadows washed out to bare sandstone. The oyster beds at Oakland were severely damaged by sediment. Alameda Creek washed away a mill in Niles Canyon and a house in Sunol Valley. San Ramon Valley was flooded from hill to hill. Fairfield and Suisun City were flooded as well.

Other Early Floods

- In April 1946, a tsunami along the California coast damaged Half Moon Bay houses and other property, traveling inland up to 1,000 feet. OES estimated damages at $21,000. At Bolinas, the tsunami submerged a small island and sank boats.
- In December 1955 into January 1956, widespread flooding caused a levee failure on Alameda Creek. Floodwaters inundated portions of Niles (Fremont), Centerville, Mission San Jose, Irvington, and Warm Springs. San Francisquito Creek overflowed, damaging Palo Alto. The flood inundated about 90,000 acres in the region.
- In February-April 1958, streets and basements were flooded in many communities. Las Trampas Creek and San Ramon Creek overflowed the main street of Walnut Creek. Marsh Creek washed out a county bridge. Arroyo Valle washed out the Southern Pacific Railroad bridge in Pleasanton. Levees failed on the Guadalupe River and Coyote Creek, inundating Alviso.
- In 1958, widespread flooding caused another levee failure on Alameda Creek, which destroyed crops and damaged industries and more than 225 homes in Niles (Fremont), Alvarado (Union City), and Alviso (San Jose). San Francisquito Creek again overflowed, damaging Palo Alto.

December 1981-April 1982. Record flooding on Corte Madera Creek damaged San Anselmo, Ross, Kentfield, and Larkspur. Severe floods on Coyote Creek in the Alviso area of San Jose caused more than $6 million in damages to about 360 homes and 40 businesses. There was a major flood on Novato Creek. The largest of the Petaluma River sheet-flow floods caused $28 million in damages, including damaged Petaluma's wastewater treatment plant. Flash floods on the Petaluma

River, Willow Brook, and Lynch and Washington creeks in Petaluma flooded 550 homes, damaged mobile home parks, and closed Highway 101. Other flood damage included the following:

- In Napa County, 24 houses were flooded in American Canyon and the Napa River flooded vineyards in St. Helena.
- Lake Chabot at Vallejo spilled, overflowing drainage facilities and flooding homes. Stormwater flooded streets west of Vallejo.
- In Fairfield, Laurel Creek overflows damaged roads and flooded undercrossings.
- In Suisun City, high outflows and tides damaged waterfront businesses.
- In San Anselmo, street flooding damaged homes and businesses.
- In Ross, water and silt damaged homes and businesses.
- In San Rafael, flash flooding destroyed 10 homes and damaged 60 others.
- In Inverness, debris flows destroyed 12 homes, damaged many more, and destroyed the water system.
- In Berkeley, streets flooded, limiting access to the University of California campus.
- In Sausalito, landslides destroyed two homes.
- In Contra Costa County, flash flooding destroyed 25 homes and damaged 300 others. San Pablo and Wildcat Creeks overflowed in North Richmond and San Pablo, inundating more than 50 city blocks. Richmond homes and businesses were also damaged by mudslides. In Pinole and Martinez, Alhambra Creek overflow caused street flooding, mud flows, and attendant damage. In Pittsburg, local creek overflows damaged buildings along Willow Pass Road.
- In Pacifica, San Pedro Creek overflow, street flooding, or debris flows destroyed 5 houses and damaged 300.
- In Pescadero, Pescadero Creek overflow damaged infrastructure and levees.
- More than 100 homes were flooded near San Mateo, and local creeks flooded streets in Brisbane, San Bruno, Millbrae, and Burlingame. Six local creeks overflowed in the San Jose area.

November 1982-March 1983. Many peninsula streams overflowed in January, including San Mateo, San Francisquito, Matadero, and Barron creeks in San Mateo County. White Slough flooded Highway 37 and local roads in Vallejo. Coyote Creek damaged a bridge. In Santa Clara County, Anderson Dam spilled, inundating downstream areas including 1,000 acres in Alviso up to 10 feet deep. Mud slides closed local roads, flooded undercrossings, damaged homes in Solano County, and damaged infrastructure elsewhere. One slide changed the course of Sonoma Creek at Glen Ellen. Flood damage also included the following:

- Coastal high tides and high seas undermined cliffs at Stinson Beach, destroying about 20 homes and damaging others.
- Inundated tidal plains damaged 200 homes and businesses in San Rafael, Corte Madera, Larkspur, and county areas; damaged resorts and marinas elsewhere in Marin County; closed Highway 4 between Pittsburg and Antioch; flooded Pittsburg businesses and Martinez structures; and inundated Edgerley Island in the Napa River. Highway 128 was inundated and closed near Monticello Dam.
- Coastal flooding closed Highway 101 at San Antonio Creek; backed up the Petaluma River into many homes; backed up the Napa River into Vallejo waterfront structures; flooded low areas between San Mateo and Sunnyvale; and inundated marshes, salt ponds, and reclaimed industrial areas near Redwood City. The entry ramp to the Dumbarton Bridge flooded, closing the bridge.
- Stormwater caused many road closures and flooded streets in Fairfield. Sheet flooding in Fremont inundated 95 square miles. Flooding clogged road drains in San Ramon Valley.
- Levees breached on Grizzly Island in the Suisun Marsh area, flooding 8,000 acres, and on Van Sickle Island, flooding 1,058 acres partially in the Delta.

December 1985-February 1986. Flood damage in the region included the following:

- The Guadalupe River overflowed its east bank in San Jose, flooding residences and businesses.
- The Napa River flood caused three deaths in the Napa area, destroyed 250 houses, damaged 2,500 houses, flooded downtown Napa and damaged 120 businesses, forced more than 5,000 residents to evacuate their homes, flooded a trailer park in Yountville, and caused an estimated $2 million in damage to vineyards. Significant flooding also occurred on Nathanson Creek in Sonoma.
- Strong gusts coupled with high tides and heavy precipitation from the St. Valentine's Day storm caused streams to pool at their confluences with San Pablo Bay, flooding shoreline buildings and arterial roads. Coastal flooding closed roads in Solano County. Stormwater flooded streets in Fairfield, Suisun City, Vallejo, and Novato. Flooding between Vallejo and Cordelia closed Interstate 80 intermittently. Flooding and landslides closed Highway 152. Stream overflow and mudslides caused damage in the East Bay. Coastal flooding due to Delta high tides and local stream overflow led to damage in Contra Costa County.

OES estimated $153 million in flood damage for the region.

C.7 San Joaquin River Hydrologic Region

Slow rise flooding is the predominant cause of flood damage in the San Joaquin River Hydrologic Region. Flooding of Delta islands recurs often and may be a coastal-type phenomenon caused by high tides and high winds, or structure failure. Flood damage has been observed in the San Joaquin River Hydrologic Region since at least 1805. Major floods are summarized below. Table C-29 lists all documented flood events in the region.

The "Great Flood." The Great Flood of 1861-62 was remarkable for the exceptionally high stages reached on most streams, repeated large floods, and prolonged and widespread inundation in the San Joaquin Valley. Lower elevations experienced heavy rain, while upper elevations saw record snowfall. The regional event was only part of a deluge that encompassed all of California, much of Oregon, and parts of Utah and Nevada (Utah Territory), Arizona (New Mexico Territory), and Idaho (Washington Territory).

Captain William Brewer, a Yale University geologist, described the Central Valley as a body of water 250 to 300 miles long and 20 miles wide. Captain Brewer surmised that "over one-fourth of all the taxable property of the State has been destroyed," and as a result the state went bankrupt. Captain Brewer also reported, "All the roads in the middle of the state are impassable, so all mails are cut off. The telegraph also does not work..."

Empire and Mokelumne City were completely destroyed. Mormon Slough levees breached and flooded the lower parts of Stockton. All bridges were lost in Stockton.

Damage was not confined to the valley. The Sonora *Union-Democrat* reported that "the mining interest has suffered greatly...wheels, sluices, etc. have suddenly disappeared...deep claims...are filled up...flumes and derricks blown down and washed off." Part of Sonora was underwater. At Knight's Ferry, homes, the mill, and most businesses were ruined. The bridge there failed when it was rammed by the debris of a failed upstream bridge. Nearly every building in Mokelumne Hill was torn from its foundation. Big Oak Flat was wiped out.

Other Early Floods

- In 1805, a flood inundated the entire valley floor.
- In 1907 and 1909, Central Valley floods provided the impetus for revised flood management plans and led to development of the San Joaquin River flood protection system.
- In 1932, levees on Venice Island in the Delta breached, flooding 3,220 acres.
- In 1936, Delta levees breached on Medford and Quimby Islands, inundating 1,988 acres.
- In 1937, the Merced River flooded the lower portions of the valley, and the highway and the Yosemite Valley Railroad were damaged. Other damage occurred in low-lying areas of the San Joaquin River.

- In 1938, Delta levees breached on Mandeville, Quimby, Rhode, and Venice Islands and Pescadero and Stewart Tracts, a total of about 21,000 acres. The 100-acre Rhode Island was never reclaimed.

November-December 1950. The west levee of Paradise Cut breached, causing Delta flooding on the Pescadero Tract and the Stewart Tract, and washed out the Southern Pacific Railway tracks and Highway 50 west of Stockton. A San Joaquin River levee breached and flooded Mossdale, RD 17, in the Delta near Stockton. Total Delta area flooded was 13,820 acres. Duck Creek overflowed and produced sheet flooding in a suburban residential area also near Stockton. The San Joaquin County Prison Farm flooded. Lowland flooding was common in the upper Delta and along the San Joaquin, Stanislaus and Tuolumne rivers. Bear Creek flooded Highway 140, surrounding development, and farmland at Merced. The Chowchilla River overflowed and flooded Chowchilla and Highway 99.

December 1955-January 1956. Heavy rainfall and snowmelt occurred in the upper watersheds of the eastside tributaries to the San Joaquin River. This caused extensive flooding along the river and all its major east-side tributaries, as well as flooding on the larger west-side tributaries. This flood caused extensive damage to agriculture, homes, and public facilities. Thousands of people were evacuated from their homes, and several people died of heart attacks during the flood. Unusually high tides aggravated the situation by impeding the passage of floodwater through the Delta.

December 1964-January 1965. Major flooding and substantial damages occurred along the Stanislaus and Cosumnes Rivers, Deer Creek, and Dry Creek. Damage also occurred along the Merced, San Joaquin, Chowchilla, and Fresno rivers and streams in Merced County. USACE estimated 71,900 acres flooded by stream overflow, particularly west of Merced and along the Merced River. The Merced River damaged camping and recreational facilities and infrastructure in Yosemite Valley. Levees breached in nine places on the Stanislaus River, inundating farmland. There was a levee breach on the Eastside Bypass. Flooding closed Highway 49 in many places and Highways 108 and 120 in Tuolumne County. USACE estimated $4.5 million flood damages in the San Joaquin River region.

December 1968-February 1969. Severe rain caused floods that struck the northern part of the region, and both rain and snowmelt floods occurred in the southern part of the region.

In January, the Stanislaus River flooded Ripon, and a levee breached flooding 3,000 acres of agricultural land. The Mokelumne River caused minor flooding in Modesto that recurred in February. Levees also breached on the Chowchilla and Fresno Rivers.

In February, two levee breaches occurred on the west side of the San Joaquin River in the Patterson-Grayson area, inundating farmland. Cottonwood Creek and the Fresno River flooded northern Madera and adjacent areas, and levees breached in several places on those streams. Highway 99 was closed by floodwaters in four places in Madera County, and numerous other roads were flooded.

January-March 1983. In January, Orestimba, Crow, Salado, and Del Puerto Creeks overflowed and flooded small communities. Other local streams overflowed and flooded Stevinson and parts of Los Banos, La Grande, and Hilmar. Local runoff flooded parts of Newman, Patterson and Crows Landing, persisting for several months. Seepage damaged streets in Merced and orchards and vineyards on the west side of the region. High tides and waves in the Delta breached levees of Little Franks Tract, Mildred Island, Fay Island, and Shima Tract, a total of about 3,952 acres. The San Joaquin River east levee in RD 2064 breached (6,000 acres). The San Joaquin River west levee in RD 2100 breached (500 acres), flooding two homes and two duplexes. The Eastside Bypass levee breached near Owens Creek (about 3,000 acres), and the San Joaquin River levee upstream of the Chowchilla Canal Bypass breached (3,000 acres).

In February, street flooding was common in Fresno and seepage continued to damage vineyards and orchards.

In March, San Joaquin River high stages invaded resorts, homes, and farmland south of Stockton, and numerous homes were damaged by floods in Lathrop. Seepage continued to damage trees, vines, and other crops. Northern San Joaquin County farmland suffered prolonged inundation. Stormwater overwhelmed drainage systems in many small communities, and Tracy and Banta were awash with sewage-laden floodwaters. High tides and runoff breached private levees near New Hope Landing, inundating thousands of acres.

January 1997. Flood damage in the region in January 1997 included the following:

- Fourteen levees breached on the San Joaquin River between Fresno and the Chowchilla Bypass, inundating agricultural lands including many vineyards north of the river.
- The San Joaquin River flooded a mobile home park in Madera County and damaged the Highway 145 bridge.
- Merced River overflow caused extensive damage in Yosemite Valley. Yosemite National Park was closed, and highways in the region incurred damage.
- Multiple levees breached on the San Joaquin River near Vernalis, flooding agricultural lands.
- New Don Pedro Reservoir on the Tuolumne River filled and began uncontrolled release. The flows overwhelmed levees and induced massive flooding directly in the Tuolumne and San Joaquin rivers and many Delta channels, as well as through backwater on Tuolumne River tributaries, the Stanislaus River and Stanislaus tributaries, combined with high flows in those streams. A chain of levee breaches ensued, beginning at the Tuolumne/San Joaquin confluence. The Weatherbee Lake community flooded. Several levee breaches occurred on the Tuolumne River, mostly near the confluence of the Cosumnes River, closing Interstate 5 and flooding orchards and vineyards. Levee breaches on the Cosumnes River and Deer Creek flooded Wilton, Sloughhouse, Rancho Murieta, and surrounding farmland.

- In the Delta, particularly high flows on the San Joaquin River in the Delta led to failure of a levee at Mossdale (RD 2107), flooding that area and Stewart Tract (RD 2062). Levees on Paradise Cut breached in four places, contributing to the flooding of Stewart Tract and flooding the Pescadero District (RD 2058). Total Delta area flooded was 13,820 acres.

C.8 South Coast Hydrologic Region

Major floods occur regularly in the South Coast Hydrologic Region. Flooding in the region can take a variety of forms with the major damage-producing events characterized by slow rise flooding, debris flow flooding, and stormwater accumulation. Flood damage has been observed in the South Coast Hydrologic Region since at least 1760. Reports from the California missions indicate significant South Coast flooding in 72 years from 1770 to 1842. Major floods are summarized below. Table C-19 lists all documented flood events in the region.

Floods in the Mission Era. A large flood on the Los Angeles River was recorded in the California mission diary of Father Juan Crespi in 1769-70. Crespi reported that the Porciuncula (Los Angeles) River changed its course on that occasion. Mission sources also note floods in 1772, 1780, 1810, 1815, 1821, 1822, 1825, 1839, 1840, 1841, and 1842. In the 1810 event, the Santa Ana River washed away adobe structures in the area that is now Santa Ana and Anaheim. Both the Los Angeles and Santa Ana rivers changed course in the 1825 flood.

The "Great Flood." Heavy flooding during the Great Flood of 1861-62 inundated large areas of the West Coast. The coastal plains at Santa Barbara were flooded. Ventura was abandoned because of flooding. The mouth of the Los Angeles River shifted from Venice to Wilmington. The plains of Los Angeles County were flooded and formed a large lake system where the stronger currents cut new channels to the sea. Thousands of cattle drowned, and orchards and vineyards along the river were swept to the ocean. The Los Angeles, San Gabriel, and Santa Ana rivers converged, forming a solid expanse of water from Signal Hill to Huntington Beach. Runoff transformed much of what is now Orange County into an inland sea that was 4 feet deep in places 4 miles from the Santa Ana River. Twenty people died in Orange County. Agua Mansa, which was near modern Riverside and until 1851 was the largest settlement between New Mexico and Los Angeles, was obliterated except for the church and one house. In San Diego County, Mission Valley was inundated, and Old Town San Diego was evacuated. The San Diego River cut a new channel into the bay. High tides and extreme runoff backed the river into its floodplain and into the city. This flood event was unusual in that it occurred during the severe drought of 1856-64, and floodwaters did not recede for 20 days in some areas.

Other Early Floods

- In December 1812, a tsunami damaged ships and inundated lowlands along the Ventura coast.
- In 1850 and 1852, moderate floods occurred.
- In February-March 1884, the Santa Ana River cut a new channel to the sea, inundating Santa Ana and Orange.
- In February 1914 and January 1916, floods provided significant insight on the relationship between urban development in the Los Angeles Basin and the flood damage potential of the surrounding rivers. In the 1914 event, floodwaters caused more than $10 million in damages and took the lives of many people. In 1916, a similar flood event damaged

the Los Angeles area when inadequately sized bridges acted as debris plugs. The Lower Otay Dam failed in that flood, damaging developed areas in San Diego County.

- In 1925, a significant flood altered the course of both the Santa Ana River and the Los Angeles River.
- In February 1927, flash flooding provided the impetus for channel improvements.
- In August 1930, a tsunami caused one death at Redondo Beach and damaged boats and a pier at Santa Monica.
- In August 1934, a tsunami destroyed one house and caused an estimated $75,000 in damage.
- In December 1937, high waves and high tides damaged three piers and coastal developments.
- In March 1938, flooding inundated more than 250,000 acres in six counties, caused an estimated $79 million in damage, and killed 87 people.
- In April 1946, a tsunami washed away a small pier on Catalina Island and deposited sand on railroad tracks at Port Hueneme.
- In March-April 1958, sheet stormwater flow damaged property in many locations.

March 1928. The St. Francis Dam, 40 miles northwest of Los Angeles, failed, and the resulting flood killed more than 600 people. The collapse of the St. Francis Dam remains the emergency event causing the second greatest loss of life in California's history, exceeded only by the 1906 San Francisco earthquake and fire. The concrete dam was part of the Los Angeles Aqueduct system.

November-December 1965. Flood damage in the region in November-December 1965 included the following:

- In Ventura County, debris plugged Hummingbird Creek and Arroyo Simi, causing overflow to damage 63 homes near Santa Susana Knolls. Flood channels were damaged near Oxnard, and bridges washed out on the upper Ventura River. Highway 150 and other roads were closed.
- In Los Angeles County, widespread flood damage was caused to improved channels, and local flooding was common. Flooding closed Highway 101 along the Pacific Coast.
- In San Bernardino County, Wrightwood suffered flood damage to 40 homes. Flood damage occurred in Redlands and San Bernardino, and highways and 40 houses incurred flood damage in Scotland. The Mojave River blocked all bridges and crossings between Victorville and Barstow, damaged bridges at Helendale, and deposited debris on farmlands. The Santa Ana River inundated farmland and drowned cattle and horses.
- In Riverside County, the San Jacinto River washed out a levee being constructed and deposited debris, closing Highway 79. Flood damage

occurred in Corona. Forester Creek flooded Santee, and the Sweetwater River damaged San Diego, caused mudslides, and closed Highway 101. Flood damage occurred in Lakeside.

January-February 1969. Flooding took the lives of 103 people and caused more than $160 million in damages to the South Coast Hydrologic Region. Because of increased development, the 1969 flood was the most damaging on record for parts of Ventura, Orange, San Bernardino, and Riverside counties. Los Angeles County also sustained major damage.

In Ventura County, the Ventura River, San Antonio Creek, and numerous smaller streams overflowed causing damage. Santa Clara River flooding damaged the Ventura Marina, agricultural lands, petroleum installations, and infrastructure. Severe property damage occurred in Ojai, Fillmore, and Santa Paula from flooding and debris deposit. Santa Paula was isolated when Sisar Creek destroyed a bridge and access road.

In Los Angeles County, the Los Angeles River, the San Gabriel River, and their tributaries damaged infrastructure and caused evacuation of thousands of persons. Outlying suburban areas were the hardest hit, such as Azusa and Glendora. Mudslides caused the most damage there and in Glendale, Highland Park, Encina, Sherman Oaks, Hollywood Hills, Brentwood, Bel Air, and Verdugo Hills. Flood flows damaged homes in Sunland. Overtaxed local drainage systems added to the damage. High flows and erosion damaged Mount Baldy Village, damaged residential areas in Topanga, Rustic, Mandeville, and Big Tujunga canyons, in La Paloma Flats, and in Glendale. Flood flows destroyed Mint Canyon water systems and isolated residents by road damage. Interstate 5 was closed at the Santa Clara River. Antelope Valley agricultural lands were widely damaged, and all major roads except Highway 395 were closed there. Pine Canyon and Amargosa Creek overflowed, damaging infrastructure, homes, and farmland near Hughes Lake.

In Orange County, homes, roads, bridges, and water systems were damaged or destroyed in Santiago, Silverado, Modjeska, and Laguna canyons, with February flood damage exceeding damages from January. In Orange and Santa Ana, Santiago Creek undercut homes and apartment buildings, causing severe damage. Sewage flowed into San Juan Creek in San Juan Capistrano, polluting beaches at their mouths, including Huntington and Doheny State Beaches and Newport Beach.

In January, in San Bernardino County, the upper reaches of the Santa Ana River and its tributaries flooded. Cucamonga, Deer, Day, and Cajon creeks eroded flood channels. The Santa Ana and Mojave rivers overtopped their banks or breached levees, damaging property. Many homes and infrastructure were damaged or destroyed in foothill areas, including Mount Baldy Village in San Antonio Canyon, communities on Lytle Creek, and at Mountain Home on Mill Creek. San Sevaine, East Etiwanda, and Wilson creeks rose and damaged adjacent properties. Cucamonga Creek caused destruction. In the Mojave River system, Sheep Creek and its tributaries flooded Wrightwood and deposited debris.

Floods returned in February re-inundating most areas that had been flooded in January and causing even greater damage in some areas, particularly along

Cucamonga, San Antonio, Wilson, Yucaipa, San Sevaine, East Etiwanda, and Mill creeks and along the San Timoteo Wash at Loma Linda. Flooding returned to Mount Baldy Village, Lytle Creek, and Mountain Home. Mojave River damage increased many times over January's damage, destroying infrastructure. Agricultural land was flooded extensively at Helendale.

Riverside County damage was particularly great in Corona, Norco, Cherry Valley, Mira Loma, and Riverside. Raw sewage polluted the Santa Ana River at Riverside.

In San Diego County, stormwater flooding caused damages in Escondido, Oceanside, Valley Center, Fallbrook, and Rainbow and at Camp Pendleton. A levee failed on the San Luis Rey River, inundating, an industrial area, damaging roads and bridges, and interrupting rail traffic. The south approach to the bridge on Interstate 5 over the Santa Margarita River was damaged, and the northbound lanes were closed. Loma Alta Creek overflowed and flooded streets, businesses, and the Hughes Aircraft plant in Oceanside. There was damage to homes, businesses, and infrastructure at Pauma Valley, and damage to homes in Escondido.

January-March 1978. Intense storms combined with inadequate drainage systems caused widespread street flooding and forced the evacuation of homes and businesses. Mudslides were a major contributor to the damage.

In Ventura County, the Ventura River system inundated 26 buildings at Live Oak. Floodwaters of Matilija Creek damaged roads, power lines, and homes in Matilija Canyon. The Santa Clara River damaged levees and other infrastructure and farmland in its floodplain. Piru Creek damaged roads and the Highway 126 bridge. Sespe Creek overflowed, damaging 204 homes, infrastructure and industry and depositing silt on farmlands. Fillmore was isolated from automobile traffic by the Highway 126 damage and slides on Highway 23. Thacher, Reeves, and San Antonio creeks damaged farmland and infrastructure at Ojai. Calleguas Creek caused channel erosion and deposition, and damaged property and infrastructure. Damage also occurred on Santa Paula Creek. Bell Creek damaged businesses, apartments, golf courses, and infrastructure.

In Los Angeles County, canyon areas tributary to the Los Angeles River took the brunt of damage. Most damage was to infrastructure. The San Gabriel River system also damaged infrastructure.

In Orange County, the Santa Ana River and Santiago, Fullerton, and San Juan creeks damaged business, apartments, golf courses, and infrastructure.

In San Diego County, the San Diego River overflowed at Lakeside, flooded 15 businesses and damaged infrastructure in Mission Valley, and deposited silt at San Diego Stadium. Los Coches Creek floods damaged infrastructure, parking lots, and homes. San Vicente Creek overflowed, damaging 98 homes, outbuildings and corrals, and 57 businesses. The San Luis Rey River overflowed at Oceanside, damaging 15 firms in an industrial park. In Pauma Valley, the river damaged infrastructure and deposited silt. Ostrich Farm Creek flooded and damaged 29 homes, 15 businesses, and infrastructure south of Fallbrook. Keys Creek damaged water lines at Valley Center, and Moosa Creek washed out water and sewer lines at Rainbow. Flooding also damaged infrastructure on the San Dieguito

River and its tributaries—Gonzales Canyon, Santa Ysabel, and Guejito creeks. The Sweetwater River and its tributary Paradise Creek damaged infrastructure and golf courses. The Tijuana River and its tributary Smugglers Gulch damaged infrastructure. Infrastructure damage also occurred along the Santa Margarita and Otay rivers; in McGonigle, Telegraph, and Sandia Canyons; along San Onofre, Buena Vista, Loma Alta, and Los Peñasquitos creeks; and by the Fanita Park Flood Control Channel.

In Riverside County, Oak Street drain overflowed in Riverside, damaging 126 mobile homes and 12 businesses and closing the Riverside Freeway. Debris deposition was widespread. Overflows from Murrieta Creek and De Luz Creek damaged infrastructure. Perris Valley storm drain, the San Jacinto River, Riverside Canal, Mockingbird Canyon, and Bautista, Little San Gorgonio, Noble, and Cajalco creeks also damaged infrastructure.

In San Bernardino County, the Santa Ana River system damaged infrastructure. Lytle Creek rose, destroyed 1 home, and damaged 12 others. Cucamonga Creek plugged with debris, overflowed, and damaged five homes. Temescal Wash breached a levee and flooded a trailer park and 20 businesses, damaged roads and railroads, and deposited silt widely. Damages were estimated to be $86 million and took the lives of 20 people. Also causing infrastructure damage in San Bernardino County were University Creek, the Zanja, and Mill, Cajon, Cable, San Sevaine, and Deer creeks.

January-February 1980. A powerful series of storms left the region with destroyed homes, washed out bridges and roads, and disrupted utilities; 29 people lost their lives; road damage was widespread in the region, and high tides combined with the storms damaged coastal areas.

In Ventura County, one of the heavy downpours led to a spill at the Las Llajas Dam near Simi Valley and bridge damage in Moorpark. A levee breached on Calleguas Creek and destroyed crops and damaged orchards in the lower Oxnard Plain. The dependent housing area of Point Mugu Naval Air Station flooded. Forty homes were damaged by local channel overflow in Santa Paula. Sespe Creek damaged infrastructure at Fillmore.

In Los Angeles County, many mudslides occurred, notably in Mandeville Canyon, Monterey Park, Laurel Canyon, and Altadena. Nine homes were destroyed, more than 40 homes were damaged, and 1 life was lost. Stormwater flooding damaged property in Trousdale Estates, Kagel Canon, Beverly Hills, and West Hollywood.

In Riverside County, a levee on the San Jacinto River breached, inundating San Jacinto. Water mains and other utilities were damaged. At Lake Elsinore, the San Jacinto River and other inflow exceeded outlet capacity and the lake level rose, flooding homes along the lakeshore and polluting the lake with septic tank leakage. A clogged outlet channel, unused for 64 years, contributed to the rising waters. The lake crested about 4 weeks later, after 250 homes and mobile homes were damaged.

In Orange County, flood flows in Trabuco Creek isolated Coto de Caza. Road closures resulting from high water in streams, local runoff, and mudslides were common.

In San Bernardino County, four successive debris flows over 38 days in Harrison Canyon damaged 40 homes. Fontana, Chino, and Cucamonga creeks also overflowed, flooding homes and damaging roads and bridges. One person was killed.

In San Diego County, many reservoirs filled and spilled. Combined with generally high flows, the downstream reaches suffered much damage. The San Luis Rey River produced flooding in Oceanside, damaging streets and a recreational vehicle park. Sewers ruptured, dumping raw sewage into the river and Loma Alta Creek. The San Dieguito River flooded cropland in San Pasqual Valley, as well as the racetrack and fairgrounds at Del Mar. The Sweetwater River flooded National City and Chula Vista. The Tijuana River overflowed, damaging agricultural areas, homes, and infrastructure. Lakeside was flooded by San Vicente Creek and its tributaries, Slaughterhouse and Wildcat Canyons, and by Los Coches Creek, damaging homes and infrastructure. Flooding along the San Diego River ensued, isolating the Moreno Valley portion of Lakeside. The river continued flooding downstream properties, damaging businesses and infrastructure to its Pacific Ocean outlet. An earthen dam on Bottle Peak failed, destroying the Bear Valley Hydroelectric Plant. Cottonwood Creek flooded Barrett and adjacent lowlands, damaging residences.

January-March 1983. Lytle Creek overflow damaged homes and roads. Sheet flow of stormwater affected 100 homes and businesses in Upland, severely damaging 10. Flash floods inland caused debris flows. Extensive coastal flooding destroyed or damaged hundreds of homes, and caused lasting beach damage. The San Jacinto River raised Lake Elsinore, inundating eight waterfront homes and three businesses and damaging roads and bridges. Mudslides closed coastal highways, and in San Bernardino County, slides damaged 300 homes and businesses, drowned 3,000 cattle, and closed Highways 18, 60, 138, and 330. One person drowned. Local drainage systems were overwhelmed with stormwater in many locations.

In January, high tides and surf damaged coastal structures, and wave erosion closed highways, particularly in Carlsbad, Cardiff-by-the-Sea, Del Mar, La Jolla, Mission Beach, Ocean Beach, and Imperial Beach. High surf damaged hundreds of homes in Orange County and closed Highway 1 in Huntington Beach.

In February, five homes were damaged at Silver Strand Beach and 40 businesses were flooded at Redondo Beach. Floods damaged homes at Venice and Laguna Beach and in Laguna Canyon. Mudslides at Malibu damaged roads and homes. High surf damaged oceanfront homes and three piers in Los Angeles County, at Seal Beach, Pacific Beach, and Santa Monica, where a hundred-foot section of the Municipal Pier, containing a restaurant and an office, was destroyed. A pumping plant failure flooded the Long Beach Freeway. Levees breached at Huntington Beach, flooding 700 homes up to 4.5 feet deep.

In March, highway flooding was widespread in Ventura County. Calleguas Creek overflowed, damaging thousands of acres of farmland. March also brought new

flooding to hundreds of homes in Orange County, and many roads were closed at San Marcos.

January-March 1995. In January, local storm drains overflowed and damaged adjacent areas in many places. A levee washed out on Dominguez Channel. Flooding and mudslides closed Highway 1 at several locations. Mudslides damaged Malibu and Laguna Beach. Sections of the Harbor, Long Beach, Artesia, San Diego, and Golden State Freeways were flooded and closed. Mud and water closed Amtrak's Saugus Tunnel. Highway 101 was inundated at the Ventura River. A homeless encampment and a recreational vehicle park were flooded. High water damaged Carson City Hall and areas in Long Beach. Stormwater inundated 250 houses in Cypress and damaged homes in Huntington Beach, Laguna Beach, Los Alamitos, and Seal Beach. One person drowned in Trabuco Creek. Wilson Creek damaged Yucaipa.

In February, Mudslides damaged homes in the La Conchita area of the Santa Barbara coastal plain. High water in San Diego drowned one person. Santee was flooded when the San Diego River overflowed.

In March, mudslides occurred throughout the coastal areas, crushing nine homes in La Conchita and surrounding about 100 others along the coast. The Ventura River overflowed, washing out bridges and inundating farmland. The Santa Clara River flooded farmland. Highways 101 and 33 were closed. Lake Elsinore rose and damaged lakeside homes.

C.9 South Lahontan Hydrologic Region

Major floods occur less frequently in the South Lahontan Hydrologic Region compared with the rest of the state. Flash floods, often accompanied by debris flows, are the most frequent occurrences. The larger streams exhibit slow rise floods. Stormwater floods and structure failures may also occur. Records on most streams of the South Lahontan Hydrologic Region began around 1930. Flood damage has been observed there since at least 1938. Major floods are summarized below. Table C-44 lists all documented flood events in the region.

The "Great Flood." The Great Flood of 1861-62 affected the South Lahontan region along with the rest of the area. In the Owens Valley area, snow and flooding depleted the forage, reducing the game population important to local tribes. Lakes formed in the Mojave Desert, and the Mojave River rose 20 feet above normal in Oro Grande.

February-March 1938. Widespread damage occurred, approximately 80 percent in urban areas and the remainder in agricultural areas. Damage was estimated at $2.5 million. Six people died, and about 60,000 acres were inundated.

January-February 1969. Rainfall intensities and amounts were greater and, except for the Mojave River and its tributaries, runoff peaks were generally greater during these floods than the 1938 event. Although flood management facilities functioned during the January flood period, there was insufficient time to perform repairs and maintenance before the late February storm struck, which caused nearly twice as much damage. Losses in San Bernardino County alone from the January storm amounted to more than $23 million, and losses from the February storm totaled more than $31 million. There was widespread flooding in the Mojave River lowlands, and many homes were evacuated. All bridges and crossings between Victorville and Barstow were impassable.

C.10 Tulare Lake Hydrologic Region

Most floods of the Tulare Lake Hydrologic Region are the slow rise type, although failures of flood protection structures occur occasionally. Flood damage has been observed in the Tulare Lake Hydrologic Region since at least 1805. Major floods are summarized below. Table C-34 lists all documented flood events in the region.

The "Great Flood." Historically, the total area of the four lakes of the Tulare Lake Basin fluctuated from a few square miles to more than 800 square miles, depending on the amount of inflow.

Tulare Lake would begin to overflow into Fresno Slough and to the San Joaquin River at an elevation of 207 to 210 feet, when the maximum depth was about 30 feet. A reconstruction of Tulare Lake levels using precipitation records, evaporation estimates, and eyewitness accounts indicates that water flowed out of Tulare Lake toward the north in 18 of the 28 years from 1850 to 1877. In wetter years, Kern and Buena Vista lakes would coalesce and cover 100 square miles or more, flowing through Buena Vista Slough to Tulare Lake. By the 1860s, Kings River diversions for irrigation had begun. The last natural Tulare Lake outflow was in 1877, and by 1899, the lake bed was dry except in wet periods.

During the Great Flood of 1861-62, the lake rose to 216 feet and covered 790 square miles. The flood caused channel changes in all four principal rivers. Cole Slough began to form, becoming a principal northward distributary of the Kings River. A new distributary, the St. John's River, was created for the Kaweah River. The Tule River eroded a new main channel now called Porter Slough. The Kern River eroded a new channel to the northwest, bypassing Kern Lake and perhaps Buena Vista Lake. Flood damage included the following:

- The Kings River washed away the entire town of Scottsburg, which was re-established on higher ground.
- A 30-foot wave on Mill Flat Creek created by washout of a debris plug destroyed two sawmills.
- Mill Creek produced shallow flooding in downtown Visalia three times, contaminating wells, destroying four bridges, and melting more than 40 adobe houses and a majority of mercantile buildings, which were mostly adobe. No brick or wood building came down.
- Debris blocked the lower Kaweah River.
- The Tule River inundated farms several feet deep.
- The White River damaged property in the gold mining district.
- Poso Creek brought down a flood of logs and water 60 feet high.
- The Kern River caused major damage in the mining district, destroying nearly all bridges, dams, and mills. Every home on the Kern River Island was washed away. The Kern River, exiting from its canyon, formed a sheet of water 22 miles wide from the north edge of present-day Bakersfield to near Mettler. There was a major debris slide on the South Fork Kern River.

December 1867-January 1868. The Tulare Lake Basin flood is considered the greatest in the region since European settlement began. Total basin runoff was estimated by Reclamation to exceed the measured 1983 record. An overflow elevation of 216 feet was again recorded in Tulare Lake, equaling the stage of 1862.

The Kings, Kaweah, Tule, and Kern rivers all carried flows exceeding those of the Great Flood of 1861-62. The four rivers brought down great quantities of timber from the Sierra Nevada, including sequoia logs up to 30 feet in diameter.

The Kings River completed the formation of Cole Slough and again engulfed Scottsburg in its new location; and Scottsburg was moved again and renamed Centerville.

Flooding in the valley below the Kaweah and Tule rivers was so extensive that an observer reported that one could have ridden a boat from Smith Mountain (near Dinuba) 41 miles to the Tule River. Another account claimed that the valley was a lake of water from Buena Vista Lake to the San Joaquin River. The Kaweah River deposited more obstructing debris in its delta, further enlarged the St. Johns River and established a new head for it at McKays Point, washed out 12 miles of the People's Ditch near Farmersville, and reflooded Visalia up to 5 feet deep. The Tule River spread over the Poplar and Woodville districts. Deer Creek and the White River left their channels and merged on the way to Tulare Lake.

The Kern River cut the present-day channel even farther north than the one created 5 years earlier, entering Buena Vista Lake from the north.

Remarkable in this event were the following three landslides that blocked streams, which then washed out, causing huge downstream waves:

- A slide from Dennison Ridge into the South Fork Kaweah River formed a blockage estimated at one-half mile wide and 400 feet high; the ensuing release sent a 40-foot wave past Three Rivers, attenuating greatly on exiting the canyon but still leaving logs scattered widely about the Kaweah delta, including one big sequoia log deposited in downtown Visalia.
- A slide blocked Mill Flat Creek near Big Stump, and the release destroyed a new sawmill that had replaced one washed out near Sequoia Lake in 1861-62.
- A massive slide that blocked the North Fork Kern River above Kernville was said to be 1,000 feet high, but other estimates set it considerable lower. The failure wave poured over the dam of Little Kern Lake, the artifact of an earlier slide; destroyed many homes in Kernville; inundated Weldon 50 feet deep; exited Kern Canyon 200 feet high; left a 50-foot logjam in Bakersfield; and scattered logs as far as Buena Vista and Tulare lakes.

Other Early Floods

- In 1805, a flood inundated the entire valley floor.
- In March 1958, a debris flow destroyed a bridge west of Mendota, and one life was lost.

- In April 1958, Mendota was damaged, and there was flooding in adjacent areas. Runoff from the Kings, Kaweah and Tule rivers flooded agricultural lands in the Tulare Lake bed, but the bed was dry by August.

November-December 1950. In November-December 1950, floods damaged Centerville, Visalia, Porterville, Oildale, Isabella, and Kernville. Flood damage included the following:

- The Kings River washed out the weir, cofferdam, and foundation work of Pine Flat Dam and flooded nearly 70,000 acres from Piedra to Tulare Lake and the San Joaquin River, encroaching on Laton, Riverdale, and Hardwick. Trails and trail bridges in the national parks were severely damaged.
- The Kaweah River and its tributaries washed out most bridges or their approaches in the Three Rivers area, destroyed five homes and damaged others, and closed the Kaweah Hatchery permanently. Downstream, the Kaweah floods damaged Terminus Beach, destroyed six homes in Woodlake and damaged others, took out the Visalia Electric trestle at McKays Point, and flooded an area 2 to 4 miles wide from Woodlake to Visalia.
- Mill Creek flooded downtown Visalia.
- The St. Johns River and Cross Creek flooded agricultural lands north, east, and south of Visalia.
- Tule River flooding in Porterville was shallow and small in extent, but the river spread over 32,000 acres of nearby agricultural lands and damaged roads, bridges, and a concrete plant.
- The Kern River in the canyon area flooded three power plants, destroyed the state fish hatchery, inundated homes, and damaged highways along with commercial and recreational facilities. Most of Isabella and part of Kernville were flooded. Five bridges were washed out in the Bakersfield area, and the Kern River flooded more than 37,000 acres, of which 18,500 acres were caused by levee breaches in the Goose Lake/Jerry Slough system.
- Inflow from the Kings, Kaweah and Tule rivers flooded 10,600 acres in Tulare Lake, which had been dry since 1946. The lake was dry by March 1951.

December 1955-January 1956. A storm caused by a family of cyclones from the mid-Pacific Ocean poured rain and induced snowmelt on low elevations of the Tulare Lake Hydrologic Region. Flood damage included the following:

- Roads and bridges were damaged in the Kings River Canyon and on the Kaweah River and tributaries near Ash Mountain.
- At Three Rivers, the river destroyed or damaged many homes. Three powerhouses were flooded with water and sand, and their flumes were

damaged. Businesses, roads, and bridges were damaged, and much livestock was lost.

- Downstream, Terminus Beach and a resort were inundated, the Friant-Kern Canal was breached, and the Visalia Electric trestle and 1,800 feet of track were washed out near McKays Point.
- Cameron Creek inundated the area from Cameron Creek Colony to Farmersville.
- Packwood Creek flooded Highway 198 and took out nearly all the creek's bridges downstream.
- Farmland around Exeter, Farmersville, and Lindcove was widely flooded.
- Woodlake and its surroundings were thoroughly inundated.
- Highway 99 was flooded at Tagus Ranch.
- The Tule River flooded Springville's water system, damaged infrastructure in Porterville, closed the highway to Visalia, and flooded thousands of acres west of Porterville. A few blocks flooded in Tulare.
- Levees failed on the Kaweah and St. Johns rivers. Near McKays Point, debris plugged the St. Johns River and bypassed the diversion weir, sending the main Kaweah flow toward Visalia. A shallow lake covering 300 to 450 square miles formed east of the city in the Kaweah delta.
- In Visalia, 21 flooded blocks were sealed off on Christmas Eve 1955. The flooding was shallow, but reached 5 feet in a few places. College of the Sequoias and the Plaza Interchange flooded, and drinking water sources were contaminated. Visalia flooding was largely attributed to the plugging of the Mill Creek conduit under the downtown area. The conduit, lacking a debris rack, took in a log 3 feet in diameter with a large root ball. Smaller debris accumulated and plugged the conduit. Geysers erupted soon; most were in the streets but one inside the Harvey House hotel damaged it to the extent of condemnation. More than half of Visalia was underwater at one point.
- Tulare Lake received about 11 percent of the inflow it received in 1950 and was dry by April.

December 1966-January 1967. Flooding took three lives and submerged 142,000 acres, mostly agricultural land. Flood damage included the following:

- In Tulare Lake and Buena Vista Lake, there was extensive inundation damage to agricultural lands. About 26,560 acres were inundated in Tulare Lake for the first time since 1958. The lake was dry by August. Regional damage included bank erosion, debris deposits, and inundation of parts of Kernville, Springville, Three Rivers, Lindsay, and Lamont. In mountain areas, recreation and transportation facilities and meadowlands were flooded and heavily damaged.
- Above Pine Flat Dam on the Kings River, roads, bridges, and power facilities were damaged, and flooding and deposition from Ten Mile

Creek damaged a commercial area at Hume Lake. Residential and commercial areas suffered flood damage from the Kings River at Centerville, Reedley, Kingsburg, and Laton.

- Mill Creek flooded homes, farms, and businesses in Dunlap and Miramonte.
- Minor damage to railroads occurred on Fresno Slough.
- Significant flooding occurred along Los Gatos, Warthan, and Avenal Creeks, damaging roads, sewage treatment facilities, levees, utilities, and farmland.
- At Three Rivers, roads, bridges, and transmission/distribution lines were damaged or destroyed, homes, businesses and a county park were washed out, and the Kaweah River cut a new channel across the Three Rivers Golf Course.
- Dry Creek (Limekiln Creek) overflow closed local roads, and debris clogged a weir, causing local flooding and deposition.
- Yokohl, Lewis, and Cottonwood creeks inundated a combined 16,000 acres, including parts of Lindsay and Exeter. Yokohl Creek undermined the Visalia Electric track along Highway 198.
- Woodlake was inundated when a drain failed. East Woodlake, Terra Bella, Tonyville, and areas near Cutler, Orosi, Yettem, and Seville were flooded.
- About 1,520 acres were inundated along the Tule River above Success Dam, including part of Springville where bridges were washed out, along with 24,800 acres below the dam, including a park, a gravel plant, and agricultural lands north and west of Woodville. Uncontrolled spill from Lake Success contributed to the agricultural flooding.
- The North Fork Tule River damaged bridges; five cabins washed away at Camp Wishon; and Johnsondale was isolated without power. The Tule River Indian Reservation lost roads, all bridges, and telephone and power supply lines. Highway 155 had long sections obliterated. Several homes were washed away, and the water supply was disabled in Springville.
- The Tule River breached levees near Porterville and flooded the Pixley National Wildlife Refuge. Poso Creek, White River, and Deer Creek sustained levee breaks and caused flood damage to farmland. Fountain Springs Gulch overflow damaged citrus groves, infrastructure, and homes.
- The Kern River inundated part of Kernville, flowing more than one-fourth mile wide in that area. It destroyed or damaged homes, businesses, and infrastructure and destroyed sections of Highway 178. The river also flooded 12,000 acres of farm- and wasteland below

Bakersfield, and washed out the bridge at Highway 155, an electric plant, the state fish hatchery, and a weir.

- The South Fork Kern River inundated 7,200 acres of agricultural land, and it combined with Kelso Creek to flood Weldon and damage other homes, infrastructure, and businesses.
- Jerry Slough flooded 640 acres and damaged homes, infrastructure, and farmlands.
- Erskine Creek damaged large sections of a local road.
- Havilah Creek flooded Havilah, damaging homes and infrastructure and isolating the town.
- Walker Basin Creek flooded about 6,370 acres of farmland.
- Caliente Creek flooded 5,260 acres, including Lamont, and damaged businesses and infrastructure.
- Streams at Coalinga flooded 5,370 acres of oilfields and farmlands.
- Los Gatos and Zapato Chino creeks ponded behind the California Aqueduct embankment, threatening to damage the aqueduct or pollute the water.
- Avenal and Cottonwood creeks flooded 13,880 acres of cropland and oilfields.

January-June 1969. Heavy precipitation plus a prodigious snowpack melt caused flooding in the region. Flood damage included the following:

- Parts of Dinuba, Orosi, East Orosi, Cutler, and Yettem were flooded by overflowing irrigation canals.
- The Kaweah River washed away the public beach south of Three Rivers.
- Woodlake was flooded. Highway 99 was flooded south of Fresno, and flooding was widespread in the city.
- Two levees breached on a Tule River distributary.
- Highway 99 was blocked by floods in two places in Tulare County, and numerous other roads were flooded.
- Avenal Creek in Sunflower Valley and Los Gatos Creek north of Coalinga overflowed twice and caused widespread flooding.
- A levee breached on Warthan Creek, flooding Coalinga.
- The White River levee breached, closing Highway 99.
- Cross Creek levees breached, inundating farmland.
- Parts of Clovis, Earlimart, Exeter, Lamont, Lindsay, McFarland, Orange Cove, and Strathmore flooded.
- Caliente Creek flooded the Lamont/Arvin area.

All measures available were taken to reduce inundation of the rich farmlands of the Tulare Lake bottom. Water was routed from the Kings River through Fresno Slough to the San Joaquin River until it was limited by high water on that river. Water was diverted away from Tulare Lake through interagency cooperation into the

Friant-Kern Canal and the California Aqueduct. Interior leveed cells of the lake were filled to capacity by pumping before additional cells were allowed to be filled, and the USACE constructed levees and improved channels. Nevertheless, the inundated acreage steadily increased from January to June, until nearly 89,000 acres were covered. The lake persisted until about 1972.

February-May 1998. La Niña conditions produced flooding throughout the spring. Flood damage included the following:

- Coast Range runoff inundated farmland around Mendota and Cantua Creek.
- The White River inundated Earlimart and closed Highway 99 for a week.
- Accumulated stormwater ponded on many roads in Bakersfield.
- Lewis and Frazier creeks overflowed twice and flooded Tonyville and Strathmore.
- Poso Creek flooded 112 homes in McFarland and rural areas near Wasco.
- Flash floods occurred on Highways 178 and 58 and other streets in Bakersfield, and covered Highway 166 to the southwest.
- Caliente Creek flooded Lamont and closed northbound Highway 99 south of Bakersfield.
- Flooding occurred in the Lebec/Frazier Park/Cuddy Valley area.

Tulare Lake continued to receive runoff, and great quantities of water were exported to Southern California and the San Joaquin River.

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Appendix D: FEMA-Approved Multi-Hazard Mitigation Plans

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Table C-D-1. FEMA-Approved Multi-Hazard Mitigation Plans

Hydrologic Region	County	Cities Covered Under County HMPs	Year
San Francisco	ABAG (Alameda, Contra Costa, San Mateo, Santa Clara, Solano)	Alameda, Albany, Belmont, Belvedere, Benicia, Brisbane, Burlingame, Campbell, Clayton, Cloverdale, Coma, Concord, Corte Madera, Cotati, Cupertino, Danville, Dixon, el Cerrito, Fairfax, Fairfield, Foster City, Fremont, Gilroy, Half Moon Bay, Healdsburg, Hillsborough, Lafayette, Livermore, Los Altos Hills, Menlo Park, Millbrae, Milpitas, Moraga, Morgan Hill, Oakland, Orinda, Pacifica, Palo Alto, Petaluma, Pleasant Hill, Pleasanton, Portola Valley, Richmond, Rio Vista, Rohnert Park, San Anselmo, san Bruno, San Carlos, San Joes, San Mateo, San Pablo, San Ramon, Santa Clara, Santa Rosa, Saratoga, Sebastopol, Sonoma, South San Francisco, Sunnyvale, Tiburon, Vacaville, Vallejo, Walnut Creek, Windsor, Alameda County Flood Control & WCD, Association of Bay Area Governments, Bay Area Rapid Transit District (BART), Bethel Island Municipal Improvement District, Contra Costa Water District, East Bay Regional Parks District, Eastern Contra Costa Transit Authority, Jefferson Unified High School District, Metropolitan Transportation Commission (MTC), Moraga-Orinda Fire District, Oakland Unified School District, Ross School District, San Ramon Valley Fire Protection District, Santa Clara Valley Water District, Sewer Authority Mid Coastside, Solano County Water Agency, South San Francisco Unified School District, Vallejo Sanitation and Flood Control District	2005
San Francisco Bay/Sacramento	Alameda	Berkeley	2004
San Francisco Bay/Sacramento	Alameda	San Leandro	2005
North Lahontan/San Joaquin River	Alpine	Alpine County Unified School District, Bear Valley Water District, Kirkwood Meadows Public Utility District, Markleeville Public Utility District, Markleeville Water Company, South Tahoe Public Utility District	2004
San Joaquin/Sacramento	Amador	Amador City, Ione, Jackson, Plymouth, Sutter Creek, Amador Water Agency, Jackson Valley Irrigation District	2006
Sacramento	Butte	Biggs, Chico, Gridley, Oroville, Paradise,	2007
San Joaquin	Calaveras	Calaveras County Water District	2006
San Joaquin	Calaveras	Calaveras County Water District	2006
Sacramento	Colusa	Colusa, Williams	2004
North Lahontan/Sacramento River, San Joaquin River	El Dorado	Placerville, South Lake Tahoe, El Dorado County Office of Education, El Dorado Irrigation District, Golden West Community Services District	2004
Tulare Lake	Fresno	Clovis Unified School District	2008
Tulare Lake	Fresno	Coalinga and Coalinga-Huron Unified School District	2005
North Coast	Humboldt	Ferndale, Garberville Sanitary District, Humboldt #1 Fire Protection District, Humboldt Bay Municipal Water District, Humboldt community Services District, McKinleyville Community Services District	2007

Table C-D-1. FEMA-Approved Multi-Hazard Mitigation Plans

Hydrologic Region	County	Cities Covered Under County HMPs	Year
South Lahontan/Tulare Lake/Central Coast	Kern	Arvin, Bakersfield, California City, Delano, Maricopa, McFarland, Ridgecrest, Shafter, Taft, Tehachapi, Wasco, Arvin Community Services District, Arvin-Edison Water Storage District, Bakersfield City School District, Bear Valley Community Services District, Berrenda Mesa Water District, Buena Vista Water Storage District, Buttonwillow County Water District, Buttonwillow Recreation and Park District, Buttonwillow Union School District, Cawelo Water District, Delano Joint Union High School District, East Kern Airport District, East Niles Community Services District Edison Elementary School District, Elk Hills School District, Fairfax School District, Ford City Taft Heights Sanitation District, Golden Hills Community Services District, Greenfield County Water District, Indian Wells Valley Airport District, Kern Community College District, Kern County Water Agency, Kern Delta Water District, Kern High School District, Kern Sanitation Authority, Kern-Tulare Water District, Kernville Union School District, Lost Hills Union School District, Lost Hills Water District, McKittrick School District, Mojave Unified School District, North of the River Municipal Water District, North of the River Recreation and Parks District, North of the River Sanitary District No. 1, Panama-Buena Vista Union School District, Pond Union School District, Richland Elementary School District, Rosamond Community services District, Semitropic Water Storage District, Shafter Recreation and Parks District, Sierra Sands Unified School District, South Fork Mosquito Abatement District, Stallion Springs Community Services District, Taft City School District, Tehachapi Unified School District, Tehachapi Valley Healthcare District, Tehachapi Valley Recreation and Parks District, Tehachapi-Cummings County Water District, Vineland School District, Wasco Recreation and Parks District, Water Association of Kern County, West Kern Water District, West Side Recreation and Park District, Wheeler Ridge-Maricopa Water Storage District	2005
North Coast	Lake	Lake	2012
Sacramento	Lake	Lake	2012
South Coast/South Lahontan	Los Angeles	Arcadia	2007
South Coast/South Lahontan	Los Angeles	Avalon	2004
South Coast/South Lahontan	Los Angeles	Baldwin Park	2004
South Coast/South Lahontan	Los Angeles	Baldwin Park Unified School District	2004
South Coast/South Lahontan	Los Angeles	Bellflower	2006
South Coast/South Lahontan	Los Angeles	Beverly Hills	2010
South Coast/South Lahontan	Los Angeles	Beverly Hills Unified School District	2006
South Coast/South Lahontan	Los Angeles	Bonita Unified School District	2004
South Coast/South Lahontan	Los Angeles	Bradbury	2004
South Coast/South Lahontan	Los Angeles	Burbank	2005
South Coast/South Lahontan	Los Angeles	Burbank Unified School District	2012
South Coast/South Lahontan	Los Angeles	Cerritos	2004
South Coast/South Lahontan	Los Angeles	Commerce	2004
South Coast/South Lahontan	Los Angeles	Compton	2004

Table C-D-1. FEMA-Approved Multi-Hazard Mitigation Plans

Hydrologic Region	County	Cities Covered Under County HMPs	Year
South Coast/South Lahontan	Los Angeles	Covina-Valley unified School District	2006
South Coast/South Lahontan	Los Angeles	Diamond Bar	2004
South Coast/South Lahontan	Los Angeles	Duarte	2004
South Coast/South Lahontan	Los Angeles	El Monte	2004
South Coast/South Lahontan	Los Angeles	El Monte City School District	2004
South Coast/South Lahontan	Los Angeles	El Segundo	2008
South Coast/South Lahontan	Los Angeles	Glendale	2006
South Coast/South Lahontan	Los Angeles	Glendora	2004
South Coast/South Lahontan	Los Angeles	Glendora Unified School District	?
South Coast/South Lahontan	Los Angeles	Hawaiian Gardens	2004
South Coast/South Lahontan	Los Angeles	Huntington Park	2004
South Coast/South Lahontan	Los Angeles	Industry	2005
South Coast/South Lahontan	Los Angeles	Irwindale	2006
South Coast/South Lahontan	Los Angeles	La Habra Heights	2007
South Coast/South Lahontan	Los Angeles	La Mirada	2004
South Coast/South Lahontan	Los Angeles	La Verne	2004
South Coast/South Lahontan	Los Angeles	Las Virgenes Unified School District	2006
South Coast/South Lahontan	Los Angeles	Las Virgenes-Malibu Council of Governments	2004
South Coast/South Lahontan	Los Angeles	Lawndale Elementary School District	2006
South Coast/South Lahontan	Los Angeles	Little Lake City School District	?
South Coast/South Lahontan	Los Angeles	Lomita	2004
South Coast/South Lahontan	Los Angeles	Long Beach	2004
South Coast/South Lahontan	Los Angeles	Long Beach Unified School District	2004
South Coast/South Lahontan	Los Angeles	Los Angeles County Office of Education	2004
South Coast/South Lahontan	Los Angeles	Los Angeles Unified School District	2004
South Coast/South Lahontan	Los Angeles	Los Angeles, Los Angeles County Office of Education, Los Angeles Unified School District	2011, 2004, 2004
South Coast/South Lahontan	Los Angeles	Monrovia	2004
South Coast/South Lahontan	Los Angeles	Montebello	2004
South Coast/South Lahontan	Los Angeles	Newhall School District	2004
South Coast/South Lahontan	Los Angeles	Palos Verdes Estates	2004

Table C-D-1. FEMA-Approved Multi-Hazard Mitigation Plans

Hydrologic Region	County	Cities Covered Under County HMPs	Year
South Coast/South Lahontan	Los Angeles	Palos Verdes Peninsula Unified School District	2006
South Coast/South Lahontan	Los Angeles	Paramount	?
South Coast/South Lahontan	Los Angeles	Pasadena	?
South Coast/South Lahontan	Los Angeles	Pico Rivera	2004
South Coast/South Lahontan	Los Angeles	Pomona	2004
South Coast/South Lahontan	Los Angeles	Pomona Unified School District	2004
South Coast/South Lahontan	Los Angeles	Rancho Palos Verdes	2004
South Coast/South Lahontan	Los Angeles	Rolling Hills	2004
South Coast/South Lahontan	Los Angeles	Rosemead School District	2004
South Coast/South Lahontan	Los Angeles	San Dimas	2005
South Coast/South Lahontan	Los Angeles	San Fernando	2007
South Coast/South Lahontan	Los Angeles	Santa Clarita	2010
South Coast/South Lahontan	Los Angeles	Santa Monica	2007
South Coast/South Lahontan	Los Angeles	Santa Monica-Malibu Unified School District & Santa Monica College	?
South Coast/South Lahontan	Los Angeles	South Pasadena	?
South Coast/South Lahontan	Los Angeles	Torrance	2004
South Coast/South Lahontan	Los Angeles	Vernon	2004
South Coast/South Lahontan	Los Angeles	Walnut	2000
South Coast/South Lahontan	Los Angeles	West Covina	2004
South Coast/South Lahontan	Los Angeles	West Hollywood	2004
South Coast/South Lahontan	Los Angeles	Whittier	?
San Francisco Bay, North Coast	Marin	Larkspur	?
San Francisco Bay/North Coast	Marin	Marin County Operation Area	2006
San Francisco Bay, North Coast	Marin	Novato	2006
North Coast	Mendocino	Ukiah	2008
South Lahontan	Mono	Mammoth Lakes	2006
Central Coast	Monterey	Monterey Regional Water Pollution Control Agency	2005
Central Coast	Monterey	Seaside	2005
Central Coast	Monterey	Carmel-by-the-Sea, Gonzales, Greenfield, King City, Marina, Pacific Grove, Salinas, Sand City, Soledad	2007

Table C-D-1. FEMA-Approved Multi-Hazard Mitigation Plans

Hydrologic Region	County	Cities Covered Under County HMPs	Year
South Coast	Municipal Water District of Orange	Tustin, City of Newport Beach Water Department, City of Buena Park Water Department, City of Garden Grove Water Department, City of La Habra Water Department, City of Orange Water Department, City of Tustin Water Department, City of Westminster Water Department, El Toro Water District, Laguna Beach County Water District, Mesa Consolidated Water District, Moulton Niguel Water District, Municipal Water District of Orange County, Ocean View School District - Orange Co, Orange County Sanitation District, Orange County Water District, Santa Margarita Water District, Serrano Water District, South Coast Water District, South Orange County Wastewater Authority, Trabuco Canyon Water District, Yorba Linda Water District	2006
San Francisco Bay/Sacramento	Napa	Napa	2004
San Francisco Bay/Sacramento	Napa	American Canyon, Calistoga, St. Helena, Yountville	2004
North Lahontan, Sacramento River	Nevada	Grass Valley, Nevada City, Truckee,	2006
South Coast	Orange	Anaheim	2004
South Coast	Orange	Huntington Beach/Fountain Valley	?
South Coast	Orange	Irvine	?
South Coast	Orange	La Habra	2007
South Coast	Orange	Mission Viejo	2007
South Coast	Orange	Municipal Water District of Orange County	2006
South Coast	Orange	Newport Beach	2008
South Coast	Orange	Saddleback Valley Unified School District	2005
South Coast	Orange	San Clemente	2004
South Coast	Orange	San Juan Capistrano	?
South Coast	Orange	Santa Ana	?
Sacramento/North Lahontan	Placer	Roseville	2005
North Lahontan, Sacramento River	Placer	Auburn, Colfax, Lincoln, Loomis, Placerville, Rocklin, Foresthill Fire Protection District & Iowa Hill, North Tahoe Fire Protection District, Placer County Agriculture Commission, Placer County Fire Chief's Association, Placer County Fire Protection District, Placer County Fire Protection District, Placer County Fire Safe Alliance, Placer Count y Flood Control & Water Conservation District, Placer County Foresthill Public Utilities District, Placer County Office of Education, Placer County Resource Conservation District, Placer County Water Agency, Sierra Joint Community College District, Squaw Valley Public Services District, Tahoe Truckee Unified School District	2005

Table C-D-1. FEMA-Approved Multi-Hazard Mitigation Plans

Hydrologic Region	County	Cities Covered Under County HMPs	Year
South Coast/Colorado River	Riverside	Banning, Beaumont, Blythe, Calimesa, Canyon Lake, Cathedral City, Coachella, Corona, Desert Hot Springs, Hemet, Indian Wells, Indio, Hemet, La Quinta, Lake Elsinore, Moreno Valley, Murrieta, Norco, Palm Springs, Perris, Rancho Mirage, Riverside, San Jacinto, Temecula, Alvord Unified School District, Beaumont Unified School District, Desert Regional Medical Center, Elsinore Valley Municipal Water District, JFK Memorial Hospital, Kaiser Permanente Hospital, Lake Elsinore Unified School District, Menifee Union School District, Mission Springs Water District, Moreno Valley Community Services District, Moreno Valley Unified School District, Murrieta County Water District, Parkview Community Hospital, Rancho California Water District, Riverside County Office of Education, Children and Family Services, Riverside Unified School District, San Gorgonio Pass Water Agency, San Jacinto Unified School District, Valley Sanitation District, Western Municipal Water District-Riverside County	2005
San Joaquin/Sacramento	Sacramento	Citrus Heights, Elk Grove, Folsom, Galt, Isleton, Rancho Cordova, Sacramento, 2067 & Brannan Andrus Levee Maint. District, American River Flood Control District, American River Regulatory Water Authority, Arcade Creek Recreation and Park District, Arden Manor Recreation and Park District, Arden Park Recreation and Park District, California-American Water Company, Carmichael Recreation and Park District, Carmichael Water District, Center Unified School District, Citrus Heights Water District, Cordova Recreation and Park District, Del Paso Manor Water District, Elk Grove community Services District - Fire, Elk Grove Unified school District, Elk Grove Water District, Elverta Joint Unified School District, Fair Oaks Recreation and Park District, Fruitridge Vista Water District, Fulton/Elk Grove Recreation and Park District, Galt Fire Protection District, Galt Joint Unified School District, Galt Joint Union High School District, Grant Joint Union High School District, Herald Fire Department, Isleton fire Protection District, Law Enforcement Chaplaincy Sacramento, Los Rios Community College District, Mercy General/SSD MRC, Mission Oaks Recreation and Park District, Natomas Unified School District, North Highlands Recreation and Park District, North Sacramento School District, Omochumne-Hartnell Water District, Orangevale Recreation and Park District, Orangevale Water District, Rancho Murieta Community Services District, Reclamation District #3, Reclamation District #341, Reclamation District #551, Reclamation District #556, Reclamation District #563, Reclamation District #800, Reclamation District #1000, Reclamation District #1002, Reclamation District #1601, Reclamation District 2110, Rio Linda Union School District, Rio Linda/Elverta Recreation and Park District, Ro Linda/Elverta Water District, River Delta Unified School District, Robia School District, Sacramento Area Flood Control Agency, Sacramento City Unified School District, Sacramento Regional County Sanitation District/Community Services District #1, Sacramento Suburban Water District, Sacramento-Yolo Mosquito Abatement District, San Juan Unified School District, San Juan Water District - Placer, San Juan Water District - Sacramento, South Gate Recreation and Park District, Sunrise Recreation and Park District, Tokay Park Water District, Walnut Grove Fire Department, Wilton Fire Department	2004
South Coast/Colorado River/South Lahontan	San Bernardino	Redlands	2005

Table C-D-1. FEMA-Approved Multi-Hazard Mitigation Plans

Hydrologic Region	County	Cities Covered Under County HMPs	Year
South Coast/Colorado River/South Lahontan	San Bernardino	Adelanto, Apple Valley, Barstow, Big Bear Lake, Chino, Chino Hills, Colton, Fontana, Grand Terrace, Hesperia, Highland, Loma Linda, Montclair, Needles, Ontario, Rancho Cucamonga, Rialto, San Bernardino, Twentynine Palms, Upland, Victorville, Yucaipa, Arrowbear Park County Water District, Baldy Mesa Water District, Big Bear Airport District, Big Bear Area Regional Wastewater Agency, Big Bear City Community Services District, Chino Basin Water Conservation District, Chino Valley Independent Fire District, Chino Valley Unified School District, Crest Forest Fire Protection District, Crestline Lake Arrowhead Water Agency, Crestline Village Water District, Cucamonga Valley Water District, East Valley Water District, Fontana Unified School District, Hesperia Recreation and Park District, Inland Empire Utilities Agency, Monte Vista Water District, Morongo Valley Community Services District, Needles Unified School Distinct, Newberry Community Services District, Omnitrans, Patton State Hospital-Under Dept of Mental Health, Rialto Unified School District, Rim of the World Unified School District, Running Springs Water District, San Bernardino Community College District, San Bernardino Mountains Community Hospital District, San Bernardino Municipal Water Department, City of, San Bernardino Valley Municipal Water District, Twentynine Palms Water District, West Valley Water District, Yucaipa Valley Water District	2005
South Coast/Colorado River	San Diego	North County Transit District	2007
South Coast/Colorado River	San Diego	Olivenhain Municipal Water District	2005
South Coast/Colorado River	San Diego	Carlsbad, Chula Vista, Coronado, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, La Mesa, Lemon Grove, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Solana Beach, Vista	2004
South Coast/Colorado River	San Diego		2010
San Francisco Bay	San Francisco	San Francisco	2008
Central Coast/Tulare Lake	San Luis Obispo	Arroyo Grande	2008
Central Coast/Tulare Lake	San Luis Obispo	Atascadero	2005
Central Coast/Tulare Lake	San Luis Obispo	Los Osos Community Services District	2005
Central Coast/Tulare Lake	San Luis Obispo	Morro Bay	2006
Central Coast/Tulare Lake	San Luis Obispo	Paso Robles	2005
Central Coast/Tulare Lake	San Luis Obispo	Paso Robles Joint Unified School District	2005
Central Coast/Tulare Lake	San Luis Obispo	Pismo Beach	2007
Central Coast/Tulare Lake	San Luis Obispo	San Luis Obispo	2006
Central Coast/South Coast	Santa Barbara	Buellton, Goleta, Guadalupe, Lompoc, Santa Barbara, Santa Maria	2004
Central Coast	Santa Cruz	Santa Cruz	2007
Sacramento	Shasta	Redding	2005
Sacramento	Shasta	Shasta Lake	2005
Sacramento	Shasta Lake	Shasta Lake Fire Protection District	2005
Sam Francisco Bay/Sacramento	Solano	Davis Joint Unified School District	2005

Table C-D-1. FEMA-Approved Multi-Hazard Mitigation Plans

Hydrologic Region	County	Cities Covered Under County HMPs	Year
North Coast	Sonoma	Sonoma County Water Agency	2008
San Joaquin	Stanislaus	Ceres, Hughson, Modesto, Newman, Patterson, Riverbank, Turlock, Ceres Unified School District, Chatom Unified School District, Del Puerto Health Care District, Del Puerto Water District, El Solyo Water District, Empire Union School District, Gratton Unified School District, Hart-Ransom School District, Hickman Charter School District, Hughson Unified School District, Keyes Union School District, Knights Ferry Unified School District, La Grange Unified School District, Modesto City School District, Newman-Crows Landing Unified School District, Oak Flat Water District, Oakdale Joint Unified School District, Paradise Elementary School District, Riverbank Unified School District, Roberts Ferry Unified School District, Rock Creek Water District, Salida Union School District, Shiloh School District, Stanislaus County Office of Education, Stanislaus Union School District, Sylvan Union School District, Turlock Irrigation District, Turlock Joint School District, Valley Home Joint School District, Waterford Union School District, West Stanislaus County Fire District, Yosemite Community College District	2006
Sacramento	Sutter	Live Oak, Gilsizer County Drainage District, Levee District One, Reclamation District #70, Reclamation District #1001, Reclamation District #1500, Reclamation District #1660	2007
Sacramento	Tehama	Red Bluff	2004
San Joaquin	Tuolumne	Sonora, Columbia College, Columbia Fire Protection District, Groveland Community Services District, Jamestown Fire Protection District, Jamestown Sanitary District, Mi-Wuk Sugar Pine Fire Protection District, Sonora Union High School District, Tuolumne Band of Me-Wuk Indians, Tuolumne Fire Protection District, Tuolumne Utilities District, Twain Harte Community Services District	2004
South Coast/Central Coast/Tulare Lake	Ventura	Oxnard/Ventura	2005
South Coast/Central Coast/Tulare Lake	Ventura	Port Hueneme/Ventura	2005
South Coast/Central Coast/Tulare Lake	Ventura	Simi Valley	2004
South Coast/Central Coast/Tulare Lake	Ventura	Camarillo, Fillmore, San Buenaventura, Santa Paula, Ventura, Camrosa Water District, Ojai Valley Sanitary District, Ventura County Watershed Protection District	2005
Sacramento	Yolo	Davis, West Sacramento, Winters, Woodland,	2004
Sacramento	Yuba	Marysville, Wheatland, Yuba City, Dobins-Oregon House Fire Protection District	?

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Appendix E: Dams, Weirs, Debris Basins, and Reservoirs in California

The list of dams, weirs, debris basins, and reservoirs in California was developed from information accumulated by the Division of Safety of Dams, Department of Water Resources. Web site accessed February 2013: http://www.water.ca.gov/damsafety/damlisting/index.cfm.

APPENDIX E: DAMS, WEIRS, DEBRIS BASINS, AND RESERVOIRS IN CALIFORNIA

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Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Central Coast	Monterey	San Antonio Reservoir	Reservoir	-	Monterey County Water Resources Agency	San Antonio River	1965	350,000	Flood Management, Groundwater Recharge	X	X	X	-	X	-	X	-	-
Central Coast	Monterey	Los Padres Dam	Dam	-	California American Water Co.	Carmel River	1949	3,100	Water Supply	-	X	-	-	-	-	-	-	-
Central Coast	Monterey	San Clemente Dam	Dam	San Clemente Reservoir	California American Water Co.	Carmel River	1921	1,425	-	-	-	-	-	-	-	-	-	X
Central Coast	Monterey	Forest Lake Dam	Dam	Forest Lake	Pebble Beach Community Services District	Offstream	1892	428	Irrigation	-	-	X	-	-	-	-	X	X
Central Coast	Monterey	Hughes Reservoir Dam	Dam	Hughes Reservoir	Fort Hunter Liggett	Unknown	1966	300	-	-	-	-	-	-	-	-	-	X
Central Coast	Monterey	Lower Stoney Reservoir Dam	Dam	Lower Stoney Creek Reservoir	Fort Hunter Liggett	Unknown	1973	150	-	-	-	-	-	-	-	-	-	X
Central Coast	Monterey	Dam A	Dam	-	National Refractories and Minerals Corp.	Unknown	Unknown	105	-	-	-	-	-	-	-	-	-	X
Central Coast	Monterey	Dam No. 1	Dam	-	Raisch Products	Unknown	Unknown	100	-	-	-	-	-	-	-	-	-	X
Central Coast	Monterey	Pacific Grove Dam	Dam	-	California American Water Co.	Tributary Pacific Ocean	1882	76	-	-	-	-	-	-	-	-	-	X
Central Coast	Monterey	El Piojo Dam	Dam	El Piojo Reservoir	Fort Hunter Liggett	Unknown	1961	50	-	-	-	-	-	-	-	-	-	X
Central Coast	Monterey	Engineer Dam	Dam	-	Fort Hunter Liggett	Unknown	1964	50	-	-	-	-	-	-	-	-	-	X
Central Coast	Monterey	Milpitas Reservoir Dam	Dam	Milpitas Reservoir	Fort Hunter Liggett	Unknown	1960	50	-	-	-	-	-	-	-	-	-	X
Central Coast	Monterey	Oat Hill Reservoir	Reservoir	-	Fort Hunter Liggett	Unknown	1962	50	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Central Coast	Monterey	Sycamore Reservoir Dam	Dam	Sycamore Reservoir	Fort Hunter Liggett	Unknown	1961	50	-	-	-	-	-	-	-	-	-	X
Central Coast	Monterey	Black Rock Creek Dam	Dam	White Rock Lake	White Rock Club, Inc.	North Fork Black Rock Creek	1925	30	-	-	-	-	-	-	-	-	-	X
Central Coast	Monterey	Gonzales Slough	Weir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
Central Coast	San Benito	Hernandez Dam	Dam	Hernandez Reservoir	San Benito County Water District	San Benito River	1962	18,000	Water Supply	-	X	-	-	X	-	-	-	-
Central Coast	San Benito	San Justo Dam	Reservoir	San Justo Reservoir	U.S. Bureau of Reclamation	San Benito River Offstream	1987	11,693	Water Supply	-	X	-	-	-	-	X	-	-
Central Coast	San Benito	San Justo Dike	Dike	San Justo Reservoir	U.S. Bureau of Reclamation	San Benito River Offstream	1987	11,693	-	-	-	-	-	-	-	-	-	-
Central Coast	San Benito	Paicines Dam	Dam	Paicines Reservoir	San Benito County Water District	Tributary Tres Pinos Creek	1912	4,500	Recreation	-	-	-	-	-	-	X	-	-
Central Coast	San Benito	Hawkins Dam	Dam	Hawkins Lake	Ausaymas Cattle Co.	Tributary Arroyo De Las Viboras	1928	575	-	-	-	-	-	-	-	-	-	X
Central Coast	San Benito	J V De Laveaga Dam	Dam	-	Las Auilas Corporation	Tributary Quien Sabe Creek	1940	514	-	-	-	-	-	-	-	-	-	X
Central Coast	San Benito	Percolation Area Dam	Dam	-	Las Auilas Corporation	Tributary Los Muertos Creek	1951	430	-	-	-	-	-	-	-	-	-	X
Central Coast	San Benito	Vessey Dam	Dam	-	C. Schroder	Tributary Tequisquita Slough	1945	258	-	-	-	-	-	-	-	-	-	X
Central Coast	San Benito	Santa Ana Creek Tributary Retention Dam	Dam	Santa Ana Creek	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Central Coast	San Luis Obispo	Nacimiento Reservoir	Reservoir	-	Monterey County Water Resources Agency	Nacimiento River	1957	350,000	Flood Management, Groundwater Recharge	X	X	X	-	X	-	X	-	-
Central Coast	San Luis Obispo	Twitchell Dam	Dam	Twitchell Reservoir	US Bureau of Reclamation	Cuyama River	1958	240,000	Flood Management	-	X	-	-	-	-	-	-	-
Central Coast	San Luis Obispo	Lopez Reservoir	Reservoir	-	San Luis Obispo County FCWCD	Arroyo Grande Creek	1969	52,500	Water Supply	X	X	X	-	X	-	X	-	-
Central Coast	San Luis Obispo	Salinas Dam	Dam	Santa Margarita Lake, Salinas Reservoir	U.S. Army Corps of Engineers (USACE) Los Angeles District	Salinas River	1941	43,200	Water Supply	-	-	-	-	-	-	X	-	-
Central Coast	San Luis Obispo	Whale Rock Dam	Reservoir	Whale Rock Reservoir	Whale Rock Commission	Old Creek	1960	40,662	Water Supply	-	X	-	-	-	X	-	-	-
Central Coast	San Luis Obispo	Terminal Dam	Dam	Lopez Reservoir	San Luis Obispo County FCWCD	Tributary Arroyo Grande	1969	844	-	-	-	-	-	-	-	-	-	X
Central Coast	San Luis Obispo	Righetti Dam	Dam	Righetti Reservoir	Ernest R. Righetti	West Corral De Piedra	1966	680	-	-	-	-	-	-	-	-	-	X
Central Coast	San Luis Obispo	San Marcos Dam	Dam	-	Harry E. Blythe, Jr.	San Marcos Creek	1964	325	-	-	-	-	-	-	-	-	-	X
Central Coast	San Luis Obispo	Eagle Ranch Dam	Dam	Eagle Ranch	Eagle Ranch, LLC	Hale Creek	1974	300	-	-	-	-	-	-	-	-	-	X
Central Coast	San Luis Obispo	Hartzell Dam	Dam	-	W.W. Hartzell, Jr.	Santa Rita Creek	1965	300	-	-	-	-	-	-	-	-	-	X
Central Coast	San Luis Obispo	Atascadero Park Dam	Dam	Atascadero Lake	City of Atascadero	Tributary Atascadero Creek	1918	250	-	-	-	-	-	-	-	-	-	X
Central Coast	San Luis Obispo	Los Tablas Creek Dam	Dam	-	MidState Bank & Trust	Las Tablas Creek	1961	180	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Central Coast	San Luis Obispo	Chorro Creek Dam	Dam	Chorro Reservoir	California Department of Corrections	Chorro Creek	1941	90	-	-	-	-	-	-	-	-	-	X
Central Coast	San Luis Obispo	Arroyo Grande Creek Dam	Dam	Lopez Reservoir	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Central Coast	San Luis Obispo	Meadow Creek	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Central Coast	San Luis Obispo	Salsipuedes Creek	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Central Coast	San Mateo	Bean Hollow No. 2 Dam	Dam	De Los Frijoles	Lake Lucerne Mutual Water Co.	Arroyo De Los Frijoles	1938	900	-	-	-	-	-	-	-	-	-	X
Central Coast	San Mateo	Bean Hollow No. 3 Dam	Dam	De Los Frijoles	Lake Lucerne Mutual Water Co.	Arroyo De Los Frijoles	1939	461	-	-	-	-	-	-	-	-	-	X
Central Coast	San Mateo	Lake Lucerne Dam	Dam	Lake Lucerne	Lake Lucerne Mutual Water Co.	Arroyo De Los Frijoles	1923	455	-	-	-	-	-	-	-	-	-	X
Central Coast	San Mateo	Green Oaks No. 1 Dam	Dam	-	Ana Nuevo Ranch	Green Oaks Creek	1936	322	-	-	-	-	-	-	-	-	-	X
Central Coast	San Mateo	Coastways Dam	Dam	Coastways Reservoir	Coastways Ranch	Tributary Ano Nuevo Creek	1951	100	-	-	-	-	-	-	-	-	-	X
Central Coast	Santa Barbara	Twitchell Dam	Dam	Twitchell Reservoir	U.S. Bureau of Reclamation	Cuyama River	1958	398,120	Water Supply , Flood Management	X	X	X	-	X	-	-	-	-
Central Coast	Santa Barbara	Bradbury Dam	Dam	Lake Cachuma	U.S. Bureau of Reclamation	Santa Ynez River	1953	239,200	Water Supply	-	X	-	-	-	-	-	-	-
Central Coast	Santa Barbara	Gibraltar Dam	Dam	Gibraltar Reservoir	City of Santa Barbara	Santa Ynez River	1920	9,998	Water Supply	-	X	-	-	-	-	-	-	-
Central Coast	Santa Barbara	Juncal Dam	Dam	Jameson Lake	Montecito Water District	Santa Ynez River	1930	6,140	Water Supply	-	X	-	-	-	-	-	-	-
Central Coast	Santa Barbara	Alisal Creek Dam	Dam	Alisal Creek	Alisal Ranch	Alisal Creek	1971	2,342	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Central Coast	Santa Barbara	Lauro Dam	Dam	Lauro Reservoir	U.S. Bureau of Reclamation	Diablo Creek	1952	870	-	-	-	-	-	-	-	-	-	X
Central Coast	Santa Barbara	Glen Anne Dam	Dam	Glen Anne Reservoir	U.S. Bureau of Reclamation	West Fork Glen Anne Canyon Creek	1953	660	-	-	-	-	-	-	-	-	-	X
Central Coast	Santa Barbara	Edwards Dam	Dam	Edwards Reservoir	Edwards Ranch, LLC	Tributary Gato Creek	1985	596	-	-	-	-	-	-	-	-	-	X
Central Coast	Santa Barbara	Dos Pueblos Dam	Dam	-	Rudolf R. Schulte	Tributary Dos Pueblos	1946	300	-	-	-	-	-	-	-	-	-	X
Central Coast	Santa Barbara	Lake Los Carneros Reservoir	Reservoir	-	City of Goleta	La Patera Depress	1932	168	-	-	-	-	-	-	-	-	-	X
Central Coast	Santa Barbara	Rancho Del Ciervo Dam	Dam	Dennis Reservoir	Meyerstein Trust	Tributary San Jose Creek	1938	165	-	-	-	-	-	-	-	-	-	X
Central Coast	Santa Barbara	Sheffield Dam	Dam	Sheffield Reservoir	City of Santa Barbara	Sycamore Creek	1925	138	-	-	-	-	-	-	-	-	-	X
Central Coast	Santa Barbara	Runoff Control Facility Reservoir	Reservoir	-	Casmalia Resources	Tributary Casmalia Creek	1899	137	-	-	-	-	-	-	-	-	-	X
Central Coast	Santa Barbara	Santa Monica Debris Basin	Debris Basin	-	Santa Barbara County FCWCD	Santa Monica Creek	1978	79	Flood Management	-	-	-	-	-	-	-	-	-
Central Coast	Santa Barbara	Ortega Dam	Dam	Ortega Reservoir	U.S. Bureau of Reclamation	Santa Ynez River Offstream	1958	72	-	-	-	-	-	-	-	-	-	X
Central Coast	Santa Barbara	Carpinteria Dam	Dam	Carpinteria Reservoir	U.S. Bureau of Reclamation	Carpinteria Creek Offstream	1954	40	-	-	-	-	-	-	-	-	-	X
Central Coast	Santa Barbara	Alamo Pintado Creek	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Central Coast	Santa Barbara	Orcutt Creek	Reservoir	-	Unknown	Orcutt Creek	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Central Coast	Santa Barbara	Rodeo San Pasqual Debris Basin	Debris Basin	-	NRCS, Santa Barbara County FCWCD	Rodeo and San Pasqual creeks	Mid 1960s	Unknown	Flood Management	-	-	-	-	-	-	-	-	-
Central Coast	Santa Barbara	San Miguel Debris Basin	Debris Basin	-	Natural Resources Conservation Service (NRCS) Santa Barbara County Flood Control and Water Conservation District (FCWCD)	San Miguel Creek	Mid 1980s	Unknown	Flood Management	-	-	-	-	-	-	-	-	-
Central Coast	Santa Clara	Uvas Reservoir	Reservoir	-	Santa Clara Valley Water District	Uvas Creek	1957	10,000	Water Supply	-	X	-	-	X	-	-	-	X
Central Coast	Santa Clara	North Fork Dam	Dam	Lake Clementine	Pacheco Pass Water District	Pacheco Creek	1939	6,150	Irrigation	-	-	X	-	-	-	-	-	-
Central Coast	Santa Clara	Murry Dam	Dam	-	California Department of Parks and Recreation	Mississippi Creek	1957	715	-	-	-	-	-	-	-	-	-	X
Central Coast	Santa Clara	Coit Dam	Dam	-	California Department of Parks and Recreation	Tributary North Fork Pacheco Creek	1956	275	-	-	-	-	-	-	-	-	-	X
Central Coast	Santa Clara	R Simoni Irrigation Dam	Dam	Uvas Reservoir	Della Erta Simoni	Hay Canyon	1961	152	-	-	-	-	-	-	-	-	-	X
Central Coast	Santa Clara	DeBell Dam	Dam	Sprig Lake	Michael Bonfante	Tributary Bodfish Creek	1952	120	-	-	-	-	-	-	-	-	-	X
Central Coast	Santa Clara	Peabody Dam	Dam	-	Lois Long	Tributary Llagas Creek	1950	68	-	-	-	-	-	-	-	-	-	X
Central Coast	Santa Clara	Selvage No. 2 Dam	Dam	-	Lucky Hereford Ranch	Tributary Llagas Creek	1948	24	-	-	-	-	-	-	-	-	-	X
Central Coast	Santa Clara	Rock Dam	Dam	Miller Slough	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Central Coast	Santa Cruz	Newell Dam	Dam	Loch Lomond	City of Santa Cruz	Newell Creek	1960	8,991	Water Supply	-	X	-	-	-	-	X	-	-
Central Coast	Santa Cruz	Soda Lake Dam	Dam	Soda Lake	Granite Rock Co.	Tributary Pajaro River	1978	1,983	-	-	-	-	-	-	-	-	-	X
Central Coast	Santa Cruz	Mill Creek Dam	Dam	Mill Creek	Lockheed Missiles and Space Co., Inc.	Mill Creek	1889	223	-	-	-	-	-	-	-	-	-	X
Central Coast	Santa Cruz	Cowell Reservoir Dam	Dam	Cowell Reservoir	Regents of the University of California	Tributary Pacific Ocean	1890	175	-	-	-	-	-	-	-	-	-	X
Central Coast	Santa Cruz	Bay Street Reservoir Dam	Dam	Bay Street Reservoir	City of Santa Cruz	Offstream	1924	112	-	-	-	-	-	-	-	-	-	X
Central Coast	Santa Cruz	Sempervirens Dam	Dam	Sempervirens Reservoir	California Department of Parks and Recreation	Sempervirens Creek	1951	78	-	-	-	-	-	-	-	-	-	X
Central Coast	Santa Cruz	Oak Site Dam	Dam	-	California Department of Forestry	Tributary Big Creek	1969	20	-	-	-	-	-	-	-	-	-	X
Central Coast	Santa Cruz	Lampico Reservoir	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Central Coast	Santa Cruz	San Lorenzo River	Weir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
Central Coast	Santa Cruz	San Lorenzo River Reservoir	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Colorado River	Imperial	Salton Sea Dike	Dike	-	U.S. Bureau of Reclamation	Unknown	Unknown	233,000	Irrigation	-	-	X	X	-	-	X	-	-
Colorado River	Imperial	Imperial Diversion Dam	Dam	Imperial Reservoir	U.S. Bureau of Reclamation	Colorado River	1938	160,000	Irrigation	-	-	X	-	-	-	-	-	-
Colorado River	Imperial	North Dike	Dike	Senator Wash Reservoir	U.S. Bureau of Reclamation	Senator Wash Offstream	1966	17,766	Hydroelectricity	-	-	-	-	-	X	-	-	-
Colorado River	Imperial	Senator Wash Dam	Dam	Senator Wash Reservoir	U.S. Bureau of Reclamation	Senator Wash	1966	17,766	Water Supply	-	X	-	-	-	X	X	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Colorado River	Imperial	Squaw Lake Dike	Dike	Senator Wash Reservoir	U.S. Bureau of Reclamation	Senator Wash Offstream	1966	17,766	Hydroelectricity	-	-	-	-	-	X	X	-	-
Colorado River	Imperial	Bernard Galleano Reservoir	Reservoir	-	Imperial Irrigation District	offstream (canal)	1988	425	Irrigation	-	-	X	X	-	-	-	-	-
Colorado River	Imperial	Young Reservoir	Reservoir	-	Imperial Irrigation District	Interceptor canal	1996	275	Irrigation	-	-	X	-	-	-	-	-	-
Colorado River	Imperial	Carl C. Bevins Reservoir	Reservoir	-	Imperial Irrigation District	offstream (East Highline Canal)	1991	253	Irrigation	-	-	X	-	-	-	-	-	-
Colorado River	Imperial	Milas Russell, Sr. Reservoir	Reservoir	-	Imperial Irrigation District	offstream (canal)	1996	200	Irrigation	-	-	X	-	-	-	-	-	-
Colorado River	Imperial	El Centro Water Purification Plant Reservoir	Reservoir	-	City Of El Centro	Offstream	1956	185	Water Supply	-	X	-	-	-	-	-	-	-
Colorado River	Imperial	H. "Red" Sperber Reservoir	Reservoir	-	Imperial Irrigation District	offstream (Central Main Canal)	1982	Unknown	Irrigation	-	-	X	-	-	-	-	-	-
Colorado River	Imperial	J.M. Sheldon Reservoir	Reservoir	-	Imperial Irrigation District	offstream (East Highline and Vail Canals)	1976	Unknown	Irrigation	-	-	X	-	-	-	-	-	-
Colorado River	Imperial	Louise K. Willey Reservoir	Reservoir	-	Imperial Irrigation District	offstream (canal)	1996	Unknown	Irrigation	-	-	X	-	-	-	-	-	-
Colorado River	Imperial	Oscar Fudge Reservoir	Reservoir	Fudge Reservoir	Imperial Irrigation District	offstream (Westside Main Canal)	1977	Unknown	Irrigation	-	-	X	-	-	-	-	-	-
Colorado River	Imperial	Robert F. Carter Reservoir	Reservoir	-	Imperial Irrigation District	offstream (Rositas Canal)	1983	Unknown	Irrigation	-	-	X	-	-	-	X	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Colorado River	Riverside	East Side Detention Dike No. 1	Dike		U.S. Bureau of Reclamation	Whitewater River Offstream	1949	21,000	Flood Management	X	-	-	-	-	-	-	-	-
Colorado River	Riverside	East Side Detention Dike No. 2	Dike		U.S. Bureau of Reclamation	Whitewater River Offstream	1949	18,000	Flood Management	X	-	-	-	-	-	-	-	-
Colorado River	Riverside	West Side Detention Dike No. 4	Dike	-	U.S. Bureau of Reclamation	Whitewater River Offstream	1968	4,900	Flood Management	X	-	-	-	-	-	-	-	-
Colorado River	Riverside	Wide Canyon Dam	Dam	-	Riverside County FCWCD	West Wide Canyon	1968	1,490	Flood Management	X	-	-	X	-	-	-	-	-
Colorado River	Riverside	West Side Detention Dike No. 3	Dike	-	U.S. Bureau of Reclamation	Whitewater River Offstream	1970	1,300	Irrigation	-	-	X	-	-	-	-	-	-
Colorado River	Riverside	Tachevah Creek Detention Dam	Dam	-	Riverside County FCWCD	Tachevah Creek	1964	650	Flood Management	X	-	-	-	-	-	-	-	-
Colorado River	Riverside	West Side Detention Dike No. 2	Dike	-	U.S. Bureau of Reclamation	Whitewater River Offstream	1968	630	Flood Management	X	-	-	-	-	-	-	-	-
Colorado River	Riverside	Tahquitz Creek Debris	Debris Basin	-	Riverside County FCWCD	Tahquitz Creek	1991	75	Flood Management	X	-	-	-	-	-	-	-	-
Colorado River	Riverside	Palo Verde Diversion Dam	Dam	Palo Verde	Unknown	Colorado River	Unknown	Unknown	Irrigation	-	-	X	-	-	-	-	-	-
Colorado River	Riverside	West Magnesia Debris Basin	Debris Basin	-	USACE, Riverside County FCWCD	West Magnesia Canyon	1985	Unknown	Flood Management	X	-	-	-	-	-	-	-	-
Colorado River	San Bernardino	Copper Basin Dam	Dam	Copper Basin Reservoir	Metropolitan Water District of Southern California	Copper Basin	1938	22,000	Water Supply	-	X	-	-	-	-	-	-	-
Colorado River	San Bernardino	Gene Wash Dam	Dam	Gene Wash Reservoir	Metropolitan Water District of Southern California	Gene Wash	1937	6,300	Water Supply	-	X	-	-	-	-	-	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Colorado River	San Bernardino	Lake Mead/Powell Reservoir	Reservoir	-	U.S. Bureau of Reclamation	Colorado River	1936	1,500	Flood Management	X	X	-	-	-	X	X	-	-
Colorado River	San Bernardino	Parker Dam	Dam	Lake Havasu	U.S. Bureau of Reclamation	Colorado River	1938	Unknown	Hydroelectricity	-	-	-	-	-	X	X	-	-
Colorado River	San Diego	Wuest Dam	Dam	-	Wuest Estate Company	McCain Creek	1928	280	Recreation	-	-	-	-	-	-	X	-	-
North Coast	Humboldt	Benbow Dam	Dam	Benbow Lake	California Department of Parks and Recreation	South Fork Eel River	1932	1,060	Hydroelectricity	-	-	X	X	-	X	X	-	-
North Coast	Humboldt	Big Lagoon Dam	Dam	Big Lagoon	California Redwood Acquisition Company	Big Lagoon	1947	780	Ecosystem	-	-	-	X	-	-	X	-	X
North Coast	Humboldt	Scotia Log Pond	Reservoir	-	The Pacific Lumber Co.	Tributary Eel River	1910	210	-	-	-	-	-	-	-	-	-	X
North Coast	Humboldt	Arcata Dam	Dam	Jolly Giant Creek	City of Arcata	Jolly Giant Creek	1937	46	Water Supply	-	X	-	-	-	-	-	-	X
North Coast	Lake	Scott Dam	Dam	Lake Pillsbury	Pacific Gas and Electric Company	Eel River	1921	73,000	Water Supply, Hydroelectricity	-	X	-	-	-	X	X	-	X
North Coast	Mendocino	Coyote Valley Dam	Dam	Lake Mendocino	USACE San Francisco District	East Fork Russian River	1959	155,500	Flood Management, Water Supply, Hydroelectricity, Recreation	X	X	-	-	-	X	X	-	-
North Coast	Mendocino	Jayne's Lake Dam	Dam	-	Eden Valley Ranch, LLC	Toney Creek	1985	1,225	-	-	-	X	-	-	-	-	-	X
North Coast	Mendocino	Scout Lake Dam	Dam	Scout Lake	Boy Scouts of America, San Francisco Bay Area Council	Tributary Berry Creek	1964	1,140	-	-	-	-	X	-	-	X	-	X
North Coast	Mendocino	Morris Dam	Dam	-	City of Willits	James Creek	1927	845	Water Supply	-	X	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
North Coast	Mendocino	Cape Horn Dam	Dam	Van Arsdale Reservoir	Pacific Gas and Electric Company	South Eel River	1907	700	Hydropower	-	X	-	-	-	X	-	-	X
North Coast	Mendocino	Centennial Dam	Dam	-	City of Willits	Davis Creek	1990	635	Water Supply	-	X	-	-	-	-	-	-	X
North Coast	Mendocino	Bradford Reservoir	Reservoir	-	Robert L. Bradford	Tributary Russian River	1985	440	-	-	-	-	-	-	-	-	-	X
North Coast	Mendocino	Mast Dam	Dam	-	Stacy Holland	Tributary Cahto Creek	1963	380	Irrigation	-	-	X	X	-	-	X	-	X
North Coast	Mendocino	Crawford Ranch Dam	Dam	-	McDowell Valley Vineyards	Tributary McDowell Creek	1972	340	Recreation	-	-	X	-	-	-	X	-	-
North Coast	Mendocino	Round Mountain Dam	Dam	-	Round Mountain Cooperative Community, Inc.	Tributary York Creek	1964	282	-	-	-	-	-	-	-	-	-	X
North Coast	Mendocino	Brooktrails No. 3 North Dam	Dam	Lake Emily	Brooktrails CSD	Willits Creek	1970	275	-	-	-	-	-	-	-	-	-	X
North Coast	Mendocino	Bevans Creek Dam	Dam	-	Mr. Jon Babcock	Bevans Creek	1955	215	-	-	-	-	-	-	-	-	-	X
North Coast	Mendocino	Lolonis Vineyards Reservoir	Reservoir	-	Lolonis Vineyards, Inc.	Tributary West Fork Russian River	1999	209	-	-	-	-	-	-	-	-	-	X
North Coast	Mendocino	Williams Valley Reservoir	Reservoir	-	Roger A. and Michelle M. Burch	Tributary Short Creek	1965	200	-	-	-	-	-	-	-	-	-	X
North Coast	Mendocino	Mcguire Dam	Dam	-	Soper Wheeler Co.	South Fork Noyo River	1967	190	-	-	-	-	-	-	-	-	-	X
North Coast	Mendocino	Ridgewood Dam	Dam	Walker Lake	The Walker Lake Association	Forsythe Creek	1929	185	-	-	-	-	-	-	-	-	-	X
North Coast	Mendocino	Ada Rose Lake Dam	Dam	Lake Ada Rose Reservoir	Brooktrails Community Services District	Tributary Willets Creek	1964	138	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
North Coast	Mendocino	McNab Dam	Dam	-	Fetzer Vineyards	McNab Creek	1947	96	-	-	-	-	-	-	-	-	-	X
North Coast	Mendocino	Mendocino 3 Upper Dam	Dam	-	Mendocino County	Middle Creek	1915	85	-	-	-	-	-	-	-	-	-	X
North Coast	Mendocino	Mill Pond Dam	Dam	Mill Pond	Georgia Pacific Corporation	Tributary Pacific Ocean	1885	72	-	-	-	-	-	-	-	-	-	X
North Coast	Mendocino	Cornett Dam	Dam	-	Mrs. Mildred Cornett	Tributary Russian River	1974	65	-	-	-	-	-	-	-	-	-	X
North Coast	Mendocino	Chinquapin Dam	Dam	-	Mendocino County	Moore Creek	1971	45	-	-	-	-	-	-	-	-	-	X
North Coast	Mendocino	Perry Gulch Dam	Dam	-	Perry Gulch Ranch	Tributary Perry Gulch	1980	33	-	-	-	-	-	-	-	-	-	X
North Coast	Mendocino	Mendocino Middle Dam	Dam	-	Mendocino County	Middle Creek	1908	27	-	-	-	X	-	-	-	-	-	X
North Coast	Mendocino	Schwindt Dam	Dam	-	David Schwindt and Riendo Arr	Tributary Burns Creek	Unknown	23	-	-	-	-	-	-	-	-	-	X
North Coast	Mendocino	Casper Creek	Weir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
North Coast	Mendocino	South Fork Caspar Creek	Weir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
North Coast	Modoc	Clear Lake Dike Dam	Dam	Clear Lake	U.S. Bureau of Reclamation	Lost River	1910	597,500	-	-	X	X	-	-	-	X	-	X
North Coast	Modoc	A and C Reservoirs	Reservoir	Avanzino	Carey Ranches	South Fork Willow Creek	1923	800	-	-	-	-	-	-	-	-	-	X
North Coast	Modoc	Big Johnson Dam	Dam	-	Stanley Johnson	Tributary Lost River	1959	410	-	-	-	-	-	-	-	-	-	X
North Coast	Modoc	Boles Meadow Reservoir	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	X	X	-	-	X	-	-	X
North Coast	Modoc	Diamond Reservoir Dam	Dam	Diamond Reservoir	Unknown	Unknown	Unknown	Unknown	-	-	-	-	X	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
North Coast	Modoc	Dry Lake Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	X	-	-	X	-	X
North Coast	Modoc	Dry Valley Reservoir Dam	Dam	Dry Valley Reservoir	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
North Coast	Modoc	Hackamore Reservoir Dam	Dam	Hackamore Reservoir	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
North Coast	Modoc	Henski Reservoir Dam	Dam	Henski Reservoir	Unknown	Unknown	Unknown	Unknown	-	-	-	-	X	-	-	-	-	X
North Coast	Modoc	North Fork Willow Creek Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	X	-	-	-	-	X
North Coast	Modoc	Pease Flat	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
North Coast	Modoc	Reservoir F	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	X	-	-	X	-	X
North Coast	Modoc	Reservoir G	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	X	-	-	-	X	-	X
North Coast	Modoc	Spaulding Reservoir Dam	Dam	Spaulding Reservoir	Unknown	Unknown	Unknown	Unknown	-	-	-	X	X	-	-	-	-	X
North Coast	Modoc	Surveyors Valley Reservoir	Reservoir	-	Unknown	Davis Creek	Unknown	Unknown	-	-	-	-	X	-	-	X	-	X
North Coast	Modoc	Telephone Flat Reservoir Dam	Dam	Telephone Flat Reservoir	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
North Coast	Modoc	Timbered Ridge Reservoir	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
North Coast	Modoc	Whitney Reservoir	Reservoir	-	Unknown	none	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
North Coast	Siskiyou	Copco No. 1 Dam	Dam	Copco Reservoir	Pacific Power And Light Company	Klamath River	1922	77,000	Hydroelectricity, Recreation	-	-	-	-	-	-	-	-	X
North Coast	Siskiyou	Iron Gate Dam	Dam	Iron Gate Reservoir	PacifiCorp	Klamath River	1962	58,000	Hydroelectricity, Recreation	-	-	-	-	-	X	X	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
North Coast	Siskiyou	Dwinnell Dam	Reservoir	Lake Shastina	Montague Water Conservation District	Shasta River	1928	50,000	Water Supply	-	X	X	-	-	-	-	-	X
North Coast	Siskiyou	Steamboat Lake Dam	Dam	Lake Steamboat	California Department of Fish and Wildlife	Tributary Little Shasta River	1968	2,700	Water Supply, Irrigation	-	X	X	-	-	-	-	-	-
North Coast	Siskiyou	Trout Lake Dam	Dam	Trout Lake	California Department of Fish and Wildlife	Tributary Little Shasta River	1960	2,108	-	-	-	-	X	-	-	X	-	X
North Coast	Siskiyou	Shelley Dam	Dam	-	Dr. I. Jack Cowley	Webb Gulch	1952	364	-	-	-	-	-	-	-	-	-	X
North Coast	Siskiyou	Campbell Lake Dam	Dam	-	Jennifer S. and John W. Menke	Shackleford Creek	1929	350	-	-	-	-	-	-	-	-	-	X
North Coast	Siskiyou	Dwight Hammond Dam	Dam	-	Hammond Lake Irrigation Association	Tributary Shasta River	1959	348	-	-	-	-	-	-	-	-	-	X
North Coast	Siskiyou	Juanita Lake Dam	Dam	-	California Department of Fish and Wildlife	Tributary Musgrave Creek	1964	348	Recreation	-	-	-	X	-	-	X	-	X
North Coast	Siskiyou	Fiock No. 2 Dam	Dam	-	Robert J. Cena	Tributary Shasta River	1946	318	-	-	-	-	-	-	-	-	-	X
North Coast	Siskiyou	Greenhorn Dam	Dam	Greenhorn Reservoir	City of Yreka	Greenhorn Creek	1960	251	-	-	X	-	-	-	-	-	-	X
North Coast	Siskiyou	Bass Lake Dam	Dam	Bass Lake	California Department of Fish and Wildlife	Tributary Little Shasta River	1949	223	-	-	-	-	-	-	-	-	-	X
North Coast	Siskiyou	George Fiock No. 1 Dam	Dam	-	The Kuck Brothers	Tributary Shasta River	1954	223	-	-	-	-	-	-	-	-	-	X
North Coast	Siskiyou	Barton Dam	Dam	Barton Lake	Madison Valley Investment Partners	White Slough	1964	160	-	-	-	-	-	-	-	-	-	X
North Coast	Siskiyou	Montague No. 2 Dam	Dam	Montague Reservoir	City of Montague	Tributary Oregon Slough	1978	160	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
North Coast	Siskiyou	Ray Soule Reservoir Dam	Dam	Ray Soule Reservoir	Skip Soule	Tributary Lower Shasta River	1953	132	-	-	-	-	-	-	-	-	-	X
North Coast	Siskiyou	Cloak Lake Dam	Dam	Cloak Lake	Madison Valley Investment Partners	Tributary Shasta River	1955	123	-	-	-	-	-	-	-	-	-	X
North Coast	Siskiyou	Lake Suzanne Dam	Dam	-	Mark and Melody Mariani	Tributary Shasta River	1962	89	-	-	-	-	-	-	-	-	-	X
North Coast	Siskiyou	Copco No 2 Dam	Dam	-	PacifiCorp	Klamath River	1925	55	Hydroelectricity, Recreation	-	-	-	-	-	-	-	-	X
North Coast	Sonoma	Warm Springs Dam	Dam	Lake Sonoma	USACE San Francisco District	Dry Creek	1982	449,000	Water Supply	X	X	X	-	X	-	X	-	-
North Coast	Sonoma	Santa Rosa Creek Reservoir Dam	Dam	Santa Rosa Creek Reservoir (Spring Lake)	NRCS, Sonoma County Water Agency	Santa Rosa Creek Offstream	1964	3,550	Flood Management	X	-	-	-	-	-	X	-	-
North Coast	Sonoma	Meadow Lane Dam	Dam	-	City of Santa Rosa	Offstream	1979	2,100	Irrigation	-	-	X	-	-	-	-	X	X
North Coast	Sonoma	Delta Pond Dam	Dam	-	City of Santa Rosa	Tributary Russian River	1984	1,950	Irrigation	-	-	X	-	-	-	-	X	X
North Coast	Sonoma	Matanzas Creek Dam	Dam	Matanzas Creek Reservoir	Sonoma County Water Agency	Matanzas Creek	1963	1,500	Flood Control	X	-	-	-	-	-	-	-	-
North Coast	Sonoma	Merlo Reservoir	Reservoir	-	Harry A. Merlo	Fall Creek	1982	930	Irrigation	-	-	X	X	-	-	X	-	X
North Coast	Sonoma	Richardson Dam	Dam	Hedgpeth Lake	Soper Wheeler Company	Tributary Pepperwood Creek	1954	520	Water Supply	-	X	-	X	-	-	X	-	X
North Coast	Sonoma	Coen C3 Dam	Dam	-	Frei Bros/Gallo Glass Company	Tributary Dry Creek	1982	480	-	-	-	X	-	-	-	-	-	X
North Coast	Sonoma	Fountaingrove Dam	Dam	Fountaingrove Lake	City of Santa Rosa	Tributary Mark West Creek	1953	427	-	-	-	-	-	-	-	X	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
North Coast	Sonoma	Lytton Dam	Dam	-	The Salvation Army	Tributary Russian River	1956	410	-	-	-	-	-	-	-	-	-	X
North Coast	Sonoma	Annadel No. 1 Dam	Dam	Lake Ilsanjo	State Department of Parks and Recreation	Spring Creek	1956	395	Recreation	-	-	-	-	-	-	X	-	X
North Coast	Sonoma	Lake Ralphine Dam	Dam	Lake Ralphine	City of Santa Rosa	Tributary Santa Rosa Creek	1882	387	Recreation	-	-	-	-	-	-	X	-	X
North Coast	Sonoma	Towibalyla Dam	Dam	-	Kendall Jackson Wine Estates, Ltd.	Tributary Franz Creek	1962	376	Irrigation	-	-	X	-	-	-	-	-	X
North Coast	Sonoma	Asti Dam	Dam	-	E & J Gallo Winery	Tributary Russian River	1955	325	Irrigation	-	-	X	-	-	-	-	-	X
North Coast	Sonoma	Airport Reservoir Dam	Dam	-	Sonoma County Water Agency	Offstream	2002	315	Irrigation	-	-	X	-	-	-	-	X	X
North Coast	Sonoma	Russian River No. 1 Dam	Dam	-	Russian RV Park and Recreation District	Russian River	1963	315	-	-	-	-	-	-	-	-	-	X
North Coast	Sonoma	Airport Storage Pond 2	Reservoir	-	Sonoma County Water Agency	Tributary Windsor Creek	1989	310	Irrigation	-	-	X	-	-	-	-	X	X
North Coast	Sonoma	Sea Ranch	Reservoir	-	The Sea Ranch Water Company	Offstream	1996	300	-	-	-	-	-	-	-	-	-	X
North Coast	Sonoma	Shiloh Ranch	Reservoir	-	Shiloh Homeowners Association	Tributary Russian River	1991	300	-	-	-	-	-	-	-	-	-	X
North Coast	Sonoma	Airport Storage Pond	Reservoir	-	Sonoma County Water Agency	Tributary Windsor Creek	1985	290	Irrigation	-	-	X	-	-	-	X	X	X
North Coast	Sonoma	Pond No. 2	Reservoir	-	City of Santa Rosa	Offstream	1952	290	Irrigation	-	-	X	-	-	-	-	X	X
North Coast	Sonoma	Vineyard Subdivision Dam	Dam	Vineyard Lake	The Vineyards Club, Inc.	Tributary Gill Creek	1962	245	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
North Coast	Sonoma	Hillside Ranch Dam	Dam	-	Rafanelli & Nahas Real Estate Dev	Tributary House Creek	1967	210	-	-	-	-	-	-	-	-	-	X
North Coast	Sonoma	Mallacomes Dam	Dam	-	Nancy F. Ogg, et al.	Foote Creek	1951	200	-	-	-	-	-	-	-	-	-	X
North Coast	Sonoma	Lake Helen Dam	Dam	-	Robert Maddocks	Tributary Russian River	1966	192	-	-	-	-	-	-	-	-	-	X
North Coast	Sonoma	Dutcher Creek Dam	Dam	-	E & J Gallo Winery	Tributary Borrelli Creek	1992	186	Irrigation	-	-	X	-	-	-	-	-	X
North Coast	Sonoma	Piner Creek Dam	Dam	Piner Creek Reservoir	Sonoma County Water Agency	Paulin Creek	1962	172	Flood Management	-	X	-	-	-	-	-	-	-
North Coast	Sonoma	Silver Shoon Ranch Dam	Dam	-	W. Berry Hill, et al.	Santa Rosa Creek	1955	160	-	-	-	-	-	-	-	-	-	X
North Coast	Sonoma	The Hill Ranch	Reservoir	-	Thia Kellner Hill	Santa Rosa Creek	1955	160	-	-	-	-	-	-	-	-	-	X
North Coast	Sonoma	Axell Dam	Dam	-	Kendall Jackson Wine Estates, Ltd.	Tributary Franz Creek	1952	155	Irrigation	-	-	X	-	-	-	-	-	X
North Coast	Sonoma	Dennis No. 2 Reservoir	Reservoir	-	E & J Gallo Winery	Tributary Dry Creek	1997	148	Irrigation	-	-	X	-	-	-	-	-	X
North Coast	Sonoma	Dina Bob Lake Dam	Dam	-	Mrs. Robert D. Ogg	Tributary Franz Creek	1955	139	-	-	-	-	-	-	-	-	-	X
North Coast	Sonoma	Middle Fork Brush Creek	Reservoir	-	Sonoma County Water Agency	Middle Fork Brush Creek	1961	138	-	X	-	-	-	-	-	-	-	X
North Coast	Sonoma	Lagunita Dam	Dam	-	Brookfield Investors, LLC	Tributary Windsor Creek	1954	133	-	-	-	-	-	-	-	-	-	X
North Coast	Sonoma	Healdsburg Rec Dam	Dam	-	County of Sonoma, Regional Parks Department	Russian River	1953	125	-	-	-	-	-	-	-	X	-	X
North Coast	Sonoma	Foote No. 4 Dam	Dam	-	Nancy F. Ogg, et al.	Tributary Kellogg Creek	1976	117	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
North Coast	Sonoma	Murray Dam	Dam	-	Coyote Hills Partnership	Tributary Franz Creek	1970	117	-	-	-	-	-	-	-	X	-	X
North Coast	Sonoma	Budge Dam	Dam	-	Jordan Vineyard and Winery	Tributary Russian River	1964	110	Irrigation	-	-	X	-	-	-	-	-	X
North Coast	Sonoma	Foothill Regulating Park Reservoir	Reservoir	-	County of Sonoma, Regional Parks Department	Tributary Windsor Creek	1963	109	-	-	-	-	-	-	-	X	-	X
North Coast	Sonoma	Norton No. 2 Dam	Dam	-	Ridge Vineyards	Tributary Dry Creek	1956	102	Irrigation	-	-	X	-	-	-	-	-	X
North Coast	Sonoma	Greeott Dam	Dam	-	Frederick and Donna Furth	Tributary Windsor Creek	1951	100	-	-	-	-	-	-	-	-	-	X
North Coast	Sonoma	Lafranchi Creek	Reservoir	-	Wine World, Inc.	Lafranchi Creek	1982	100	Irrigation	-	-	X	-	-	-	-	-	X
North Coast	Sonoma	Lowe Dam	Dam	-	Mrs. Paul Foster	Tributary Franz Creek	1959	95	-	-	-	-	-	-	-	-	-	X
North Coast	Sonoma	Azalea Dam	Dam	-	Kennith D. and Barbara J. Dyche	North Fork Lancel Creek	1955	85	-	-	-	-	-	-	-	-	-	X
North Coast	Sonoma	Foss Creek North Area Dam	Dam	-	City of Healdsburg	Foss Creek	1998	85	Flood Management	X	-	-	-	-	-	-	-	-
North Coast	Sonoma	Cook No. 2 Dam	Dam	-	E & J Gallo Winery	Tributary Dry Creek	1961	82	Irrigation	-	-	X	-	-	-	-	-	X
North Coast	Sonoma	Foote No. 3 Dam	Dam	-	Nancy F. Ogg, et al.	Tributary Redwood Creek	1970	77	-	-	-	-	-	-	-	-	-	X
North Coast	Sonoma	Donovan Dam	Dam	-	Frederick and Donna Furth	Tributary Windsor Creek	1953	70	-	-	-	-	-	-	-	-	-	X
North Coast	Sonoma	Salinger Dam	Dam	-	Dr. Walter Byck	Tributary Mark West Creek	1952	58	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
North Coast	Sonoma	Bosch No. 2 Dam	Dam	-	Richard S. Toyfoya	Tributary Windsor Creek	1962	37	-	-	-	-	-	-	-	-	-	X
North Coast	Sonoma	John C. Warnecke Dam	Dam	-	John Carl Warnecke	Tributary Russian River	1974	30	-	-	-	-	-	-	-	-	-	X
North Coast	Trinity	Clair Engle Lake (Trinity Dam)	Reservoir	Trinity Lake	U.S. Bureau of Reclamation	Trinity River	1962	2,760,870	Hydroelectricity, Recreation, Water Supply, Flood Control	-	X	X	X	-	X	X	-	X
North Coast	Trinity	Robert W. Matthews Dam	Dam	Ruth Lake Reservoir	Humboldt Bay Municipal Water District	Mad River	1962	51,800	Water Supply	X	X	-	-	-	X	X	-	-
North Coast	Trinity	Lewiston Dam	Dam	Lewiston Lake	U.S. Bureau of Reclamation	Trinity River	1963	14,660	Power Supply, Irrigation	X	X	X	X	-	X	X	-	X
North Coast	Trinity	Ewing Dam	Dam	Ewing Reservoir	Trinity County Waterworks District 1	Ewing Gulch	1972	887	Water Supply	-	X	-	-	-	-	-	-	X
North Coast	Trinity	Jones Ranch	Reservoir	-	Eleanor Jones	Tributary Trinity River	1980	58	-	-	-	-	-	-	-	-	-	X
North Coast	Trinity	Three Forks Sediment Pond	Reservoir	-	Burgess, Norman R.	Rock Creek	1994	15	-	-	-	-	-	-	-	-	-	X
North Coast	Trinity	Grass Valley Creek Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
North Lahontan	Alpine	Harvey Place Dam	Dam	Harvey Place Reservoir	South Tahoe Public Utility District	Indian Creek	1989	3,700	-	X	X	-	-	-	-	-	-	X
North Lahontan	Alpine	Indian Creek Dam	Dam	Indian Creek Reservoir	South Tahoe Public Utility District	Indian Creek	1967	3,160	-	-	-	X	-	-	-	X	-	X
North Lahontan	Alpine	Heenan Lake Dam	Dam	Heenan Lake Reservoir	California Department of Fish and Wildlife	Tributary East Fork Carson River	1929	3,100	-	-	-	X	X	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
North Lahontan	Alpine	Red Lake Dam	Dam	Red Lake	California Department of Fish and Wildlife	Red Lake Creek	1924	1,410	-	-	-	-	X	-	-	-	-	X
North Lahontan	Alpine	Lower Kinney Lake Dam	Dam	-	Alpine Land and Reservoir Company	Tributary Silver Creek	1926	920	-	-	-	-	-	-	-	-	-	X
North Lahontan	Alpine	Kinney Meadows Dam	Dam	Kinney Reservoir	Alpine Land And Reservoir Company	Tributary Silver Creek	1929	900	-	-	-	-	-	-	-	-	-	X
North Lahontan	Alpine	Lower Sunset Dam	Dam	-	Alpine Land and Reservoir Company	Pleasant Valley Creek	Unknown	860	-	-	-	-	-	-	-	-	-	X
North Lahontan	Alpine	Scott Lake Dam	Dam	Scott Lake	F. Dressler Co. and K. Neddenriep	Tributary West Fork Carson River	1926	600	-	-	-	-	-	-	-	-	-	X
North Lahontan	Alpine	Wet Meadows Dam	Dam	Wet Meadows Reservoir	Alpine Land and Reservoir Company	Tributary Pleasant Valley Creek	Unknown	450	-	-	-	-	-	-	-	-	-	X
North Lahontan	Alpine	Tamarac Lake Dam	Dam	Tamarac Lake	Alpine Land and Reservoir Company	Tributary Pleasant Valley Creek	1905	400	-	-	-	-	-	-	-	-	-	X
North Lahontan	Alpine	Upper Kenny Lake	Reservoir	-	Alpine Land and Reservoir Company	Tributary Silver Creek	Unknown	328	-	-	-	-	-	-	-	-	-	X
North Lahontan	Alpine	Crater Lake Dam	Dam	Crater Lake	F. Dressler Co. and K. Neddenriep	Crater Lake Creek	1937	320	-	-	-	-	-	-	-	-	-	X
North Lahontan	Alpine	Lost Lake East Dam	Dam	Lost Lakes	Carson Water Subconservancy District	Lost Creek	1925	230	-	-	-	-	-	-	-	-	-	X
North Lahontan	Alpine	Upper Sunset Lake	Reservoir	-	Alpine Land and Reservoir Company	Upper Pleasant Valley Creek	1904	200	-	-	-	-	-	-	-	-	-	X
North Lahontan	Alpine	Lost Lake West Dam	Dam	Lost Lakes	Carson Water Subconservancy District	Lost Creek	1925	140	-	-	-	-	-	-	-	-	-	X
North Lahontan	El Dorado	Fallen Leaf Dam	Dam	Fallen Leaf Lake	United States Forest Service	Taylor Creek	1934	6,800	Recreation	-	-	-	-	-	-	-	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
North Lahontan	El Dorado	Echo Lake Dam	Dam	-	El Dorado Irrigation District	Tributary Upper Truckee River	1876	1,900	-	-	-	-	-	-	X	-	-	X
North Lahontan	El Dorado	Emergency Effluent Holding Dam	Dam	-	South Tahoe Public Utility District	Tributary Heavenly Valley Creek	1961	184	Wastewater	-	-	-	-	-	-	-	X	X
North Lahontan	Lassen	McCoy Flat Dam	Dam	McCoy Flat Reservoir	Lassen Irrigation Company	Susan River	1891	17,290	-	-	-	X	X	-	X	X	-	X
North Lahontan	Lassen	Red Rock No 1 Dam	Dam	Dodge Reservoir	Edgar S. Roberts	Red Rock Creek	1893	10,000	-	-	-	-	-	-	-	-	-	X
North Lahontan	Lassen	Heath Reservoir Dam	Dam	Heath Reservoir	Frank E. and George R. Heath, Jr.	Slate Creek	1965	8,650	-	-	-	-	-	-	-	-	-	X
North Lahontan	Lassen	Hog Flat Dam	Dam	Hog Flat Reservoir	Lassen Irrigation Company	Tributary Susan River	1891	8,000	-	-	-	X	X	-	X	X	-	X
North Lahontan	Lassen	Lake Leavitt Dam	Dam	Lake Leavitt	Lassen Irrigation Company	Tributary Susan River	1891	7,482	-	-	-	X	X	-	X	X	-	X
North Lahontan	Lassen	Round Valley Dam	Dam	Round Valley Reservoir	Jack and Thomas Swickard	Round Valley Creek	1892	5,500	-	-	-	-	-	-	-	-	-	X
North Lahontan	Lassen	Sworinger Dam	Dam	Sworinger Reservoir	John Estill and Lani Estill	Tributary Silver Creek	1961	4,050	-	-	-	-	-	-	-	-	-	X
North Lahontan	Lassen	Cramer Dam	Dam	-	Wood Ranch; Leland Wood, Jr.	Tributary Horse Lake	1910	3,000	-	-	-	-	-	-	-	-	-	X
North Lahontan	Lassen	Buckhorn Dam	Dam	Buckhorn Reservoir	Edgar S. Roberts	Buckhorn Creek	1904	2,000	-	-	-	-	-	-	-	-	-	X
North Lahontan	Lassen	Antelope Dam	Dam	Bald Mountain Reservoir	R.C. Roberts Ranches, LLC	Madeline Plains	1918	1,500	-	-	-	-	-	-	-	-	-	X
North Lahontan	Lassen	Branham Flat Dam	Dam	-	Mapes Ranch, Inc.	Branham Creek	1880	1,200	-	-	-	-	-	-	-	-	-	X
North Lahontan	Lassen	Mendiboure Dam	Dam	Mendiboure Reservoir	Pierre Mendiboure	Tributary Van Loan Creek	1949	1,130	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
North Lahontan	Lassen	Smoke Creek Dam	Dam	Smoke Creek Reservoir	Jackrabbit Properties, LLC	Smoke Creek	1949	960	-	-	-	-	-	-	-	-	-	X
North Lahontan	Lassen	Coon Camp Dam	Dam	-	Mapes Ranch, Inc.	Tributary Horse Lake	1900	548	-	-	-	-	-	-	-	-	-	X
North Lahontan	Lassen	Caribou Lake Dam	Dam	-	Roney Land & Cattle Co, Inc	Susan River	1928	460	-	-	-	-	-	-	-	-	-	X
North Lahontan	Lassen	Emerson Dam	Dam	-	M. Mallery and W. Mallery	Tributary Gold Run Creek	Unknown	418	-	-	-	-	-	-	-	-	-	X
North Lahontan	Lassen	Madeline Dam	Dam	-	Dennis A. and Rene Daugherty	Tributary Madeline Plains	1900	400	-	-	-	-	-	-	-	-	-	X
North Lahontan	Lassen	California Corrections Center II Reservoir	Reservoir	-	California Department of Corrections	Offstream	1995	368	-	-	-	-	-	-	-	-	-	X
North Lahontan	Lassen	Ward Lake Dam	Dam	Ward Lake	R & H Leasing	Tributary Susan River	1889	350	-	-	-	-	-	-	-	-	-	X
North Lahontan	Lassen	Fredonia Dam	Dam	-	Mapes Ranch, Inc.	Tributary Pine Creek	1914	300	-	-	-	-	-	-	-	-	-	X
North Lahontan	Lassen	California Corrections Center Reservoir	Reservoir	-	California Department of Corrections	Offstream	1980	280	-	-	-	-	-	-	-	-	-	X
North Lahontan	Lassen	Petes Valley Dam	Dam	-	Petes Valley Partners	Peters Creek	1954	240	-	-	-	-	-	-	-	-	-	X
North Lahontan	Lassen	Shugru Dam	Dam	Shugru Reservoir	Audrey Egan	Tributary Susan River	Unknown	195	-	-	-	-	-	-	-	-	-	X
North Lahontan	Lassen	Peconom Dam	Dam	-	John Fitzgerald	Antelope Valley	1920	173	-	-	-	-	-	-	-	-	-	X
North Lahontan	Lassen	Spaulding Dam	Dam	Spaulding Reservoir	R.C. Roberts Ranches, LLC	Tributary Madeline Plains	1954	147	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
North Lahontan	Lassen	Mardis Barry Dam	Dam	-	John Fitzgerald	Tributary Susan River	1941	113	-	-	-	-	-	-	-	-	-	X
North Lahontan	Lassen	Horse Lake Dam	Dam	-	Snow Storm Ranch	Snowstorm Creek	1912	75	-	-	-	-	-	-	-	-	-	X
North Lahontan	Lassen	Boot Creek Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
North Lahontan	Lassen	Elmers Reservoir Dam	Dam	Elmers Reservoir	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
North Lahontan	Lassen	Union Reservoir	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
North Lahontan	Modoc	Poison Springs Dam	Dam	Fee Reservoir	Fee Ranch, Inc. and P.H. Peterson	Rock Creek	1957	7,120	-	-	-	-	-	-	-	-	-	X
North Lahontan	Modoc	Boggs and Warren Dam	Dam	-	James and Lynette Harris	East Sand Creek	1922	1,058	-	-	-	-	-	-	-	-	-	X
North Lahontan	Modoc	Schadler Dam	Dam	Schadler Reservoir	Schadler Ranch, Inc.	Eight Mile Creek	1967	205	-	-	-	-	-	-	-	-	-	X
North Lahontan	Modoc	Burger Dam	Dam	-	Cason L. Baugh	Tributary Upper Lake	1968	161	-	-	-	-	-	-	-	-	-	X
North Lahontan	Mono	Bridgeport Dam	Dam	Bridgeport Reservoir	Walker River Irrigation District	East Walker River	1924	44,100	Irrigation, Flood Control	X	-	X	-	-	-	-	-	-
North Lahontan	Mono	Lower Twin Lake Dam	Dam	Twin Lakes	Centennial Livestock	Robinson Creek	1888	4,011	-	-	-	-	-	-	-	-	-	X
North Lahontan	Mono	Upper Twin Lake Dam	Dam	Twin Lake Reservoir	Centennial Livestock Attn: Dave Woods	Robinson Creek	1905	2,070	-	-	-	-	-	-	-	-	-	X
North Lahontan	Mono	Poore Lake Reservoir Dam	Dam	Poore Lake	Park Livestock Co.	Poore Creek	1900	1,200	-	-	-	-	-	-	-	-	-	X
North Lahontan	Mono	Lobdell Lake Dam	Dam	Lobdell Lake	William M. Weaver, Jr., and David Park	Desert Creek	1948	640	-	-	-	-	-	-	-	-	-	X
North Lahontan	Mono	Black Reservoir Dam	Dam	Junction Reservoir	Bently Family Limited Partnership	Black Creek	1905	185	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
North Lahontan	Nevada	Prosser Creek Reservoir	Reservoir	-	U.S. Bureau of Reclamation	Prosser Creek	1962	41,200	Flood Management, Irrigation	X	-	X	-	-	-	X	-	-
North Lahontan	Nevada	Boca Dam	Dam	Boca Reservoir	U.S. Bureau of Reclamation	Little Truckee River	1939	41,110	-	-	X	-	-	-	-	X	-	X
North Lahontan	Nevada	Martis Creek Dam	Dam	Martis Creek Lake	USACE	Martis Creek	1972	20,400	-	X	X	-	-	-	-	X	-	X
North Lahontan	Nevada	Donner Lake Dam	Dam		Truckee Meadows Water Authority	Donner Creek	1927	10,300	-	-	X	-	-	-	-	-	-	X
North Lahontan	Nevada	Donner Euer Valley Dam	Dam	-	Donner Euer Valley Corp.	Tributary South Fork Prosser Creek	1966	80	-	-	-	-	-	-	-	-	-	X
North Lahontan	Placer	Lake Tahoe Dam	Dam	Lake Tahoe	U.S. Bureau of Reclamation	Truckee River	1913	840,000	-	-	-	X	-	-	-	-	-	X
North Lahontan	Placer	Reservoir A	Reservoir	-	North Star CSD	West Martis Creek	1973	180	-	-	-	-	-	-	-	-	-	X
North Lahontan	Placer	Quail Lake Dam	Dam	Quail Lake	Tahoe City Public Utility District	Tributary Lake Tahoe	1926	70	-	-	-	-	-	-	-	-	-	X
North Lahontan	Placer	Prosser Creek Dam	Dam	Prosser Creek	U.S. Bureau of Reclamation	Prosser Creek	19591962	Unknown	-	X	-	X	-	-	-	-	-	X
North Lahontan	Sierra	Stampede Dam	Dam	Stampede Reservoir	U.S. Bureau of Reclamation	Little Truckee River	1970	280,250	Fish and Wildlife Protection	X	-	X	X	-	-	X	-	-
North Lahontan	Sierra	Stampede Dike	Dike	Stampede Reservoir	U.S. Bureau of Reclamation	Tributary Little Truckee River	1970	280,250	-	-	-	-	-	-	-	-	-	-
North Lahontan	Sierra	Independence Dam	Dam	Elery Lake Dam	Truckee Meadows Water Authority	Independenc e Creek	1939	18,500	-	-	X	-	-	-	-	-	-	X
Sacramento River	Alpine	Caples Lake Dam	Dam	Twin Lake	Pacific Gas and Electric Company	Tr Silver Fork	1922	21,580	Hydroelectricity	-	-	-	-	-	X	X	-	-
Sacramento River	Alpine	Caples Lake Auxiliary	Dam	-	El Dorado Irrigation District	Caples Creek	Unknown	12,600	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Amador	Silver Lake Dam	Dam	Silver Lake	El Dorado Irrigation District	Silver Fork	1876	3,840	Hydroelectricity	-	-	X	-	-	X	-	-	-
Sacramento River	Butte	Oroville Dam	Dam	Lake Oroville	DWR	Feather River	1968	3,537,577	-	X	X	-	-	-	X	X	-	X
Sacramento River	Butte	Sly Creek Dam	Dam	Sly Creek Reservoir	South Feather Water and Power Agency	Lost Creek	1961	65,050	-	-	-	X	-	-	X	-	-	X
Sacramento River	Butte	Thermalito Afterbay	Reservoir	-	DWR	Tr Feather River	1967	57,041	Water Supply, Hydroelectricity	-	X	-	-	-	X	X	-	-
Sacramento River	Butte	Thermalito Diversion Dam	Dam	-	DWR	Feather River	1967	13,328	Hydroelectricity	-	-	-	-	-	X	-	-	-
Sacramento River	Butte	Thermalito Forebay	Reservoir	-	DWR	Tr Cottonwood Creek	1967	11,768	Hydroelectricity	-	-	-	-	-	X	X	-	-
Sacramento River	Butte	Paradise Dam	Dam	Paradise Lake	Paradise Irrigation District	Little Butte Creek	1957	11,500	Irrigation	-	-	X	-	-	-	-	-	-
Sacramento River	Butte	Concow Dam	Dam	Concow Reservoir	Thermalito Table Mountain Irrigation District	Concow Creek	1925	6,370	Irrigation	-	-	X	-	-	-	-	-	-
Sacramento River	Butte	Lost Creek	Reservoir	-	South Feather Water and Power Agency	Lost Creek	1924	5,680	Hydroelectricity	-	-	-	-	-	X	-	-	-
Sacramento River	Butte	Philbrook Dam	Dam	Philbrook No. 1	Pacific Gas and Electric Company	Philbrook Creek	1926	5,180	Hydroelectricity	-	-	-	-	-	X	X	-	-
Sacramento River	Butte	Philbrook Saddle Dam	Dam	Philbrook No. 2	Pacific Gas and Electric Company	Philbrook Creek	1926	5,000	Hydroelectricity	-	-	-	-	-	X	X	-	-
Sacramento River	Butte	Ponderosa Diversion Dam	Dam	Ponderosa Reservoir	South Feather Water and Power Agency	SF Feather River	1962	4,750	-	-	-	-	-	-	-	-	-	X
Sacramento River	Butte	Magalia Dam	Dam	-	Paradise Irrigation District	Little Butte Creek	1918	2,900	-	-	X	X	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Butte	Poe Dam	Dam	-	Pacific Gas and Electric Company	NF Feather River	1959	1,150	Hydroelectricity	-	-	-	-	-	X	-	-	-
Sacramento River	Butte	Round Valley Dam	Dam	Round Valley Reservoir	Pacific Gas and Electric Company	W Br Feather River	1877	1,147	Hydroelectricity	-	-	-	-	-	X	-	-	-
Sacramento River	Butte	Miners Ranch Dam	Dam	Miners Ranch Reservoir	South Feather Water and Power Agency	Tr N Honcut Creek	1962	895	Hydroelectricity	-	-	-	-	-	X	-	-	-
Sacramento River	Butte	Feather River Hatchery Dam	Dam	Fish Barrier Dam	DWR	Feather River	1964	580	-	-	-	-	X	-	-	-	-	X
Sacramento River	Butte	A. L. Chaffin Dam	Dam	-	Estate of George R. Chaffin	Tr Cottonwood Creek	1957	450	-	-	-	-	-	-	-	-	-	X
Sacramento River	Butte	Forbestown Diversion Dam	Dam	-	South Feather Water and Power Agency	SF Feather River	1962	358	-	-	-	-	-	-	-	-	-	X
Sacramento River	Butte	California Park Reservoir	Reservoir	-	California Park Association	Dead Horse Slough	1986	335	-	-	-	-	-	-	-	-	-	X
Sacramento River	Butte	Lake Wyandotte Dam	Dam	Lake Wyandotte	South Feather Water and Power Agency	N Honcut Creek	1924	313	-	-	-	-	-	-	-	-	-	X
Sacramento River	Butte	Desalba Forebay Dam	Dam	-	Pacific Gas and Electric Company	Middle Butte Creek	1903	280	-	-	-	-	-	-	-	-	-	X
Sacramento River	Butte	Kunkle Dam	Dam	Kunkle Reservoir	Pacific Gas and Electric Company	Tr W Br Feather River	1907	253	-	-	-	-	-	-	-	-	-	X
Sacramento River	Butte	Lake Madrone Dam	Dam	Madrone Lake	Lake Madrone Water District	Berry Creek	1931	200	-	-	-	-	-	-	-	-	-	X
Sacramento River	Butte	Cannon Ranch Dam	Dam	Cannon Reservoir	Ronald J. and Lucy R. Boeger	Tr Oregon Gulch	1870	176	-	-	-	-	-	-	-	-	-	X
Sacramento River	Butte	Grizzly Creek Dam	Dam	-	Mr. and Mrs. Ronald T. Dreisbach	Grizzly Creek	1964	76	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Butte	Big Chico Creek Diversion Channel	Weir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
Sacramento River	Butte	Lindo Channel Diversion Weir	Weir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
Sacramento River	Butte	Little Chico Butte Creek Diversion Structure Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Butte	Little Chico Creek Diversion Structure Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Butte	Littlefield Dam	Dam	Littlefield Reservoir	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Butte	Morgan Reservoir	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Butte	Wilson Reservoir	Reservoir	-	Unknown	Stream from Lake Oroville	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Colusa	Coleman Dike	Dike	East Park Reservoir	U.S. Bureau of Reclamation	Little Stony Creek Offstream	1910	54,438	-	-	-	-	-	-	-	-	-	-
Sacramento River	Colusa	East Park Dam	Dam	East Park Reservoir	U.S. Bureau of Reclamation	Little Stony Creek	1910	54,438	Irrigation	-	-	X	-	-	-	-	-	-
Sacramento River	Colusa	East Park Dike 1	Dike	East Park Reservoir	U.S. Bureau of Reclamation	Little Stony Creek	1910	54,438	-	-	-	-	-	-	-	-	-	-
Sacramento River	Colusa	East Park Dike 2	Dike	East Park Reservoir	U.S. Bureau of Reclamation	Little Stony Creek	1910	54,438	-	-	-	-	-	-	-	-	-	-
Sacramento River	Colusa	East Park Dike 3	Dike	East Park Reservoir	U.S. Bureau of Reclamation	Little Stony Creek	1910	54,438	-	-	-	-	-	-	-	-	-	-
Sacramento River	Colusa	Gordon Dike	Dike	East Park Reservoir	U.S. Bureau of Reclamation	Little Stony Creek Offstream	1910	54,438	-	-	-	-	-	-	-	-	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Colusa	Funks Dam	Dam	Funks Reservoir	U.S. Bureau of Reclamation	Funks Creek	1976	2,312	Flow Regulation	-	X	-	-	-	-	-	-	-
Sacramento River	Colusa	York Hill 360 Dam	Dam	-	Catherine Townzen and Lucille Penning	Tr Bear Creek	1952	245	-	-	-	-	-	-	-	-	-	X
Sacramento River	Colusa	Rancho Rubini Dam	Dam	-	Hector and Nancy Rubini	Tr Bear Creek	1955	106	-	-	-	-	-	-	-	-	-	X
Sacramento River	Colusa	Rainbow Diversion Dam	Dam	-	U.S. Bureau of Reclamation	Stoney Creek	1914	100	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Union Valley Reservoir Dam	Dam	Union Valley Reservoir	Sacramento Municipal Utility District	Silver Creek	1963	230,000	Flood Management	X	-	-	-	-	-	-	-	-
Sacramento River	El Dorado	Loon Lake Auxiliary	Dam	-	Sacramento Municipal Utility District	Gerle Creek	1963	76,500	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Loon Lake Dam	Dam	-	Sacramento Municipal Utility District	Gerle Creek	1963	76,500	-	-	-	-	-	-	X	X	-	X
Sacramento River	El Dorado	Loon Lake Dike	Dike	-	Sacramento Municipal Utility District	Gerle Creek	1963	76,500	-	-	-	-	-	-	-	-	-	-
Sacramento River	El Dorado	Ice House Dike No. 1	Dike	-	Sacramento Municipal Utility District	South Fork Silver Creek	Unknown	46,000	-	-	-	-	-	-	-	-	-	-
Sacramento River	El Dorado	Ice House Dam	Dam	Ice House Reservoir	Sacramento Municipal Utility District	SF Silver Creek	1959	37,120	-	-	-	-	-	-	X	X	-	X
Sacramento River	El Dorado	Mark Edson Dam	Dam	Stumpy Meadows Reservoir	Georgetown Divide Public Utility District	Pilot Creek	1962	20,000	-	-	X	X	-	-	-	-	-	X
Sacramento River	El Dorado	Slab Creek Dam	Dam	Slab Creek Reservoir	Sacramento Municipal Utility District	SF American River	1967	16,600	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	El Dorado	Medley Lakes Dam	Dam	Lake Aloha	Pacific Gas and Electric Company	Tr SF American River	1923	5,350	Hydroelectricity	-	-	-	-	-	-	X	-	-
Sacramento River	El Dorado	Medley Lakes Auxiliary No. 4	Dam	-	El Dorado Irrigation District	South Fork American River	Unknown	5,280	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Chili Bar Reservoir	Reservoir	-	Pacific Gas and Electric Company	SF American River	1964	3,700	Hydroelectricity	-	-	-	X	-	X	X	-	-
Sacramento River	El Dorado	Junction Dam	Dam	-	Sacramento Municipal Utility District	Silver Creek	1962	3,250	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Brush Creek Dam	Dam	-	Sacramento Municipal Utility District	Brush Creek	1970	1,530	Hydroelectricity	-	-	-	-	-	X	-	-	-
Sacramento River	El Dorado	Rubicon Auxiliary	Dam	-	Sacramento Municipal Utility District	Feather River	1963	1,450	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Rubicon Reservoir Dam	Dam	Rubicon Reservoir	Sacramento Municipal Utility District	Rubicon River	1963	1,450	Hydroelectricity	-	X	-	-	-	X	-	-	-
Sacramento River	El Dorado	Gerle Dam	Dam	-	Sacramento Municipal Utility District	Gerle Creek	1962	1,200	Hydroelectricity	-	-	-	-	-	X	-	-	-
Sacramento River	El Dorado	Weber Reservoir	Reservoir	-	El Dorado Irrigation District	NF Weber Creek	1924	1,100	-	-	X	X	-	-	-	-	-	X
Sacramento River	El Dorado	Buck Island Auxiliary	Dam	-	Sacramento Municipal Utility District	Rockbound Creek	1963	1,070	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Buck Island Dam	Dam	-	Sacramento Municipal Utility District	Little Rubicon	1963	1,070	Hydroelectricity	-	-	-	-	-	X	-	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	El Dorado	Jacobs Creek Dam	Dam	-	Four Corners Landowners Association	Jacobs Creek	1948	587	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	El Dorado Forebay Dam	Dam	-	El Dorado Irrigation District	Long Canyon	1923	472	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Indian Creek Dam	Dam	Indian Creek Reservoir	Greenstone Country Owners Association	Indian Creek	1946	457	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Finnon Lake Dam	Dam	-	Mosquito Volunteer Fire Department	Jay Bird Creek	1905	400	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Camino Dam	Dam	Camino Reservoir	Sacramento Municipal Utility District	Silver Creek	1961	275	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Schubin Dam	Dam	-	Nick J. Schubin	Tr Webber Creek	1952	225	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Straza Dam	Dam	-	Black Rock Ranch, LLC	Black Rock Creek	1971	185	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Schmidell Lake Dam	Dam	Lake Schmidell	U.S. Fish and Wildlife Service	Tr Rubicon River	1955	184	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Blakely Dam	Dam	-	El Dorado Irrigation District	Tr SF American River	1875	152	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Williamson No. 1 Reservoir	Reservoir	-	M. Mak, M. Chan, and M. Lau	Tr Weber Creek	1926	150	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Volo Mining Company Dam	Dam	-	Robert Purser	Indian Creek	1958	148	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Niegel Dam	Dam	-	Rod Hinkle, et al.	Hastings Creek	1951	145	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Fay Gunby Dam	Dam	-	El Dorado Bonsai, Inc.	Tr Weber Creek	1961	117	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	El Dorado	Shaffer Reservoir	Reservoir	-	Echo Lane Investors, LLC	Indian Creek	1968	111	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Abrams Dam	Dam	Black Rock Reservoir	Black Rock Ranch, LLC	Hastings Creek	1950	110	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Manhattan Creek Dam	Dam	-	Virginia Johnson	Manhattan Creek	1952	110	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Aeree Dam	Dam	-	Pilot Hill Estates Homeowners Association	Tr Pilot Creek	1951	90	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Gastaldi Dam	Dam	-	Polly Gastaldi	Tr Webber Creek	1951	83	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Auburn Lake Trails Dam	Dam	-	Auburn Lake Trails Property Owners	Maine Bar Canyon	1978	68	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Cross Creek Ranch Dam	Dam	-	Ken Hill	Tr Webber Creek	1949	55	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Georgetown Control Dam	Dam	-	Georgetown Divide Public Utility District	Canyon Creek	1956	50	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Rock Creek Dam	Dam	Chiquita Lake	Larry B. Ford	Rock Creek	1932	34	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Robbs Peak Dam	Dam	-	Sacramento Municipal Utility District	SF Rubicon River	1963	30	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	Camp Creek Diversion Dam	Dam	Camp Creek	U.S. Bureau of Reclamation	Camp Creek	1953	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	El Dorado	New York Creek	Weir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
Sacramento River	El Dorado	North Fork American River Diversion Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Glenn	Stony Gorge Dam	Dam	Stony Gorge Reservoir	U.S. Bureau of Reclamation	Stony Creek	1928	58,500	-	X	-	X	-	-	X	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Glenn	E A Wright Dam	Dam	-	Mr. Fritz Mast	Small Creek	1950	400	-	-	-	-	-	-	-	-	-	X
Sacramento River	Glenn	Sanhedrin Ranch	Reservoir	-	George Kokkinakis	Stony Creek	1967	120	-	-	-	-	-	-	-	-	-	X
Sacramento River	Glenn	Hamilton Dam	Dam	-	Leon Whitney	Tr Watson Creek	1967	111	-	-	-	-	-	-	-	-	-	X
Sacramento River	Glenn	Stony Creek Gravel Dam	Dam	-	Glenn Colusa Irrigation District	Stony Creek	1906	100	Irrigation	-	-	X	-	-	-	-	-	X
Sacramento River	Glenn	Willow Creek	Reservoir	-	Unknown	None	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lake	Clear Lake	Lake	-	State of California	Cache Creek	Unknown	1,155,000	-	-	X	X	X	X	X	X	-	X
Sacramento River	Lake	Cache Creek Dam	Dam	Clear Lake	Yolo County FCWCD	Cache Creek	1914	313,000	-	-	X	X	X	X	X	X	-	X
Sacramento River	Lake	Indian Valley Dam	Dam	Indian Valley Reservoir	Yolo County FCWCD	N Fork Cache Creek	1976	300,000	-	X	X	X	-	-	-	X	-	X
Sacramento River	Lake	Tailings Impoundment Reservoir	Reservoir	-	Barrick Gold Corp.	Unknown	Unknown	60,350	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lake	Highland Creek Dam	Dam	Highland Springs Reservoir	Lake County Watershed Protection District	Highland Creek	1962	3,500	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lake	Coyote Creek Dam	Dam	Hidden Valley Lake	Hidden Valley Lake Association	Coyote Creek	1968	3,375	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lake	Geunoc Lake	Reservoir	-	Lilys Reach LLC	Bucksnort Creek	1928	3,237	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lake	McCreary Dam	Dam	McCreary Lake	Lilys Reach LLC	Bucksnort Creek	1961	2,098	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lake	Lake County Sanitation District 2 Dam	Dam	-	Lake County Sanitation District	Tr Lyons Creek	1976	870	Waste Water	-	-	-	-	-	-	-	X	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Lake	Adobe Creek	Reservoir	-	Lake County Watershed Protection District	Adobe Creek	1962	695	Flood Control	X	X	-	-	-	-	-	-	-
Sacramento River	Lake	Lakeport Dam	Dam	-	City of Lakeport Sewer District 1	Tr Manning Creek	1980	650	Waste Water	-	-	-	-	-	-	-	X	-
Sacramento River	Lake	Lake Bordeaux	Reservoir	-	Lilys Reach LLC	Tr Bucksnort Creek	1962	538	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lake	Lake County Sanitation District Dam	Dam	-	Lake County Sanitation District	Tr Burns Val Creek	1972	530	Waste Water	-	-	-	-	-	-	-	X	-
Sacramento River	Lake	Langtry Dam	Dam	-	Lilys Reach LLC	Tr Cassidy Creek	1992	525	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lake	Spring Valley Dam	Dam	Spring Valley Reservoir	County of Lake	Wolf Creek	1968	325	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lake	Bottoms Reservoir	Reservoir	-	William and Mary Bottoms	Tr Helena Creek	1990	315	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lake	Lake Burgundy Dam	Dam	-	Lilys Reach LLC	Tr Bucksnort Creek	1962	200	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lake	Bar X Ranch Reservoir No. 2	Reservoir	-	Heart Consciousness Church	Crazy Creek	2003	147	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lake	Peters Dam	Dam	-	Remore Valley Ranch	Benmore Creek	1940	112	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lake	Allen Dam	Dam	-	Evelyn Allen	Tr Kelsey Creek	1955	85	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lake	Graham Dam	Dam	-	Susan Amberson	Tr Highland Creek	1959	62	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lake	Coyote Creek Weir	Weir	-	Barrick Gold Corp.	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
Sacramento River	Lake	Detert Lake Dam	Dam	Detert Reservoir	Lilys Reach LLC	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Lake	Homestake Tailings Dam	Dam	-	Lake County Watershed Protection District	Tr Hunting Creek	1990	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lassen	Tule Lake	Reservoir	-	John Hancock Mutual Ins. Co.	Cedar Creek	1904	39,500	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lassen	Indian Ole Dam	Dam	Mountain Meadows Reservoir	Pacific Gas and Electric Company	Hamilton Creek	1924	24,800	Hydroelectricity	-	-	-	X	-	X	X	-	-
Sacramento River	Lassen	Collett Addition Dam	Dam	-	Malacha Hydro Limited Partnership	Tr Pit River	1991	7,800	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lassen	Coyote Flat Dam	Dam	-	John B. Crook	Coyote Creek	1928	5,250	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lassen	Silva Flat Dam	Dam	Silva Flat Reservoir	Rick and Tracy Boggs	Juniper Creek	1926	3,900	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lassen	Spooner Dam	Dam	Spooner Reservoir	Gary Johns	Tr Ash Creek	1906	3,123	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lassen	Iverson Dam	Dam	-	McArthur 1989 Trust	Tr Juniper Creek	1968	1,800	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lassen	Holbrook Reservoir	Reservoir	-	Betty Carrol and Craig Rulison	Ash Creek	1952	719	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lassen	Muck Valley Afterbay	Reservoir	-	Malacha Hydro Limited Partnership	Pit River Offstream	1990	420	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lassen	Elkins And Lane Dam	Dam	Lane Reservoir	William T. and Kathleen Deforest	Tr Ash Creek	1953	412	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lassen	Albaugh No. 1 Dam	Dam	-	J.E. Albaugh	Tr Pit River	1953	335	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lassen	Collett Afterbay Dam	Dam	-	Malacha Hydro Limited Partnership	Tr Sacramento River	1991	300	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lassen	Myers Dam	Dam	Myers Reservoir	Daran V. Myers	Tr Ash Creek	1957	279	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Lassen	Albaugh No 2 Dam	Dam	-	J.E. Albaugh	Tr Willow Creek	1966	270	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lassen	Beaver Creek Reservoir	Reservoir	-	Beaver Creek Ranch	Tr Beaver Creek	1978	214	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lassen	Leonard No 2 Dam	Dam	-	Drs. Eugene and Ann Breznock	Tr Ash Creek	1968	187	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lassen	Rains Creek	Reservoir	-	Richard W. Callison	Fraser Creek	1960	126	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lassen	Nine Springs Dam	Dam	Nine Springs Reservoir	Dan Tankersley	Tr Bull Run Slough	1954	125	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lassen	Gerig Dam	Dam	-	Gerig Dam Association	Pit River	1939	110	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lassen	Chace Valley Dam	Dam	-	Melvin D. Myers	Tr Butte Creek	1955	92	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lassen	Muck Valley Diversion Reservoir	Reservoir	-	Malacha Hydro Limited Partnership	Pit River	1988	24	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lassen	Bull Run Slough Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Lassen	Mill Pond Dam	Dam	Mill Pond Embankment	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Big Sage Dam	Dam	Big Sage Reservoir	Hot Springs Valley Irrigation District	Rattlesnake Creek	1921	77,000	-	-	-	X	-	-	-	-	-	X
Sacramento River	Modoc	West Valley Reservoir	Reservoir	-	South Fork Irrigation District	West Valley Creek	1936	23,000	-	-	-	X	-	-	X	X	-	X
Sacramento River	Modoc	Dorris Day Reservoir	Reservoir	Dorris Reservoir	California Pines Property Owners Association	Stockdill Slough	Unknown	20,690	-	-	-	-	X	-	-	-	-	X
Sacramento River	Modoc	Big Dobe North Dam	Dam	-	Ronald Schluter	Tr Rattlesnake Creek	1912	6,530	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Modoc	Lower Roberts Reservoir	Reservoir	-	Big Valley Mutual Water Company	Tr Pit River	1905	5,500	Water Supply	-	X	-	-	-	-	-	-	-
Sacramento River	Modoc	Cloverswale Dam	Dam	-	SX Ranch, Incorporated	Tr Witcher Creek	1973	4,620	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	S X 112 Dam	Dam	Essex Reservoir	SX Ranch, Incorporated	Tr Pit River	1917	4,225	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Big Dobe South Dam	Dam	-	Ronald Schluter	Tr Rattlesnake Creek	1912	3,860	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Ingals Swamp Dam	Dam	Dossir Brothers Reservoir	SX Ranch, Incorporated	Ingals Swamp	1918	2,850	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Payne Dam	Dam	Payne Reservoir	Ray or Judy Breiner	Tr SF Pit River	1928	2,850	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Duncan Dam	Dam	Duncan Reservoir	U.S. Fish and Wildlife Service	Tr Pit River	1919	2,575	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Bayley Reservoir Dam	Dam	Bayley Reservoir	Alturas Ranches, LLC	Crooks Canyon	1954	2,390	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Davis Creek Orchard Dam	Dam	Davis Creek Orchard Reservoir	Wilson Ranches	Roberts Creek	1975	1,841	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Huffman Antelope Dam	Dam	-	SX Ranch, Incorporated	Clover Swale	1922	1,550	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Taylor Creek No. 1 Dam	Dam	Taylor Reservoir	Greg Fowler	Taylor Creek	1952	1,500	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Little Juniper Dam	Dam	Little Juniper Reservoir	Alturas Ranches, LLC	L Juniper Creek	1926	1,370	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Curtis Capik Dam	Dam	-	Loren Crabtree	Tr NF Pit River	1965	1,367	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Danhauser Dam	Dam	-	John W. Capik	Tr SF Pit River	1890	1,258	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Modoc	Donovan Dam	Dam	-	Unknown	Rye Grass Swale	1953	1,234	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Toreson Dam	Dam	Ballard Reservoir	Mr. and Mrs. Robert G. Baird	Toms Creek	1898	1,140	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Graven Dam	Dam	-	Frederick R. & Mildred Anklin	Tr Canyon Creek	1917	1,100	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	McGinty Dam	Dam	McGinty Reservoir	U.S. Bureau of Indian Affairs	Mud Creek	1970	1,090	-	-	X	-	-	-	-	-	-	X
Sacramento River	Modoc	McGinty Saddle Dike	Dike	McGinty Reservoir	U.S. Bureau of Indian Affairs	Mud Creek	1970	1,090	-	-	-	-	-	-	-	-	-	-
Sacramento River	Modoc	Jack's Swamp Dam No. 2	Dam	-	Glen Nader	Tr Pit River	1926	1,013	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	McBrien Dam	Dam	McBrien Reservoir	Hagge Ranch, Inc.	Pit River	1880	1,000	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Renner Sibley Creek Dam	Dam	-	USA Investments Associates	Sibley Creek	1959	765	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Lauer Dam	Dam	Lauer Reservoir	U.S. Bureau of Indian Affairs	Tr NF Pit River	1900	600	-	-	X	-	-	-	-	-	-	X
Sacramento River	Modoc	Halls Meadows Reservoir	Reservoir	-	Joe and Karen Russ	Couch Creek	1941	581	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Rye Grass Swale Dam	Dam	Graves Reservoir	Rollie L. Gilliam	Tr Canyon Creek	1923	530	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Pickering Lumber Dam	Dam	-	Ronald H. Westfall and John P. Ochipinti	Tr Pit River	1932	500	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Lookout Dam	Dam	-	Lookout Dam Company	Pit River	1930	430	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Cummings Reservoir No 1 Dam	Dam	Lower Cummings Reservoir	Milano Land and Cattle Co., LLC	WF Rock Creek	1912	400	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Modoc	Mud Lake	Reservoir	-	Ronald Schluter	Tr NF Pit River	1926	300	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	White Reservoir	Reservoir	-	Richard Jennings	Tr Pit River	1918	290	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Upper Pasture Dam	Dam	Upper Pasture	Wilson Ranches	Yankee Jim Slough	Unknown	250	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Thomas Briles Dam	Dam	Briles Reservoir	Warren Hopkins	Tr Goose Lake	1910	209	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Hines Brothers Dam	Dam	Hines Reservoir	Craig Knight	Tr Pit River	1955	200	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Enquist Dam	Dam	-	Spencer Murfey	Tr Olivers Canyon	1919	185	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Plum Canyon Dam	Dam	Porter Reservoir	Warren Weber, et al.	Plum Creek	1913	184	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Leonard Johnson Dam	Dam	-	C. William Johnson	Dry Creek	1948	120	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Kramer Dam	Dam	Kramer Reservoir	Kramer Ranch, LLC	Widow Valley Creek	1937	118	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	James Porter Dam	Dam	Porter Reservoir	Terry and Carole York	Tr Parker Creek	1928	106	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Lindauer Concrete Dam	Dam	-	Carey Ranches	Pit River	1920	101	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Shedd Dam	Dam	-	Joe and Karen Russ	Tr NF Pit River	1962	100	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Carpenter Wilson Dam	Dam	Wilson Reservoir	Leon and Grace Urrutia	Cooley Gulch	1948	93	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Junkers Reservoir	Reservoir	-	Geraldine (Pokey) Silva	Tr Pit River	1923	71	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Clarke Dam	Dam	-	Juanita C. Gardner	Tr NF Pit River	1939	70	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Modoc	Big Juniper Creek Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Bucher Swamp Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	C Reservoir	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Dobe Swale Reservoir Dam	Dam	Dobe Swale Reservoir	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Emigrant Spring Reservoir	Reservoir	-	Peggy S. Brown	Emigrant Creek	1924	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Householder Dam	Dam	Householder Reservoir	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Householder Reservoir Dam	Dam	Householder Reservoir	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Indian Spring Reservoir	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Jim Creek Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Kelley and Griener Dam	Dam	Kelley Reservoir	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Lost Reservoir	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	North Fork Pit River	Weir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
Sacramento River	Modoc	Pine Creek Reservoir	Reservoir	-	U. S. Fish and Wildlife Service	Tributary to Pit River	Unknown	Unknown	-	-	X	-	X	-	-	X	-	X
Sacramento River	Modoc	Poindexter Reservoir	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Pretty Tree Reservoir	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Modoc	Rimrock Valley Reservoir	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Rock Creek Reservoir	Reservoir	-	Pacific Gas and Electric Company	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Upper Cummings Reservoir	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Modoc	Westside Canal	Weir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
Sacramento River	Modoc	Wood Flat Reservoir	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Napa	Monticello Reservoir	Reservoir	Lake Berryessa	Skalli Corporation	Putah Creek	1957	1,902,086	-	X	X	X	-	-	X	X	-	X
Sacramento River	Napa	Homestake Sed M1 Dam	Dam	-	Juliana Mutual Water Company	Tr Knoxville Creek	1984	39,259	-	-	-	-	-	-	-	-	-	X
Sacramento River	Napa	Dick Week Dam	Dam	-	Juliana Mutual Water Company	Tr Pope Creek	1955	3,140	-	-	-	-	-	-	-	-	-	X
Sacramento River	Napa	Eaton H. Magoon Lake Dam	Dam	-	Jerome W. Komes	Routan Creek	1965	2,762	-	-	-	-	-	-	-	-	-	X
Sacramento River	Napa	Metcalf Dam	Dam	-	Juliana Mutual Water Company	Tr Maxwell Creek	1974	1,045	-	-	-	-	-	-	-	-	-	X
Sacramento River	Napa	Usibelli No 2 Dam	Dam	-	Juliana Mutual Water Company	Tr Maxwell Creek	1973	900	-	-	-	-	-	-	-	-	-	X
Sacramento River	Napa	Moskowite Reservoir Dam	Reservoir	Moskowite Reservoir	U.S. Bureau of Reclamation	Tr Capell Creek	1955	472	-	-	-	-	-	-	-	-	-	X
Sacramento River	Napa	Blanchard Offner Dam	Dam	Lake Rodney	Jerome W. Komes and L. Martini	Tr Pope Creek	1963	274	-	-	-	-	-	-	-	-	-	X
Sacramento River	Napa	Duvall Dam	Dam	-	Juliana Mutual Water Company	Tr Pope Creek	1940	242	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Napa	Turkey Ranch	Reservoir	-	Magoon Estate, Ltd.	Tr Pope Creek	1999	240	-	-	-	-	-	-	-	-	-	X
Sacramento River	Napa	Napa Valley Lake	Reservoir	-	Harold Moskowite	Tr Putah Creek	1990	200	-	-	-	-	-	-	-	-	-	X
Sacramento River	Napa	Catacoula Dam	Dam	-	Vintage Ranch Properties, Inc.	Maxwell Creek	1953	183	-	-	-	-	-	-	-	-	-	X
Sacramento River	Napa	Long Valley West No. 2 Reservoir	Reservoir	-	Clinton and Nancy Pridmore	Tr Pope Creek	1982	177	-	-	-	-	-	-	-	-	-	X
Sacramento River	Napa	Hardester North Dam	Dam	-	Magoon Estate Limited	Tr Burton Creek	Under Construction	155	-	-	-	-	-	-	-	-	-	X
Sacramento River	Napa	Davis Dam	Dam	-	Unknown	Tr Pope Creek	1955	140	-	-	-	-	-	-	-	-	-	X
Sacramento River	Napa	Lower Twin Lake Dam	Dam	Twin Lakes	Juliana Mutual Water Company	Tr Pope Creek	1985	127	-	-	-	-	-	-	-	-	-	X
Sacramento River	Napa	Deer Creek Dam	Dam	-	Homestake Mining Company	Tr Pope Creek	1980	103	-	-	-	-	-	-	-	-	-	X
Sacramento River	Napa	Upper Twin Lake Dam	Dam	Twin Lakes	The Hess Collection Winery	Tr Pope Creek	1987	63	-	-	-	-	-	-	-	-	-	X
Sacramento River	Napa	Burns Dam	Dam	-	MVP Vineyards, LLC	Tr Swartz Creek	1956	62	-	-	-	-	-	-	-	-	-	X
Sacramento River	Napa	Lake La Verne Dam	Dam	-	Homestake Mining Company	Tr Capell Creek	1956	54	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Lake Spaulding No. 2 Dam	Dam	Spaulding Spillway	Pacific Gas and Electric Company	South Yuba River	1916	74,800	Hydroelectricity	-	-	-	-	-	-	-	-	-
Sacramento River	Nevada	Lake Spaulding No. 3 Auxiliary	Dam	Spaulding Emergency Spillway	Pacific Gas and Electric Company	South Yuba River	1919	74,800	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Lake Spaulding Dam	Dam	Lake Spaulding	Pacific Gas and Electric Company	SF Yuba River	1913	74,773	Hydroelectricity	-	-	-	-	-	X	X	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Nevada	Bowman Arch Dam	Dam	-	Pacific Gas and Electric Company	Canyon Creek	1927	68,500	Hydroelectricity	-	-	-	-	-	X	X	-	-
Sacramento River	Nevada	Bowman Lake	Reservoir	-	Nevada Irrigation District	Canyon Creek	1927	64,000	-	-	-	X	-	-	-	X	-	X
Sacramento River	Nevada	Scotts Flat Dam	Dam	Scotts Flat Reservoir	Nevada Irrigation District	Deer Creek	1948	49,000	Irrigation	-	-	X	-	-	-	-	-	-
Sacramento River	Nevada	Lake Fordyce Dam	Dam	-	Pacific Gas and Electric Company	Fordyce Creek	1873	48,900	-	-	-	-	-	-	X	-	-	X
Sacramento River	Nevada	French Lake Dam	Dam	-	Nevada Irrigation District	Canyon Creek	1859	12,500	-	X	X	X	-	-	X	-	-	X
Sacramento River	Nevada	Faucherie Dam	Dam	-	Nevada Irrigation District	Canyon Creek	1964	5,500	-	-	X	X	-	-	X	X	-	X
Sacramento River	Nevada	Van Giesan Dam	Dam	Lake Combie	Nevada Irrigation District	Bear River	1928	5,500	Water Supply , Irrigation	-	X	X	-	-	-	X	-	-
Sacramento River	Nevada	Meadow Lake Dam	Dam	Meadow Lake	Pacific Gas and Electric Company	Tr Fordyce Creek	1864	4,930	Hydroelectricity	-	-	-	-	-	-	-	-	-
Sacramento River	Nevada	Magnolia Dam	Dam	-	Lake of the Pines Association	Magnolia Creek	1967	4,150	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Faucherie Spillway Auxiliary	Dam	-	Nevada Irrigation District	Canyon Creek	1966	4,020	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Anthony House Dam	Dam	Lake Wildwood	Anderson & Anderson, Inc.	Deer Creek	1970	3,840	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Sawmill Lake Dam	Dam	Sawmill Lake	Nevada Irrigation District	Canyon Creek	1910	3,040	-	-	-	X	-	-	-	X	-	X
Sacramento River	Nevada	Sawmill Spillway Dam	Dam	-	Nevada Irrigation District	Canyon Creek	1910	3,030	-	-	-	X	-	-	-	-	-	X
Sacramento River	Nevada	Lake Sterling Dam	Dam	Lake Sterling	Pacific Gas and Electric Company	Tr Fordyce Creek	1877	1,648	Hydroelectricity	-	-	-	-	-	X	X	-	-
Sacramento River	Nevada	Deer Creek Diversion Dam	Dam	Lower Scotts Flat	Nevada Irrigation District	Deer Creek	1928	1,400	-	-	X	X	-	-	-	X	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Nevada	Dutch Flat Afterbay Dam	Dam	-	Nevada Irrigation District	Bear River	1965	1,300	Hydroelectricity	-	-	-	-	-	X	-	-	-
Sacramento River	Nevada	Blue Lake Dam	Dam	-	California Department of Fish and Wildlife	Tr Rucker Creek	1870	1,123	-	-	-	-	X	-	-	-	-	X
Sacramento River	Nevada	Dam of Middle Lindsey	Dam	Lindsey Lakes	Pacific Gas and Electric Company	Lindsey Creek	1870	1,100	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Fuller Lake Dam	Dam	-	Pacific Gas and Electric Company	Jordan Creek	1870	1,060	Hydroelectricity	-	-	-	-	-	X	-	-	-
Sacramento River	Nevada	Jackson Lake Dam	Dam	Jackson Lake	Nevada Irrigation District	Jackson Creek	1942	1,000	-	X	X	X	-	-	-	X	-	X
Sacramento River	Nevada	Culbertson Dam	Dam	-	Pacific Gas and Electric Company	Tr Texas Creek	1872	850	-	-	-	-	-	-	X	-	-	X
Sacramento River	Nevada	Upper Feeley Lake Dam	Dam	Feeley Lake	Pacific Gas and Electric Company	Tr Fall Creek	1870	739	Hydroelectricity	-	-	-	-	-	X	-	-	-
Sacramento River	Nevada	Rucker Lake Dam	Dam	Rucker Lake Reservoir	Pacific Gas and Electric Company	Rucker Creek	1871	620	Hydroelectricity	-	-	-	-	-	X	-	-	-
Sacramento River	Nevada	White Rock Lake	Reservoir	-	Pacific Gas and Electric Company	Tr North Creek	1850	578	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Swan Dam	Dam	-	Lakewood Association	Dry Creek	1967	550	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Lower Lindsey Dam	Dam	Lindsey Lakes	Pacific Gas and Electric Company	Tr Texas Creek	1870	320	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Lake Angela Dam	Dam	Lake Angela Reservoir	Donner Summit Public Utility District	Tr SF Yuba River	1924	310	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Our House	Reservoir	-	Yuba County Water Agency	Middle Yuba River	1969	290	-	-	X	-	-	-	-	-	-	X
Sacramento River	Nevada	Hour House Dam	Dam	-	Unknown	MF Yuba River	1968	285	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Nevada	Milton Diversion Dam	Dam	Milton Reservoir	Unknown	MF Yuba River	1928	270	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Upper Rock Lake Auxiliary	Dam	-	Pacific Gas and Electric Company	Texas Creek	1855	207	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Upper Rock Lake Dam	Dam	Rock Lake	Pacific Gas and Electric Company	Tr SF Yuba River	1855	207	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Dutch Flat 2 Forebay Dam	Dam	Dutch Flat No. 2 Forebay	Nevada Irrigation District	Tr Bear River	1965	185	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Lower Feeley Lake Dam	Dam	Carr Lake	Pacific Gas and Electric Company	Tr Fall Creek	1870	184	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Upper Lindsey Reservoir	Reservoir	Lindsey Lakes	Pacific Gas and Electric Company	Lindsey Creek	1870	180	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Big Downey Lake Dam	Dam	Downey Lake	Erma Bellett	Granite Creek	1954	162	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Pine Grove Dam	Dam	Pine Grove Reservoir	San Juan Ridge County Water District	L Shady Creek	1911	155	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Lake Vera Dam	Dam	Lake Vera	Lake Vera Mutual Water Company	Rock Creek	1926	136	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Chicago Park Forebay Dam	Dam	-	Nevada Irrigation District	Bear River	1966	103	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Middle Lindsey Lake	Reservoir	Lindsey Lakes	Pacific Gas and Electric Company	Tr Texas Creek	1870	103	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Loma Rica Airport Dam	Dam	Yuba Reservoir	Nevada Irrigation District	Tr L Green Horn Creek	1965	94	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Bellett Dam	Dam	-	Lake Wildwood Association	Tr Shady Creek	1950	90	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Nevada City Raw Water Reservoir	Reservoir	-	City of Nevada City	Tr Little Deer Creek	1980	53	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Nevada	Penn Valley Wastewater Facility Reservoir	Reservoir	-	Nevada County Department of Sanitation	Tr Indian Spr Creek	1990	52	Waste Water	-	-	-	-	-	-	-	X	-
Sacramento River	Nevada	Lower Rock Lake	Reservoir	-	Pacific Gas and Electric Company	Texas Creek	1855	50	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Anderson Ranch Dam	Dam	-	Usibelli Coal Mine, Inc.	Tr So Yuba River	1989	30	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Morris Reservoir	Reservoir	-	Unknown	Unknown	1934	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Rex Reservoir	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Nevada	Yuba Reservoir	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Folsom Dike 1	Dike	Folsom Lake	U.S. Bureau of Reclamation	NF American River Offstream	1956	1,120,000	-	-	-	-	-	-	-	-	-	-
Sacramento River	Placer	Folsom Dike 2	Dike	Folsom Lake	U.S. Bureau of Reclamation	NF American River Offstream	1956	1,120,000	-	-	-	-	-	-	-	-	-	-
Sacramento River	Placer	Folsom Dike 3	Dike	Folsom Lake	U.S. Bureau of Reclamation	NF American River Offstream	1956	1,120,000	-	-	-	-	-	-	-	-	-	-
Sacramento River	Placer	Folsom Dike 4	Dike	Folsom Lake	U.S. Bureau of Reclamation	NF American River Offstream	1956	1,120,000	-	-	-	-	-	-	-	-	-	-
Sacramento River	Placer	Folsom Dike 5	Dike	Folsom Lake	U.S. Bureau of Reclamation	NF American River Offstream	1956	1,120,000	-	-	-	-	-	-	-	-	-	-
Sacramento River	Placer	Folsom Dike 6	Dike	Folsom Lake	U.S. Bureau of Reclamation	NF American River Offstream	1956	1,120,000	-	-	-	-	-	-	-	-	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Placer	Lower Hell Hole Dam	Dam	-	Placer County Water Agency	Rubicon River	1966	208,400	Water Supply	X	-	-	-	-	-	-	-	-
Sacramento River	Placer	L. L. Anderson Dam	Dam	French Meadows Reservoir	Placer County Water Agency	MF American River	1965	111,333	Hydroelectricity	X	-	-	-	-	X	-	-	-
Sacramento River	Placer	Rollins Dam	Dam	Rollins Reservoir	Thousand Trails NACO Tm	Bear River	1965	66,000	-	X	X	X	-	-	X	X	-	X
Sacramento River	Placer	NF Dam	Dam	Lake Clementine	USACE	NF American River	1939	14,700	Water Quality	-	X	-	-	-	-	X	-	-
Sacramento River	Placer	Sugar Pine Reservoir	Reservoir	-	Pacific Gas and Electric Company	N Shirttail Creek	1981	10,964	Hydroelectricity	-	-	-	-	-	X	X	-	-
Sacramento River	Placer	Lake Valley Dam	Dam	Lake Valley Reservoir	Pacific Gas and Electric Company	Tr NF American River	1911	8,127	Hydroelectricity	-	-	-	-	-	X	X	-	-
Sacramento River	Placer	Lake Valley Auxiliary	Dam	-	Pacific Gas and Electric Company	NF American River	1889	7,960	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Combie Dam	Dam	Lake Combie	Nevada Irrigation District	Bear River	1928	5,555	Water Supply , Irrigation	-	X	X	-	-	-	X	-	-
Sacramento River	Placer	Ralston Afterbay	Reservoir	-	Unknown	MF American River	1966	2,800	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Upper Peak Dam	Dam	Cascade Lakes	City of Colfax	Tr SF Yuba River	1850	2,112	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Kidd Lake Dam	Dam	Kidd Lake	Pacific Gas and Electric Company	Tr SF Yuba River	1855	1,930	Hydroelectricity	-	-	-	-	-	X	X	-	-
Sacramento River	Placer	Kidd Lake Auxiliary	Dam	-	Pacific Gas and Electric Company	Tr S Yuba River	1850	1,520	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Morning Star Reservoir	Reservoir	Big Reservoir	Placer County FCWCD	N Forbes Creek	1870	1,190	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Drum Forebay Dam	Dam	-	Pacific Gas and Electric Company	Drum Canyon	1913	564	Hydroelectricity	-	-	-	-	-	X	-	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Placer	Rock Creek North Wing Auxiliary	Dam	-	Pacific Gas and Electric Company	Rock Creek	1913	550	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Rock Creek South Wing Auxiliary	Dam	-	Pacific Gas and Electric Company	Rock Creek	1913	550	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Lower Peak Lake Dam	Dam	Cascade Lakes	Pacific Gas and Electric Company	Tr SF Tuba River	1860	494	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Lower Peak Lake Auxiliary	Dam	-	Pacific Gas and Electric Company	Tr South Yuba River	1860	484	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Rock Creek Dam	Dam	Rock Creek Reservoir	Pacific Gas and Electric Company	Rock Creek	1916	410	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	City of Lincoln Wastewater Treatment Plant Reservoir	Reservoir	-	City of Lincoln	Offstream	1977	365	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Drum Afterbay Dam	Dam	-	Pacific Gas and Electric Company	Bear River	1968	341	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	New Drum Afterbay Dam	Dam	-	De Anza Placer Gold Mining Company	Bear River	1968	341	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	City of Lincoln No 4 Dam	Dam	-	City of Lincoln	Offstream	1997	301	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Kelly Lake Dam	Dam	-	Pacific Gas and Electric Company	Tr NF American River	1928	290	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Alta Dam, Lake	Dam	-	Placer County Water Agency	Tr NF American River	1862	270	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	City of Lincoln No 2 Dam	Dam	-	City of Lincoln	Offstream	1983	250	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Placer	Halsey Forebay No. 2	Reservoir	-	Pacific Gas and Electric Company	Dry Creek	1913	250	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Putts Lake Dam	Dam	Putts Lake	Walter M. Saunders Trust	Blue Canyon Creek	1916	249	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Halsey Forebay	Reservoir	-	Pacific Gas and Electric Company	Tr Dry Creek	1916	235	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Ice Lakes Dam	Dam	Serene Lakes	Sierra Lakes County Water District	Serena Creek	1942	220	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Wastewater Storage Reservoir	Reservoir	-	MJ Properties	Tr Smuthers Ravine	1978	212	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Lake Theodore Dam	Dam	Lake Theodore	Placer County Water Agency	SF Dry Creek	1896	207	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Auburn Valley Country Club #3 Dam	Dam	-	Golf Resources Of Auburn Valley, Inc.	Tr Bear River	1959	200	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Hinkle Dam	Dam	-	San Juan Suburban Water District	Tr American River	1980	200	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Interbay Dam	Dam	-	Placer County Water Agency	MF American River	1966	178	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Lake Mary Dam	Dam	-	Unknown	Tr SF Yuba River	1926	172	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Lakewood Dam	Dam	-	Stoneworth, Inc.	Dry Creek	1959	165	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Snowflower Dam	Dam	-	Spring Valley Dam Homeowners Association	Kelly Creek	1964	165	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Columbian Dam	Dam	-	Ethel Mulligan	Tr Auburn Ravine	Unknown	132	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Miners Ravine Detention	Reservoir	-	Sugar Bowl Corporation	Dry Creek	2007	120	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Placer	Christian Valley Dam	Dam	-	Pacific Gas and Electric Company	SF Dry Creek	1916	110	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Halsey Afterbay	Reservoir	-	Pacific Gas and Electric Company	Dry Creek	1913	106	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Mammoth Reservoir Dam	Dam	Mammoth Reservoir	Placer County Water Agency	Offstream	1851	103	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Patterson Reservoir	Reservoir	-	Roger C. Patterson	Tr Bear River	1962	92	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Lake Arthur Dam	Dam	-	Placer County Water Agency	SF Dry Creek	1909	87	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Boole Dam	Dam	-	California Province of the Society of Jesus	Tr American River	1951	65	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Spring Valley Ranch Dam	Dam	-	Unknown	Tr Campbell Creek	1958	60	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Winchester Reservoir	Reservoir	-	Pacific Gas and Electric Company	Tr Orr Creek	1999	58	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Kokila Dam	Dam	-	George and Donna Wieg, et al.	Tr Miners Ravine	1951	54	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Wise Forebay	Reservoir	-	South Sutter Water District	Auburn Ravine	1913	32	-	-	-	-	-	-	X	-	-	X
Sacramento River	Placer	Clover Valley Dam	Dam	-	Unknown	Tr Antelope Creek	1909	29	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Antelope Creek	Weir	Del Mar Weir	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
Sacramento River	Placer	Clover Valley Creek	Weir	Pond Weir	Placer County Water Agency	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
Sacramento River	Placer	Dairy Weir	Weir	Antelope Creek	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Placer	French Meadows Reservoir	Reservoir	-	Placer County Water Agency	Middle Fork American River	Unknown	Unknown	-	-	-	-	-	-	X	X	-	X
Sacramento River	Placer	Red Hawk Ranch Dam	Dam	-	Unknown	Dry Creek	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Placer	Sucker Ravine Loomis Tributary	Weir	Inline Weir	U.S. Bureau of Reclamation	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
Sacramento River	Plumas	Lake Almanor Dam	Dam	Lake Almanor	Pacific Gas and Electric Company	NF Feather River	1927	1,308,000	Hydroelectricity	-	-	-	-	-	X	X	-	-
Sacramento River	Plumas	Bucks Storage Dam	Dam	Bucks Lake	Pacific Gas and Electric Company	Bucks Creek	1928	103,000	Water Storage, Hydroelectricity	-	X	-	-	-	-	X	-	-
Sacramento River	Plumas	Little Grass Valley Dam	Dam	Little Grass Valley Reservoir	South Feather Water and Power Agency	SF Feather River	1961	93,010	-	-	X	-	-	-	X	-	-	X
Sacramento River	Plumas	Grizzly Valley Dam	Dam	Lake Davis	DWR	Big Grizzly Creek	1966	83,000	-	-	X	-	X	-	-	X	-	X
Sacramento River	Plumas	Frenchman Dam	Dam	-	DWR	Lit Last Chance Creek	1961	55,477	-	-	-	X	-	-	-	-	-	X
Sacramento River	Plumas	Butt Valley Dam	Dam	Butt Valley Reservoir	Pacific Gas and Electric Company	Butt Creek	1924	49,800	Hydroelectricity	-	-	-	-	-	X	-	-	-
Sacramento River	Plumas	Antelope Reservoir	Reservoir	-	DWR	Indian Creek	1964	22,566	Recreation and Wildlife	-	-	-	X	-	-	X	-	-
Sacramento River	Plumas	Bucks Diversion Dam	Dam	Lower Bucks Lake	Pacific Gas and Electric Company	Bucks Creek	1928	5,843	Hydroelectricity	-	-	-	-	-	X	-	-	-
Sacramento River	Plumas	Bidwell Lake Dam	Dam	Round Valley Reservoir	Indian Valley CSD	N Canyon Creek	1865	5,200	-	-	-	-	-	-	-	X	-	X
Sacramento River	Plumas	Rock Creek Dam	Dam	Rock Creek Reservoir	Pacific Gas and Electric Company	NF Feather River	1950	4,660	Hydroelectricity	-	-	-	-	-	X	X	-	-
Sacramento River	Plumas	Cresta Dam	Dam	-	Pacific Gas and Electric Company	NF Feather River	1949	4,400	Hydroelectricity	-	-	-	-	-	X	-	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Plumas	Caribou Afterbay Dam	Dam	Caribou Afterbay	Pacific Gas and Electric Company	NF Feather River	1959	2,400	-	-	-	-	X	-	-	X	-	X
Sacramento River	Plumas	Long Lake Dam	Dam	Long Lake	Graeagle Water Company	Gray Eagle Creek	1938	1,478	-	-	-	-	-	-	-	-	-	X
Sacramento River	Plumas	Grizzly Forebay Dam	Dam	-	Pacific Gas and Electric Company	Grizzly Creek	1928	1,112	Hydroelectricity	-	-	-	-	-	X	-	-	-
Sacramento River	Plumas	Silver Lake Dam	Dam	Silver Lake	Soper Wheeler Company	Silver Creek	1906	650	-	-	-	-	-	-	-	-	-	X
Sacramento River	Plumas	Slate Creek Diversion Dam	Dam	-	South Feather Water and Power Agency	Slate Creek	1961	643	-	-	X	-	-	-	-	-	-	X
Sacramento River	Plumas	Lower Three Lakes Dam	Dam	Three Lakes	Pacific Gas and Electric Company	Milk Ranch Creek	1928	606	-	-	-	-	-	-	X	-	-	X
Sacramento River	Plumas	Taylor Lake	Reservoir	-	The Nature Conservancy	Tr Indian Creek	1929	380	-	-	-	-	X	-	-	X	-	X
Sacramento River	Plumas	Eureka Dam	Dam	-	California Department Of Parks and Recreation	Eureka Creek	1866	220	-	-	-	-	-	-	-	-	-	X
Sacramento River	Plumas	Grizzly Creek Dam	Dam	Grizzly Ice Pond	Jared Stein	Big Grizzly Creek	1915	140	-	-	-	-	-	-	-	-	-	X
Sacramento River	Plumas	Spring Valley Lake Dam	Dam	Spring Valley Lake Reservoir	California Department of Fish and Wildlife	Rock Creek	1979	125	-	-	-	-	-	-	-	-	-	X
Sacramento River	Plumas	South Fork Diversion Dam	Dam	-	South Feather Water and Power Agency	SF Feather River	1961	88	-	-	-	-	-	-	-	-	-	X
Sacramento River	Plumas	Chester Diversion Dam	Dam	-	Unknown	NF Feather River	1975	75	-	-	-	-	-	-	-	-	-	X
Sacramento River	Plumas	Doyle Reservoir	Reservoir	-	Plumas National Forest	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Plumas	Greenhorn Creek Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Plumas	Mill Creek Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Plumas	Mill Creek Diversion Dam No. 1	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Plumas	Mill Creek Diversion Dam No. 2	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Plumas	Onion Valley Reservoir	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Sacramento	Folsom Dam	Dam	Folsom Lake	U.S. Bureau of Reclamation	American River	1956	1,120,000	-	X	X	X	-	-	X	X	-	X
Sacramento River	Sacramento	Folsom Dike 7	Dike	Folsom Lake	U.S. Bureau of Reclamation	Green Valley	1956	1,120,000	-	-	-	-	-	-	-	-	-	-
Sacramento River	Sacramento	Folsom Dike 8	Dike	Folsom Lake	U.S. Bureau of Reclamation	SF American River Offstream	1956	1,120,000	-	-	-	-	-	-	-	-	-	-
Sacramento River	Sacramento	Folsom Left Wing Dam	Dam	Folsom Lake	U.S. Bureau of Reclamation	American River	1956	1,120,000	-	X	X	X	-	-	X	X	-	X
Sacramento River	Sacramento	Mormon Island Auxiliary Dam	Dam	Folsom Lake, Mormon Auxiliary, Folsom Saddle	U.S. Bureau of Reclamation	Blue Ravine	1956	1,120,000	-	X	X	X	-	-	X	X	-	X
Sacramento River	Sacramento	Nimbus Dam	Dam	Lake Natomas	U.S. Bureau of Reclamation	American River	1955	8,800	Recreation	-	-	-	-	-	-	X	-	-
Sacramento River	Sacramento	Emergency Storage Basin Dam	Dam	-	Sacramento Region County Sanitation District	Offstream	1977	835	Waste Water	-	-	-	-	-	-	-	X	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Sacramento	Battery II Dam	Dam	-	Sacramento Region County Sanitation District	Unknown	1980	707	Waste Water	-	-	-	-	-	-	-	X	-
Sacramento River	Sacramento	Blodgett Dam	Dam	Blodgett Reservoir	Waegell Brothers, et al.	Laguna Creek	1939	374	-	-	-	-	-	-	-	-	-	X
Sacramento River	Sacramento	Battery III Dam	Dam	-	Sacramento Region County Sanitation District	Offstream	1983	240	-	-	-	-	-	-	-	-	-	X
Sacramento River	Sacramento	Willow Hill Reservoir	Reservoir	-	City of Folsom	Tr American River	Unknown	125	-	-	X	-	-	-	-	X	-	X
Sacramento River	Sacramento	Mount Stoneman Dam	Dam	-	California Department Of Corrections	Tr American River	1937	33	-	-	-	-	-	-	-	-	-	X
Sacramento River	Sacramento	Gerber Creek	Weir	Inline Weir	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
Sacramento River	Sacramento	Morrison Creek	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Shasta	Shasta Dam	Dam	Shasta Lake	U.S. Bureau of Reclamation	Sacramento River	1945	4,661,860	-	X	X	X	-	-	-	X	-	X
Sacramento River	Shasta	Whiskeytown Reservoir	Reservoir	Clair A. Hill Whiskeytown Lake	U.S. Bureau of Reclamation	Clear Creek	1963	276,117	-	X	-	X	-	-	X	X	-	X
Sacramento River	Shasta	McCloud Dam	Dam	Lake McCloud	Pacific Gas and Electric Company	McCloud River	1965	35,300	Hydroelectricity	-	-	-	-	-	X	X	-	-
Sacramento River	Shasta	Pit No. 3 Dam	Dam	Lake Britton	Pacific Gas and Electric Company	Pit River	1925	34,600	Hydroelectricity	-	-	-	-	-	X	X	-	-
Sacramento River	Shasta	Pit No. 7 Dam	Dam	Pit No. 7 Reservoir	Pacific Gas and Electric Company	Pit River	1965	34,000	Hydroelectricity	-	-	-	-	-	X	-	-	-
Sacramento River	Shasta	Iron Canyon Dam	Dam	-	Pacific Gas and Electric Company	Iron Canyon Creek	1965	24,300	Hydroelectricity	-	-	-	-	-	X	X	-	-
Sacramento River	Shasta	Keswick Dam	Dam	Keswick Reservoir	U.S. Bureau of Reclamation	Sacramento River	1950	24,132	-	-	X	-	-	-	X	X	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Shasta	Pit No. 6 Dam	Dam	Pit No. 6 Reservoir	Pacific Gas and Electric Company	Pit River	1965	15,700	Hydroelectricity	-	-	-	X	-	X	-	-	-
Sacramento River	Shasta	Spring Creek Debris Basin	Debris Basin	Spring Creek Reservoir	U.S. Bureau of Reclamation	Spring Creek	1964	7,286	Flood Management	X	-	-	X	-	-	-	-	X
Sacramento River	Shasta	Haynes Reservoir Dam	Dam	Lake Margaret	Denny Land and Cattle Co., LLC	Goose Creek	1965	5,870	-	-	-	-	-	-	-	-	-	X
Sacramento River	Shasta	Misselbeck Dam	Dam	Rainbow Lake	Igo-Ono CSD	NF Cottonwood Creek	1920	3,600	-	-	-	-	-	-	-	-	-	X
Sacramento River	Shasta	Pit No. 1 Forebay	Reservoir	-	Pacific Gas and Electric Company	Fall River	1947	2,800	Hydroelectricity	-	-	-	-	-	X	-	-	-
Sacramento River	Shasta	Pit River Weir	Weir	-	Pacific Gas and Electric Company	Pit River	1921	2,800	-	-	-	-	-	-	-	-	-	-
Sacramento River	Shasta	Pit No. 4 Dam	Dam	Pit No. 4 Reservoir	Pacific Gas and Electric Company	Pit River	1927	2,000	Hydroelectricity	-	-	-	-	-	X	-	-	-
Sacramento River	Shasta	Anderson Cottonwood Dam	Dam	Lake Redding	Anderson Cottonwood Irrigation District	Sacramento River	1917	1,240	Irrigation	-	-	X	-	-	-	-	-	X
Sacramento River	Shasta	Pit No. 5 Conduit Embankment	Reservoir	-	Pacific Gas and Electric Company	Sugar Pine Creek	1943	1,147	Hydroelectricity	-	-	-	-	-	X	-	-	-
Sacramento River	Shasta	North Battle Creek Reservoir Dam	Reservoir	North Battle Creek Reservoir	Pacific Gas and Electric Company	N Battle Creek	1909	1,090	Hydroelectricity	-	-	-	-	-	X	-	-	-
Sacramento River	Shasta	Pit No. 7 Afterbay	Reservoir	-	Pacific Gas and Electric Company	Pit River	1965	800	Hydroelectricity	-	-	-	-	-	-	-	-	-
Sacramento River	Shasta	Ross No. 1 Dam	Dam	-	Kaloko Land Corporation	Tr Stillwater Creek	1957	709	-	-	-	-	-	-	-	-	-	X
Sacramento River	Shasta	Boyd No. 2 Dam	Dam	-	Boyd Trucking Company	Tr Cottonwood Creek	1973	670	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Shasta	Hat Creek No. 2 Diversion Dam	Dam	-	Pacific Gas and Electric Company	Hat Creek	1942	620	Hydroelectricity	-	-	-	-	-	X	-	-	-
Sacramento River	Shasta	Treatment Ponds	Reservoir	-	Cortez Fisheries, Inc.	Tr Anderson Creek	1975	450	-	-	-	-	-	-	-	-	-	X
Sacramento River	Shasta	Nash Dam	Dam	-	Welton L. and Judith Carrel	Tr Stillwater Creek	1960	428	-	-	-	-	-	-	-	-	-	X
Sacramento River	Shasta	McCumber Dam	Dam	McCumber Reservoir	Pacific Gas and Electric Company	N Battle Creek	1907	425	-	-	-	-	-	-	-	X	-	X
Sacramento River	Shasta	Pit No. 5 Diversion	Reservoir	-	Pacific Gas and Electric Company	Pit River	1943	390	-	-	-	-	-	-	-	-	-	X
Sacramento River	Shasta	Reclaimed Water Reservoir	Reservoir	-	City of Shasta Lake	Tr Churn Creek	1995	370	Irrigation	-	-	X	-	-	-	-	X	X
Sacramento River	Shasta	Ross No. 2 Dam	Dam	-	Kaloko Land Corporation	Tr Stillwater Creek	1957	243	-	-	-	-	-	-	-	-	-	X
Sacramento River	Shasta	Slickrock Creek Dam	Dam	-	Iron Mountain Mine Remediation Trust I	Slickrock Creek	2004	231	Flood Management	-	-	-	X	-	-	-	-	X
Sacramento River	Shasta	Brick Flat Pit Containment Dam	Dam	-	Iron Mountain Mine Reclamation Trust I	Slickrock Creek	1994	220	Flood Management	-	-	-	X	-	-	-	-	X
Sacramento River	Shasta	Truett Dam	Dam	Woodridge Lake	Woodridge Mutual Water and Owners Corporation	Ash Creek	1958	219	-	-	-	-	-	-	-	-	-	X
Sacramento River	Shasta	Boyd No. 1 Dam	Dam	-	Boyd Trucking Company	Tr Cottonwood Creek	1971	218	-	-	-	-	-	-	-	-	-	X
Sacramento River	Shasta	George Reese Reservoir Dam	Dam	George Reese Reservoir	Arnold W. Sargent	Tr Tadpole Creek	1876	195	-	-	-	-	-	-	-	-	-	X
Sacramento River	Shasta	Null Dam	Dam	-	The Hatch 1987 Revocable Trust	Rock Creek	1954	188	-	-	-	-	-	-	-	-	-	X
Sacramento River	Shasta	Junge No. 3 Dam	Dam	-	Francis Carrington	Tr Clover Creek	1966	180	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Shasta	Charles Smith Irrigation Dam	Dam	-	United Financial Operations	Chicken Spring Gulch	1958	150	-	-	-	-	-	-	-	-	-	X
Sacramento River	Shasta	Thurmond Dam	Dam	-	Alan and Sherry Shufelberger	Slaughter Pole Creek	1966	140	-	-	-	-	-	-	-	-	-	X
Sacramento River	Shasta	Lema Dam	Dam	-	The McConnell Foundation	Tr Churn Creek	1957	108	-	-	-	-	-	-	-	-	-	X
Sacramento River	Shasta	Coleman Forebay Dam	Dam	-	Pacific Gas and Electric Company	South Fork Battle Creek Offstream	1911	76	-	-	-	-	-	-	-	-	-	X
Sacramento River	Shasta	James Montgomery Dam	Dam	-	George Domb, M.D.	Flat Creek	1869	65	-	-	-	-	-	-	-	-	-	X
Sacramento River	Shasta	Pit No. 1 Diversion	Reservoir	-	Pacific Gas and Electric Company	Fall River	1922	50	-	-	-	-	-	-	-	-	-	X
Sacramento River	Shasta	Junge No. 2 Dam	Dam	-	Francis Carrington	Tr Clover Creek	1965	42	-	-	-	-	-	-	-	-	-	X
Sacramento River	Shasta	Whiskeytown Dike 1	Dike	Clair A. Hill Whiskeytown Lake	U.S. Bureau of Reclamation	Clear Creek Offstream	1963	Unknown	-	-	-	-	-	-	-	-	-	-
Sacramento River	Shasta	Whiskeytown Dike 2	Dike	Clair A. Hill Whiskeytown Lake	U.S. Bureau of Reclamation	Clear Creek Offstream	1963	Unknown	-	-	-	-	-	-	-	-	-	-
Sacramento River	Shasta	Anderson Creek	Weir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
Sacramento River	Shasta	Porcupine Reservoir	Reservoir	-	Lassen National Forest	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Shasta	Salt Creek North Branch Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Shasta	Tunnel Reservoir	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Sierra	Jackson Meadows Dam	Dam	Jackson Meadows Reservoir	Unknown	MF Yuba River	1965	52,500	-	-	-	-	-	-	-	-	-	X
Sacramento River	Sierra	Lower Sardine Lake Dam	Dam	Lower Sardine Lake	California Department of Fish and Wildlife	Sardine Creek	1965	280	-	-	-	-	-	-	-	-	-	X
Sacramento River	Sierra	Palen Dam	Dam	Palen Reservoir	Mr. Frederick E.	Antelope Creek	1951	146	-	-	-	-	-	-	-	-	-	X
Sacramento River	Siskiyou	Box Canyon Dam	Dam	-	Siskiyou County FCWCD	Sacramento River	1969	26,000	-	X	-	-	-	-	X	X	-	X
Sacramento River	Siskiyou	Lake Siskiyou Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Solano	Lagoon Valley County Park Reservoir	Reservoir	-	City of Vacaville	Tr Laguna Creek	1981	780	-	-	X	-	-	-	X	-	-	X
Sacramento River	Solano	Detention Pond A	Reservoir	-	City of Dixon	Offstream	1989	737	-	X	X	-	-	-	-	-	-	X
Sacramento River	Solano	Putah Diversion Dam	Dam	Lake Solano	U.S. Bureau of Reclamation	Putah Creek	1959	720	-	X	X	-	-	-	-	-	-	X
Sacramento River	Solano	Giles Dam	Dam	-	Robert and Jean Brown	Tr Sweeney Creek	1965	119	-	-	-	-	-	-	-	-	-	X
Sacramento River	Solano	Maine Prairie 3 Dam	Dam	-	Maine Prairie Water District	Ulatis Creek	1965	96	-	-	-	-	-	-	-	-	-	X
Sacramento River	Solano	Bascherini Dam	Dam	-	Solano Irrigation District	Tr Ulatis Creek	1962	19	-	-	-	-	-	-	-	-	-	X
Sacramento River	Solano	Barker Slough Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Solano	Hass Slough Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Sutter	Steidlmayer #3 Dam	Dam	-	Roblee, Inc.	Unknown	1961	82	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Tehama	Black Butte Dam	Dam	-	USACE	Stoney Creek	1963	143,700	Flood Management	X	-	-	-	-	-	X	-	-
Sacramento River	Tehama	Top Cat Dam	Dam	-	Paskenta Band of Nomlaki Indians of California	Tr Brannin Creek	1976	516	-	-	-	-	-	-	-	-	-	X
Sacramento River	Tehama	Sunflower Dam	Dam	-	Newell T. and Anne W. Partch	Sunflower Gulch	1976	420	-	-	-	-	-	-	-	-	-	X
Sacramento River	Tehama	South Log Pond	Reservoir	-	Meyers Motels, Ltd.	Tr Sacramento River	1957	146	-	-	-	-	-	-	-	-	-	X
Sacramento River	Tehama	Rye Dam	Dam	-	T M Cattle Company	Kendrick Creek	1959	83	-	-	-	-	-	-	-	-	-	X
Sacramento River	Tehama	Black Butte Regulating Dam	Dam	-	USACE	Stony Creek	1989	52	Flood Management	X	-	-	-	-	-	X	-	X
Sacramento River	Tehama	Corral Dam	Dam	-	T M Cattle Company	Kendrick Creek	1959	51	-	-	-	-	-	-	-	-	-	X
Sacramento River	Tehama	Red Bluff Diversion Dam	Dam (permanent gates up)	-	U.S. Bureau of Reclamation	Sacramento River	1963	Unknown	-	-	-	-	-	-	-	-	-	-
Sacramento River	Tehama	Red Bluff Diversion Dike 1	Dike (permanent gates up)	-	U.S. Bureau of Reclamation	Sacramento River	1963	Unknown	-	-	-	-	-	-	-	-	-	-
Sacramento River	Tehama	Red Bluff Diversion Dike 2	Dike (permanent gates up)	-	U.S. Bureau of Reclamation	Sacramento River	1963	Unknown	-	-	-	-	-	-	-	-	-	-
Sacramento River	Tehama	Deer Creek Reservoir	Reservoir	-	Unknown	Deer Creek	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Yolo	Davis Creek	Reservoir	-	Homestake Mining Company	Davis Creek	1985	6,079	-	-	-	-	X	-	-	-	-	X
Sacramento River	Yolo	Cache Creek Settling Basin	Reservoir	-	State Reclamation Board	Cache Creek	1993	3,800	Settling Basin	X	-	-	-	-	-	-	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Yolo	De Boca Reservoir	Reservoir	-	John Hancock Life Insurance	Tr Deer Creek	1952	225	-	-	-	-	-	-	-	-	-	X
Sacramento River	Yolo	Capay Dam	Dam	Cache Creek	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Sacramento River	Yolo	Sacramento Bypass	Weir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
Sacramento River	Yolo	Yolo Bypass	Weir	Freemont Weir	USACE	Sacramento River	Unknown	Unknown	Flood Management	X	-	-	-	-	-	-	-	X
Sacramento River	Yuba	New Bullards Bar Reservoir	Reservoir	-	Yuba County Water Agency	N Yuba River	1970	969,600	Flood Control	X	-	X	-	-	X	X	-	-
Sacramento River	Yuba	Camp Far West Dam	Dam	Camp Far West Reservoir	South Sutter Water District	Bear River	1963	104,500	Flood Management, Hydroelectricity	X	-	X	-	-	X	X	-	-
Sacramento River	Yuba	Harry L. Englebright Dam	Dam	Harry L. Englebright Lake	Unknown	Yuba River	1941	70,000	-	-	-	-	-	-	-	-	-	X
Sacramento River	Yuba	Virginia Ranch	Reservoir	-	Browns Valley Irrigation District	Dry Creek	1963	57,000	-	-	X	X	-	-	-	-	-	X
Sacramento River	Yuba	Francis, Lake Dam	Dam	-	Yuba County Water Agency	Dobbins Creek	2000	1,905	-	-	X	-	-	-	X	X	-	X
Sacramento River	Yuba	Los Verjeles Dam	Dam	Mildred Lake	Thousand Trails, Inc.	Dry Creek	1915	1,530	-	-	-	-	-	-	-	-	-	X
Sacramento River	Yuba	Camp Far West Diversion Dam	Dam	-	South Sutter Water District	Bear River	1977	425	-	-	-	-	-	-	-	-	-	X
Sacramento River	Yuba	Honcut Creek Ranch No. 1 Dam	Dam	-	Honcut Creek Ranch, A Partnership	Tr So Honcut	1964	95	-	-	-	-	-	-	-	-	-	X
Sacramento River	Yuba	Log Cabin Dam	Dam	-	Yuba County Water Agency	Oregon Creek	1968	89	-	-	-	-	-	-	-	-	-	X
Sacramento River	Yuba	Lake Nancy	Reservoir	-	Fellowship of Friends	Woods Creek	1981	61	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Sacramento River	Yuba	Elizabeth Waters Reservoir	Reservoir	-	Fellowship of Friends	Woods Creek	1981	42	-	-	-	-	-	-	-	-	-	X
Sacramento River	Yuba	Lu Pan Reservoir	Reservoir	-	Fellowship of Friends	Tr Branch Creek	1981	37	-	-	-	-	-	-	-	-	-	X
Sacramento River	Yuba	Swan Lake	Reservoir	-	Fellowship of Friends	Tr Dry Creek	1981	24	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Alameda	Calaveras Dam	Dam	Calaveras Reservoir	City and County of San Francisco	Calaveras Creek	1925	100,000	Water Supply	-	X	-	-	-	-	-	-	-
San Francisco Bay	Alameda	Del Valle Dam	Dam	Lake Del Valle	DWR	Arroyo Valle	1968	77,100	-	X	X	-	-	-	-	-	-	X
San Francisco Bay	Alameda	James H. Turner Dam	Dam	San Antonio Reservoir	City and County of San Francisco	San Antonio Creek	1964	50,500	Water Supply	-	X	-	-	-	-	-	-	-
San Francisco Bay	Alameda	New Upper San Leandro Dam	Dam	Upper San Leandro Reservoir	East Bay Municipal Utilities District	San Leandro Creek	1977	42,000	Water Supply	-	X	-	-	-	-	-	-	-
San Francisco Bay	Alameda	Chabot Dam	Dam	-	East Bay Municipal Utilities District	San Leandro Creek	1892	10,281	Water Supply	-	X	-	-	-	-	X	-	-
San Francisco Bay	Alameda	Quarry Pits	Reservoir	-	Alameda County Water District	Old Alameda Creek	1997	3,360	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Alameda	Central Dam	Dam	-	East Bay Municipal Utilities District	Offstream	1910	485	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Alameda	Rubber Dam 1	Dam	-	Alameda County Water District	Alameda Creek	1965	416	Water Supply (seasonal)	-	X	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Francisco Bay	Alameda	Shinn Reservoir	Reservoir	Shinn Pond	Alameda County Water District	Tributary Alameda Creek	1987	390	-	-	X	-	-	-	-	X	-	X
San Francisco Bay	Alameda	San Lorenzo Creek Dam	Dam	Don Castro Reservoir	Alameda Company Public Works Agriculture	San Lorenzo Creek	1964	380	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Alameda	Cull Creek Dam	Dam	Cull Creek Reservoir	Alameda Company Public Works Agriculture	Cull Creek	1963	310	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Alameda	Lake Temescal Dam	Dam	Lake Temescal	East Bay Regional Park District	Temescal Creek	1869	200	-	-	X	-	-	-	-	X	-	X
San Francisco Bay	Alameda	Dunsmuir Reservoir Dam	Dam	Dunsmuir Reservoir	East Bay Municipal Utilities District	Offstream	1968	197	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Alameda	South Reservoir	Reservoir		East Bay Municipal Utilities District	Offstream	1956	156	-	-	X	-	-	-	-	-	X	X
San Francisco Bay	Alameda	Rubber Dam 3	Dam		Alameda County Water District	Alameda Creek	1990	154	Water Supply (seasonal)	-	X	-	-	-	-	-	-	X
San Francisco Bay	Alameda	Ward Creek Dam	Dam		Alameda Company Public Works Agriculture	Ward Creek	1963	130	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Alameda	Seneca Dam	Dam	Seneca Reservoir	East Bay Municipal Utilities District	Offstream	1950	92	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Alameda	Piedmont Dam	Dam	Reservoir Number Two	East Bay Municipal Utilities District	Offstream	1905	60	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Alameda	Estates Dam	Dam	Reservoir Number One	East Bay Municipal Utilities District	Tributary San Francisco Bay	1903	56	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Francisco Bay	Alameda	Decoto Reservoir Dam	Dam	Decoto Reservoir	Alameda County Water District	Offstream	1966	46	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Alameda	Patterson Dam	Dam	-	Alameda County Water District	Offstream	1962	46	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Alameda	Berryman Reservoir Dam	Dam	Berryman Reservoir	East Bay Municipal Utilities District	Offstream	1905	45	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Alameda	Middlefield Reservoir Dam	Dam	Middlefield Reservoir	Alameda County Water District	Offstream	1958	22	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Alameda	Almond Dam	Dam	Almond Reservoir	East Bay Municipal Utilities District	Offstream	1954	20	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Alameda	Mayhew Reservoir Dam	Dam	Mayhew Reservoir	Alameda County Water District	Offstream	1962	18	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Alameda	Arroyo Mocho Gaging Weir	Weir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
San Francisco Bay	Alameda	Cerrito Creek Dam	Dam	Cerrito Creek Dam	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Alameda	Three J Ranch	Reservoir	-	Laborers Pension Trust Fund for Northern California	Ranch Gulley	1955	Unknown	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Contra Costa	Briones Dam	Dam	Briones Reservoir	East Bay Municipal Utilities District	Bear Creek	1964	67,520	Water Supply	-	X	-	-	-	-	X	-	-
San Francisco Bay	Contra Costa	San Pablo Reservoir	Reservoir	-	East Bay Municipal District	San Pablo Creek	1920	43,193	-	-	X	-	-	-	-	X	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Francisco Bay	Contra Costa	Lafayette Dam	Dam	Lafayette Reservoir	Unknown	Lafayette Creek	1929	4,250	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Contra Costa	Mallard Dam	Dam	Mallard Reservoir	East Bay Municipal Utilities District	Offstream	1930	3,113	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Contra Costa	Pine Creek Detention Basin	Reservoir	Lower Pine Creek	Contra Costa County FCWCD	Pine Creek	1981	320	-	X	-	-	-	-	-	-	-	X
San Francisco Bay	Contra Costa	Martinez Dam	Dam	Martinez Reservoir	East Bay Municipal Utilities District	Pacheco Creek Offstream	1947	296	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Contra Costa	C.L. Tilden Park Dam	Dam	Lake Anza	East Bay Municipal Utilities District	Wildcat Creek	1938	268	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Contra Costa	North Reservoir	Reservoir		East Bay Municipal Utilities District	Offstream	1961	244	-	-	X	-	-	-	-	X	-	X
San Francisco Bay	Contra Costa	Deer Creek Dam	Dam		East Bay Municipal Utilities District	Deer Creek	1963	233	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Contra Costa	Pine Creek Dam	Dam		East Bay Municipal Utilities District	Pine Creek	1956	225	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Contra Costa	Lake Orinda Dam	Dam	Cascade Lake	Unknown	Cascade Creek	1935	200	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Contra Costa	Summit Dam	Dam	Summit Reservoir	East Bay Municipal Utilities District	Tributary Wildcat Creek	1891	117	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Contra Costa	Clearwell Phase 2 Dam	Dam		East Bay Regional Park District	Grayson Creek	1977	100	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Francisco Bay	Contra Costa	Maloney Dam	Dam	Maloney Reservoir	Contra Costa Water District	Offstream	1960	68	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Contra Costa	Leland Dam	Dam	-	Orinda Country Club	Offstream	1955	60	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Contra Costa	Danville Dam	Dam	-	Contra Costa Sanitation District	Offstream	1961	45	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Contra Costa	Moraga Dam	Dam	Moraga Reservoir	U.S. Bureau of Reclamation	Offstream	1965	36	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Contra Costa	Sobrante Clearwell Dam	Dam	-	East Bay Municipal Utilities District	Offstream	1964	25	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Contra Costa	Walnut Creek Clearwell Dam	Dam	-	East Bay Municipal Utilities District	Offstream	1967	25	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Contra Costa	Argyle No. 2 Dam	Dam	-	East Bay Municipal Utilities District	Offstream	1970	22	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Contra Costa	San Pablo Clearwell Dam	Dam	-	USACE, Contra Costa County FCWCD	Offstream	1922	17	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Contra Costa	East Bay Municipal Urban Development Erosion Dam	Dam	San Pablo Creek	Contra Costa County FCWCD	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Contra Costa	Galindo Creek Dam No. 1	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Francisco Bay	Contra Costa	Galindo Creek Dam No. 2	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Contra Costa	Lake La Salle Dam	Dam	Las Trampas Creek	East Bay Municipal Utilities District	Unknown	Unknown	Unknown	-	-	X	-	-	-	-	-	-	X
San Francisco Bay	Contra Costa	Wildcat and San Pablo Creek Sedimentation Basin	Reservoir	-	Unknown	Unknown	Unknown	Unknown	Water Quality	-	-	-	-	-	-	-	-	-
San Francisco Bay	Contra Costa	Rheem Creek	Reservoir	-	Contra Costa County Flood Control and Water Conservation District	Rheem Creek	1960	Unknown	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Marin	Peters Dam	Dam	Kent Lake	Marin Municipal Water District (MWD)	Lagunitas Creek	1954	32,900	Water Supply	-	X	-	-	-	-	-	-	X
San Francisco Bay	Marin	Seeger Reservoir	Reservoir	Nicasio Reservoir	Marin MWD	Nicasio Creek	1961	22,400	Water Supply	-	X	-	-	-	-	X	-	X
San Francisco Bay	Marin	Soulajule Dam	Dam	Soulajule Reservoir	Marin MWD	Arroyo Sausal	1979	10,700	Water Supply	-	X	-	-	-	-	X	-	-
San Francisco Bay	Marin	Alpine Dam	Dam	-	Marin MWD	Lagunitas Creek	1917	8,892	Water Supply	-	X	-	-	-	-	-	-	-
San Francisco Bay	Marin	Novato Creek Dam	Dam	Stafford Lake	North Marin County Water District	Novato Creek	1951	4,430	Water Supply	-	X	-	-	-	-	-	-	-
San Francisco Bay	Marin	Bon Tempe Dam	Dam	Bon Tempe Lake	Marin MWD	Lagunitas Creek	1949	4,300	Water Supply	-	X	X	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Francisco Bay	Marin	Phoenix Lake Dam	Dam	Phoenix Lake Reservoir	Marin MWD	Ross Creek	1907	612	Water Supply	-	X	-	-	-	-	-	-	X
San Francisco Bay	Marin	Lagunitas Dam	Dam	Lake Lagunitas	Marin MWD	Lagunitas Creek	1872	341	Water Supply	-	X	-	-	-	-	-	-	-
San Francisco Bay	Marin	Big Rock Ranch	Reservoir		Lucasfilm, Ltd.	Nicasio Creek Tributary to Lagunitas Creek	2002	91	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Marin	Dolcini Dam	Dam	-	Ms. Elizabeth W. Dolcini	Salmon Creek	1949	70	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Marin	Vonsen Dam	Dam	-	Mrs. Mary Volpi	Tributary San Antonio Creek	1951	70	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Marin	Walker Creek	Reservoir	-	Marin County Office of Education	Tributary Walker Creek	1976	66	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Marin	Arroyo San Jose	Weir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
San Francisco Bay	Marin	Fairfax Creek Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Marin	Nicasio Dam	Dam	Nicasio Reservoir	Marin MWD	Nicasio Creek	1961	Unknown	Water Supply	-	X	-	-	-	-	-	-	X
San Francisco Bay	Marin	San Anselmo Creek Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Conn Creek Dam	Dam	Lake Hennessey	City of Napa	Conn Creek	1946	31,000	-	X	X	-	-	-	-	X	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Francisco Bay	Napa	Lake Curry Dam	Dam	Lake Curry	Huneeus Chantre Properties	Gordon Valley Creek	1926	10,700	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Rector Creek Dam	Dam	Rector Reservoir	City of St. Helena	Rector Creek	1946	4,587	Water Supply	-	X	-	-	-	-	-	-	-
San Francisco Bay	Napa	Bell Canyon Dam	Dam	Bell Canyon Reservoir	City of St. Helena	Bell Creek	1959	2,530	Water Supply	-	X	-	-	-	-	-	-	-
San Francisco Bay	Napa	Milliken Reservoir	Reservoir	-	Leroy A. Young	Milliken Creek	1924	1,980	Water Supply	-	X	-	-	-	-	-	-	-
San Francisco Bay	Napa	Foss Valley Dam	Dam	-	Atlas Peak Vineyards	Tributary Milliken Creek	1988	800	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Kimball Canyon Dam	Dam	Kimball Reservoir	Ellen Macveagh	Kimball Creek	1939	344	Water Supply	-	X	-	-	-	-	-	-	-
San Francisco Bay	Napa	Lake William	Reservoir		City of Napa	Tributary Milliken Creek	1960	340	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Wine Lake	Reservoir		John Newmeyer, Green Valley Ranch	Tributary Carneros Creek	1953	320	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Heitz Dam	Dam		Howell Mountain Mutual Water Company	Tributary Pope Creek	1991	272	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Deer Lake Dam	Dam		Anthony J. and Ione A. Cataldo	Tributary Angwin Creek	1958	260	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Saint Helena Lower Dam	Dam		Howard E. Thompson	Tributary Napa River	1878	210	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Francisco Bay	Napa	Olson Dam	Dam		Michael J. Maloney	Ledgewood Creek	1955	200	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Lake Marie Dam	Dam		Elizabeth C. Williamson	Tributary Tulucay Creek	1908	170	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Rancho La Jota Dam	Dam	-	Sage Canyon, LLC; Allan Chapman	Tributary Conn Creek	1959	170	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Angwin Dam	Dam		Pacific Union College	Moore Creek	1967	156	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Green Valley Lake Dam	Dam		Heitz Wine Cellars	Dug Road Gulch	1956	150	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Lake Naz Dam	Dam	Lake Naz	Napa State Hospital	Tributary Napa River	1955	150	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Circle S Dam	Dam		Circle S Ranch, LLC; Chris Millich	Tributary Milliken Creek	1979	131	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Buena Vista Winery Dam	Dam		Buena Vista Winery, Inc.	Tributary Hudeman Slough	1971	120	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Lake Leticia	Reservoir		William E. Jarvis	Tributary Milliken Creek	1960	115	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	La Herradura Dam	Dam		City of Vallejo	Tributary Conn Creek	1948	110	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Henne Dam	Dam		Hudson Vineyards	Angwin Stream	1959	109	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Francisco Bay	Napa	Morgan Reservoir	Reservoir		Robert Egan	Tributary Gordon Valley Creek	1983	108	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Crystal Dam	Dam		Bob Dickson	Tributary Crystal Creek	1952	105	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Hudson Vineyards Dam	Dam		Raymond Vineyard & Cellar, Inc.	Tributary Huichica Creek	1983	105	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Eastside Reservoir Dam	Dam	-	City of Napa	Offstream	1948	92	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Lake Cynthia Dam	Dam		William E. Jarvis	Tributary Soda Creek	1955	92	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Robert L. Matheson Dam	Dam	-	Vivette & Company, DBA Saintsbury	Elder Creek	1954	90	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Orville Dam	Dam	Lake Orville	State Department of Veteran Affairs	Angwin Creek	1959	89	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Willow Lake No. 1	Reservoir	-	Unknown	Tributary Napa River	Proposed	89	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Jamieson Vineyards Dam	Dam	-	City of Calistoga	Tributary Fagan Creek	Unknown	75	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Scotts Canyon Dam	Dam	-	State Department of Veteran Affairs	Tributary Carneros Creek	1948	58	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Linda Vista Dam	Dam	-	William and Barbara Morgan	Tributary Chiles Creek	1959	52	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Francisco Bay	Napa	B.J. Robinson Dam	Dam	-	Massimo De Simoni	Tulucay Creek	1957	49	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Lake Camille Dam	Dam	-	Napa State Hospital	Tributary Tulucay Creek	1880	47	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Veterans Home Dam	Dam	Lake Hinman	Mr. Rene Di Rosa	Tributary Napa River	1908	39	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Bassett Brown Dam	Dam	-	Dr. Bassett Brown	Tributary Sage Creek	1990	36	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Old Waterworks Dam	Dam	-	Howell Mountain Mutual Water Company	Tributary Napa River	1883	28	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	Thompson Dam	Dam	-	C. Mondavi & Sons	Suisun Creek	1958	23	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Napa	East Napa Reservoir	Reservoir	East Napa Reservoir	Howell Mountain Mutual Water Company	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	San Francisco	Balboa Reservoir	Reservoir	-	City and County of San Francisco	Offstream	1957	437	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	San Francisco	Sunset North Basin Dam	Dam	Sunset Reservoir	City and County of San Francisco	Offstream	1938	275	-	-	X	-	-	-	-	-	-	X
San Francisco Bay	San Francisco	Sunset South Basin Dam	Dam		City and County of San Francisco	Offstream	1960	268	-	-	-	-	-	-	-	X	-	X
San Francisco Bay	San Francisco	University Mound South Basin Dam	Dam		City and County Of San Francisco	Offstream	1937	250	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Francisco Bay	San Francisco	University Mound North Basin Dam	Dam		City and County of San Francisco	Offstream	1885	182	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	San Francisco	Sutro Reservoir Dam	Dam	Sutro Reservoir	City and County of San Francisco	Offstream	1952	96	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	San Francisco	Stanford Heights Dam	Dam	Twin Peaks Reservoir	City and County of San Francisco	Offstream	1928	37	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	San Mateo	Lower Crystal Springs Reservoir	Reservoir	Crystal Springs Reservoir	City and County of San Francisco	San Mateo Creek	1888	57,910	Water Supply	-	X	-	-	-	-	-	-	X
San Francisco Bay	San Mateo	San Andreas Dam	Dam	San Andreas Lake	City and County of San Francisco	Tributary San Mateo Creek	1870	19,027	Water Supply	-	X	-	-	-	-	-	-	X
San Francisco Bay	San Mateo	Pilarcitos Dam	Dam	Pilarcitos Lake	City and County Of San Francisco	Pilarcitos Creek	1866	3,100	Water Supply	-	X	-	-	-	-	-	-	-
San Francisco Bay	San Mateo	Marina Lagoon Dam	Dam	-	City of San Mateo	Seal Slough	1997	1,600	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	San Mateo	Searsville Dam	Dam	Searsville Lake	Stanford University Trustee Board	Corte Madera Creek	1890	952	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	San Mateo	Bear Gulch Dam	Dam	Bear Gulch Reservoir	California Water Service Company	Tributary San Francisco Bay	1896	672	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	San Mateo	Pomponio Ranch Dam	Dam		Ann Bowers	Pomponio Creek	1952	256	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	San Mateo	Notre Dame	Dam		Belmont City Department of Public Works	Belmont Creek	Unknown	120	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Francisco Bay	San Mateo	Canada Road Dam	Dam	-	California Department of Transportation	Tributary San Mateo Creek	1971	74	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	San Mateo	Spenser Lake	Reservoir	-	Town of Hillsborough	Tributary San Francisco Bay	1876	73	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	San Mateo	Laurel Creek Dam	Dam	-	City of San Mateo	Laurel Creek	1969	55	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	San Mateo	Rickey Dam	Dam	-	MidPeninsula Open Space District	Peters Creek	1951	47	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	San Mateo	Emerald Lake 1 Lower Dam	Dam	Lower Emerald Lake	Emerald Lake Country Club	Tributary San Fran Bay	1885	45	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	San Mateo	Johnston Dam	Dam	-	Peninsula Open Space Trust	Arroyo Leon	1919	30	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	San Mateo	Crocker Dam	Dam	-	Town of Hillsborough	Sanchez Creek	1890	22	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	San Mateo	Upper Crystal Springs Reservoir	Reservoir	-	Spring Valley Water Company	Laguna Creek	1888	Unknown	Water Supply	-	X	-	-	-	-	-	-	X
San Francisco Bay	Santa Clara	Leroy Anderson Dam	Dam	Anderson Lake	Santa Clara Valley Water District	Coyote River	1950	91,280	Water Supply	-	X	-	-	-	-	-	-	-
San Francisco Bay	Santa Clara	Coyote Dam	Dam	Coyote Lake	Santa Clara Valley Water District	Coyote Creek	1936	23,666	Water Supply	-	X	X	-	-	-	X	-	X
San Francisco Bay	Santa Clara	James J. Lenihan Dam	Dam	Lexington Reservoir	Santa Clara Valley Water District	Los Gatos Creek	1953	21,430	Water Supply	-	X	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Francisco Bay	Santa Clara	Calero Dam	Dam	Calero Reservoir	Santa Clara Valley Water District	Calero Creek	1935	9,850	Water Supply	-	X	-	-	-	-	X	-	X
San Francisco Bay	Santa Clara	Elmer J. Chesbro Dam	Dam	Chesbro Reservoir	Santa Clara Valley Water District	Llagas Creek	1955	8,086	Flood Management	X	X	-	-	-	-	-	-	X
San Francisco Bay	Santa Clara	Austrian Dam	Dam	Lake Elsman	San Jose Water Agency	Los Gatos Creek	1950	6,200	-	-	X	-	-	-	-	-	-	X
San Francisco Bay	Santa Clara	Stevens Creek Dam	Dam	Stevens Creek Reservoir	Santa Clara Valley Water District	Stevens Creek	1935	3,800	Water Supply	-	X	-	-	-	-	-	-	X
San Francisco Bay	Santa Clara	Guadalupe Dam	Dam	Guadalupe Reservoir	Santa Clara Valley Water District	Guadalupe Creek	1935	3,460	Water Supply	-	X	-	-	-	-	-	-	X
San Francisco Bay	Santa Clara	Almaden Reservoir	Reservoir	-	Santa Clara Valley Water District	Alamitos Creek	1936	2,000	Water Supply	-	X	-	-	-	-	-	-	X
San Francisco Bay	Santa Clara	Felt Lake Dam	Dam	-	Stanford University Trustee Board	Tributary Los Trancos Creek	1930	900	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Santa Clara	Isabel Lake No. 1	Reservoir	-	O'Neal, Swenson, McDonald, and Hait	Tributary Isabel Creek	1948	717	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Santa Clara	Cherry Flat Dam	Dam	Cherry Flat Reservoir	City of San Jose	Penitencia Creek	1936	500	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Santa Clara	Vasona Percolation Reservoir	Reservoir		Santa Clara Valley Water District	Los Gatos Creek	1935	410	Water Supply	-	X	-	-	X	-	X	-	X
San Francisco Bay	Santa Clara	Grant Company 2 Dam	Dam	Halls Valley Lake	County of Santa Clara	Arroyo Aguague	1927	400	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Francisco Bay	Santa Clara	Lagunita Dam	Dam	Lagunita Reservoir	Stanford University Board Of Trustees	Tributary San Francisco Bay	1900	280	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Santa Clara	Laurel Springs Club Dam	Dam		Laurel Spring Club	Middle Fork Coyote Creek	1968	250	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Santa Clara	Upper Howell Dam	Dam	Howell Reservoir	San Jose Water Agency	Rundell Creek	1878	243	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Santa Clara	Lake Ranch Dam	Dam	Lake Ranch Reservoir	San Jose Water Agency	Beardsley Creek	1877	222	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Santa Clara	Williams Reservoir	Reservoir		San Jose Water Agency	Los Gatos Creek	1895	160	-	-	X	-	-	-	-	-	-	X
San Francisco Bay	Santa Clara	Lower Howell Dam	Dam		San Jose Water Agency	Rundell Creek	1877	153	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Santa Clara	Ed R. Levin Dam	Dam		County of Santa Clara	Tributary Arroyo De Los Coches	1968	150	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Santa Clara	Isabel Lake No. 2	Reservoir		O'Neal, Swenson, McDonald, and Hait	Tributary Isabel Creek	Unknown	95	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Santa Clara	Standish Reservoir	Reservoir		Santa Clara Valley Water District	Coyote Creek	1994	95	-	-	X	-	-	-	-	-	-	X
San Francisco Bay	Santa Clara	Kuhn Dam	Dam	-	Peggy Kuhn Thompson	Tributary Dry Creek	1947	85	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Santa Clara	Coyote Percolation Dam	Dam	-	Santa Clara Valley Water District	Coyote Creek	1934	72	Water Supply	-	X	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Francisco Bay	Santa Clara	Kelly Cabin Can Dam	Dam	-	State Department of Parks and Recreation	Kelly Cabin Canyon Creek	1955	70	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Santa Clara	Foothill Park Dam	Dam	Boronda Lake	City of Palo Alto	Tributary Los Trancos Creek	1988	67	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Santa Clara	Higuera Dam	Dam	-	Wells Fargo Bank	South Calera Creek	1953	65	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Santa Clara	San Felipe Ranch Dam	Dam	-	William R. Hewlett, et al.	Tributary San Felipe Creek	1959	64	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Santa Clara	Columbine Dam	Dam	-	San Jose Water Agency	Offstream	1963	60	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Santa Clara	Rinconada Reservoir Dam	Dam	Rinconada Reservoir	Santa Clara Valley Water District	Offstream	1969	46	Water Supply	-	X	-	-	-	-	-	-	X
San Francisco Bay	Santa Clara	Almaden Valley Dam	Dam	Almaden Reservoir	San Jose Water Agency	Tributary Alamitos Creek	1965	27	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Santa Clara	Searsville Dam	Dam	Searsville Lake	Stanford University Trustee Board	San Francisquito Creek, Bear Creek, Corte Madera Creek	1892	Unknown	-	-	-	-	-	-	-	-	-	-
San Francisco Bay	Solano	Lake Herman Dam	Dam	Lake Herman	City of Benicia	Sulphur Springs Creek	1905	2,210	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Solano	Lake Madigan Dam	Dam	Lake Madigan	City of Vallejo	Wild Horse Creek	1908	1,175	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Francisco Bay	Solano	Lake Frey	Reservoir	-	City of Vallejo	Wild Horse Creek	1894	1,075	-	-	X	-	-	-	-	-	-	X
San Francisco Bay	Solano	Lake Chabot Dam	Dam	-	City of Vallejo	Blue Rock Springs Creek	1870	504	-	-	X	-	-	-	-	-	-	X
San Francisco Bay	Solano	Montezuma Dam	Dam		Montezuma Wetlands, LLC	Unknown	2003	225	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Solano	Summit Reservoir Dam	Dam	Summit Reservoir	City Of Vallejo	Offstream	1968	220	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Solano	Municipal Dam	Dam	Suisun Reservoir	City of Suisun	Tributary Suisun Creek	1939	169	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Solano	Pennsylvania Creek Dam	Dam		City of Fairfield	Pennsylvania Creek	1958	148	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Solano	Terminal Dam	Dam	Terminal Reservoir	U.S. Bureau of Reclamation	Green Valley Offstream	1959	119	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Solano	Terminal South Dike	Dike	Terminal Reservoir, South	U.S. Bureau of Reclamation	Green Valley Offstream	1959	119	-	-	-	-	-	-	-	-	-	-
San Francisco Bay	Solano	Swanzy Lake Dam	Dam	Swanzy Reservoir	City of Vallejo	Tributary Carquinez Stream	1931	107	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Solano	Pond 2B	Reservoir	-	International Technology Corporation	Tributary Suisun Bay	1975	89	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Solano	Fleming Hill No. 2 Dam	Dam	-	City of Fairfield	Tributary Napa River	1912	33	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Francisco Bay	Solano	Dickson Hill Dam	Dam	-	City of Vallejo	Offstream	1960	27	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Sonoma	Suttonfield Dam	Dam	Suttonfield Lake	Sonoma Developmental Center	Sonoma Creek	1938	600	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Sonoma	Fern Lake Dam	Dam		Sonoma Developmental Center	Tributary Mill Creek	1921	241	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Sonoma	Sonoma Hills Reservoir	Reservoir		Fred Cline	Tributary Tolay Creek	1991	240	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Sonoma	Lawler Dam	Dam	Petaluma Reservoir	City of Petaluma	North Creek	1910	190	-	-	X	-	-	-	-	-	-	X
San Francisco Bay	Sonoma	Sonoma Valley County Sanitation District Reclamation Pond 2	Reservoir		Sonoma County Water Agency	Offstream	1990	187	Irrigation	-	-	X	-	-	-	-	X	X
San Francisco Bay	Sonoma	Sonoma Valley County Sanitation District Reclamation Pond 1	Reservoir		Sonoma County Water Agency	Offstream	1990	166	Irrigation	-	-	X	-	-	-	-	X	X
San Francisco Bay	Sonoma	Sleepy Hollow 2 Dam	Dam		Sleepy Hollow Properties	Tributary Petaluma Creek	1949	104	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Sonoma	Paradise Vineyards	Reservoir		Paradise Vineyards, LLC	Tributary Tolay Creek	2003	100	Irrigation	-	-	X	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Francisco Bay	Sonoma	Pinheiro Dam	Dam	-	Frank Teixeria	Tributary Petaluma River	1967	83	-	-	-	-	-	-	-	-	-	X
San Francisco Bay	Sonoma	Lowrey No. 1 Dam	Dam	-	Roy H. Elliott, Jr.	Tributary Carriger Creek	1954	82	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Alameda	Bethany Forebay Dam	Dam	-	DWR	Tributary Italian Slough	1961	5,250	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Alpine	Upper Blue Creek Dam	Dam	Upper Blue Lake	Pacific Gas and Electric Company	Blue Creek	1901	7,500	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Alpine	Meadow Lake	Reservoir	-	Pacific Gas and Electric Company	Tributary North Fork Mokelumne	1903	5,160	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Alpine	Alpine Dam	Dam	Lake Alpine	Northern California Power Agency	Silver Creek	1906	4,600	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Alpine	Alpine Auxiliary No. 2	Dam	-	Northern California Power Agency	Silver Creek	Unknown	4,300	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Alpine	Alpine Auxiliary No. 3	Dam	-	Northern California Power Agency	Silver Creek	Unknown	4,300	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Alpine	Alpine Auxiliary No. 4	Dam	-	Northern California Power Agency	Silver Creek	Unknown	4,300	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Alpine	Lower Blue Lake	Reservoir	-	Pacific Gas and Electric Company	Blue Creek	1903	4,300	Hydroelectricity	-	X	-	-	-	X	-	-	-
San Joaquin River	Alpine	Union Auxiliary No. 2	Dam	-	Northern California Power Agency	Tributary North Fork Stanislaus River	Unknown	3,200	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Alpine	Union Auxiliary No. 3	Dam	-	Northern California Power Agency	Tributary North Fork Stanislaus River	Unknown	3,200	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Joaquin River	Alpine	Union Auxiliary No. 4	Dam	-	Northern California Power Agency	Tributary North Fork Stanislaus River	Unknown	3,200	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Alpine	Union Auxiliary No. 7	Dam	-	Northern California Power Agency	Tributary North Fork Stanislaus River	Unknown	3,200	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Alpine	Utica Auxiliary No. 2	Dam	-	Northern California Power Agency	Tributary North Fork Stanislaus River	Unknown	2,500	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Alpine	Utica Auxiliary No. 3	Dam	-	Northern California Power Agency	Tributary North Fork Stanislaus River	Unknown	2,500	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Alpine	Utica Auxiliary No. 4	Dam	-	Northern California Power Agency	Tributary North Fork Stanislaus River	Unknown	2,500	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Alpine	Utica Auxiliary No. 5	Dam	-	Northern California Power Agency	Tributary North Fork Stanislaus River	Unknown	2,500	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Alpine	Utica No. 1 Dam	Dam	Utica Reservoir	Northern California Power Agency	North Fork Stanislaus River	1908	2,400	Irrigation	-	-	X	-	-	-	-	-	-
San Joaquin River	Alpine	Union Dam	Dam	Union Reservoir	Northern California Power Agency	North Fork Stanislaus River	1902	2,000	Water Supply	-	X	-	-	-	-	-	-	-
San Joaquin River	Alpine	Twin Lakes	Reservoir	-	Pacific Gas and Electric Company	Tributary North Fork Mokelumne	1901	1,300	Hydroelectricity	-	-	-	-	-	X	-	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Joaquin River	Alpine	Reba Dam	Dam	Bear Lake	Lake Alpine Water Company	Tributary Bloods Creek	1965	361	Water Supply	-	X	-	-	-	-	-	-	-
San Joaquin River	Alpine	North Fork Diversion Dam	Dam	North Fork Diversion Reservoir	Calaveras County Water District	North Fork Stanislaus River	1988	120	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Amador	Jackson Creek Spillway Dam	Dam	-	East Bay Municipal Utilities District	Mokelumne River	Unknown	198,000	Water Supply	-	X	-	X	-	X	X	-	-
San Joaquin River	Amador	Pardee Dam	Dam	Pardee Reservoir	East Bay Municipal Utilities District	Mokelumne River	1929	197,950	Water Supply	-	X	-	-	-	X	X	-	-
San Joaquin River	Amador	Lower Bear River Reservoir	Reservoir	-	Pacific Gas and Electric Company	Bear River	1952	48,750	Hydroelectricity	-	-	-	X	-	X	X	-	-
San Joaquin River	Amador	Jackson Creek Dam	Dam	Lake Amador	Jackson Valley Irrigation District	Jackson Creek	1965	22,000	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Amador	Upper Bear River Dam	Dam	Bear River Dam	Pacific Gas and Electric Company	Bear River	1900	7,400	Hydroelectricity	-	-	-	-	-	X	X	-	X
San Joaquin River	Amador	Bear River Dam	Dam	Bear River Reservoir	Pacific Gas and Electric Company	Bear River	1900	6,818	Hydroelectricity	-	-	-	-	-	X	X	-	X
San Joaquin River	Amador	Arroyo Seco Dam	Dam	Loch Lane Lake	C. Howard Est Howard Prop.	Tributary Dry Creek	1957	2,433	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Amador	Lake Tabeaud Dam	Dam	Lake Tabeaud	Pacific Gas and Electric Company	South Fork Jackson Creek	1901	1,170	Hydroelectricity	-	-	-	-	-	X	-	-	-
San Joaquin River	Amador	Pond K	Reservoir	-	Unimin Corporation	Unknown	2006	1,056	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Amador	CSP Mule Creek Dam	Dam	-	State Department of Corrections	Offstream	1988	535	Irrigation	-	-	X	-	-	-	-	-	-
San Joaquin River	Amador	Tiger Creek Regulator Dam	Dam	-	Pacific Gas and Electric Company	Tiger Creek	1931	523	Hydroelectricity	-	-	-	-	-	X	X	-	-
San Joaquin River	Amador	Henderson Dam	Dam	Henderson Reservoir	Amador Regional Sanitation Authority	Jackass Creek	1923	500	Waste Water	-	-	-	-	-	-	-	X	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Joaquin River	Amador	Sutter Gold Venture Waste Pond No. 2	Reservoir	-	Sutter Gold Venture	Tributary Amador Creek	Unknown	419	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Amador	Bear Valley SH Dam	Dam	-	Bear Valley Water District	Tributary Bloods Creek	1975	346	Waste Water	-	-	-	-	-	-	-	X	-
San Joaquin River	Amador	Preston Dam	Dam	Preston Reservoir	Amador Regional Sanitation Authority	Tributary Mule Creek	1949	268	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Amador	Goffinet Dam	Dam	-	Dave Maiyero	Jackass Creek	1954	197	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Amador	Plymouth Effluent Reservoir	Reservoir	-	City of Plymouth	Tributary Lower Indian Creek	1989	187	-	-	-	-	-	-	-	-	X	X
San Joaquin River	Amador	Shenandoah Lake Dam	Dam	Steiner Pond	HFH, Ltd.	Pigeon Creek	1962	168	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Amador	John Orr Dam	Dam	-	Chris H. and Fay E. Gansberg	Tributary Jackson Creek	1959	152	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Amador	Vicini Dam	Dam	-	Gordon J. Vicini	Tributary Willow Creek	1980	150	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Amador	Jameson Dam	Dam	-	Robert Jameson	Cosumnes River	1951	102	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Amador	Electra Diversion Dam	Dam	-	Unknown	North Fork Mokelumne River	1947	65	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Amador	Sutter Gold Venture Waste Pond No. 3	Reservoir	-	Sutter Gold Venture	Tributary Amador Creek	Unknown	60	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Amador	West Point Regulating Dam	Dam	-	Calaveras County Water District	Ruse Creek	1965	60	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Amador	Preston Forebay	Reservoir	-	Amador Regional Sanitation Authority	Offstream	1892	30	-	-	-	-	-	-	-	-	X	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Joaquin River	Amador	Ione Canal	Reservoir	-	Amador Water Agency	Ione Canyon	1962	24	-	-	X	-	-	-	-	-	-	X
San Joaquin River	Amador	Rancheria Creek	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	New Melones Dam	Dam	New Melones Lake	Unknown	Stanislaus River	1979	2,870,000	Irrigation, Water Supply	X	X	X	-	-	X	X	-	-
San Joaquin River	Calaveras	New Hogan Dam	Dam	New Hogan Lake	USACE	Calaveras River	1963	317,100	Hydroelectricity	X	X	X	-	-	X	X	-	-
San Joaquin River	Calaveras	Pardee Dam	Dam	Pardee Reservoir	East Bay Municipal Utilities District	Mokelumne River	1929	197,950	Water Supply	-	X	-	-	-	X	X	-	-
San Joaquin River	Calaveras	Salt Springs Dam	Dam	Salt Springs Reservoir	Rock Creek Water District	North Fork Mokelumne River	1931	141,900	Hydroelectricity	-	-	-	-	-	X	-	-	-
San Joaquin River	Calaveras	Salt Springs Valley Dam	Dam	Salt Springs Valley Reservoir	Rock Creek Water District	Rock Creek	1882	10,900	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Tiger Creek Afterbay	Reservoir	-	Pacific Gas and Electric Company	NF Mokelumne River	1931	3,960	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Flotation Tails	Reservoir	-	Meridian Gold Company	Tributary Little Johns Creek	1989	3,680	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Redhawk Lake	Reservoir	-	Calaveras Public Utility District	North Fork Calaveras River	1882	2,760	Irrigation	-	-	X	-	-	-	-	-	-
San Joaquin River	Calaveras	Calaveras Public Utility District Middle Fork Dam	Dam	Schaads Reservoir	Calaveras Public Utility District	Middle Fork Mokelumne River	1939	2,000	Hydroelectricity, Water Supply	X	X	X	-	-	X	-	-	-
San Joaquin River	Calaveras	Jeff Davis Dam	Dam	-	Calaveras Public Utility District	Tributary Wet Gulch Creek	1973	1,800	Water Supply	-	X	-	-	-	-	-	-	-
San Joaquin River	Calaveras	Skyrocket Mine Dam	Dam	Skyrocket Mine	Meridian Gold Company	Littlejohn Creek	1999	1,715	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Joaquin River	Calaveras	Flowers Dam	Dam	-	Oak Canyon Ranch, LLC	Little Johns Creek	1957	724	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Cherokee Dam	Dam	-	W.A. Spence Et Ux.	Cherokee Creek	1959	630	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Emery Dam	Dam	-	M24 Ranch Association	McKinneys Creek	1850	630	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Goodwin Dam	Dam	-	Riverside County Flood Control and Water Conservation District	Stanislaus River	1912	500	Fish and Wildlife Protection	-	-	-	X	-	-	-	-	-
San Joaquin River	Calaveras	LCRMF Dam	Dam	-	Meridian Gold Company	Tributary Clover Creek	1989	480	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Wallace Reservoir	Reservoir	-	Wallace CSD	Tributary Bear Creek	Unknown	410	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Stanislaus Forebay East	Reservoir	-	Pacific Gas and Electric Company	North Fork Stanislaus River Offstream	1908	340	Hydroelectricity	-	-	-	-	-	X	-	-	-
San Joaquin River	Calaveras	White Pines Reservoir	Reservoir	-	Calaveras County Water District	San Antonio Creek	1970	262	-	-	X	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Hunters Dam	Dam	-	Utica Power Authority	Mill Creek	1928	253	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Ferrario Dam	Dam	-	Robert and Lynn Wilson	Tributary Bear Creek	1955	250	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Holman Dam	Dam	-	City Of Angels	Tributary Angels Creek	1976	250	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Copperopolis Dam	Dam	Copperopolis Reservoir	Jon and Angelita Janofsky	Penney Creek	1905	225	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Copper Cove Dam	Dam	-	Calaveras County Water District	Tributary Littlejohns Creek	1993	205	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Joaquin River	Calaveras	La Contenta Reservoir	Reservoir	-	Calaveras County Water District	Tributary Cosgrove Spring	2002	172	-	-	X	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Stevenot Reservoir	Reservoir	-	Sutton Enterprises	Tributary Carson Creek	1987	150	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Hein Dam	Dam	-	Naki Corporation	Tributary Bear Creek	1962	145	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Andrew Cademartori Dam	Dam	-	Union Public Utility District	Seasonal Stream	1983	142	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Murphys Wastewater Dam	Dam	-	Murphys Sanitary District	Offstream	1980	140	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Tanner Dam	Dam	-	Lake Mont Pines Homeowners Association	Cowell Creek	1959	124	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Forest Meadows Dam	Dam	-	Forest Meadows Devel Co.	Angels Creek	1975	117	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	McCarty Dam	Dam	-	Patricia McCarty	Tributary Johnny Creek	1938	93	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Bevanda Dam	Dam	-	Ryan Voorhees	Tributary Calaveras River	1925	90	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Ross Dam	Dam	Ross Reservoir	Utica Power Authority	French Gulch Creek	1895	85	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	LCRMFPWRP Dam	Dam	-	Meridian Gold Company	Offstream	1989	82	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Pine Peak No. 4 Dam	Dam	-	The Mariner Group	Tributary North Fork Calaveras River	1955	73	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Joaquin River	Calaveras	Reid Dam	Dam	-	Raymond J. Vernazza	Esperanza Creek	1969	70	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Christensen No. 1 Dam	Dam	-	Sainte Limited	Steele Creek	1951	69	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Fly-in Acres Dam	Dam	-	Blue Lakes Springs Homeowners Association	Moran Creek	1953	58	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Murphys Forebay Dam	Dam	-	Utica Power Authority	Tributary Angels Creek	1953	54	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Mokelumne Hill Dam	Dam	-	Mokelumne Hill Sanitary District	Tributary Mokelumne River	1973	52	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Tiger Creek Forebay	Reservoir	-	Pacific Gas and Electric Company	Tiger Creek	Unknown	42	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Murphys Afterbay Dam	Dam	-	Utica Power Authority	Tributary Angels Creek	1953	40	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Stanislaus Afterbay	Reservoir	-	Pacific Gas and Electric Company	Middle Fork Stanislaus River	1963	35	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Calaveras	Old McCormick Reservoir	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Contra Costa	Los Vaqueros Dam	Dam	Los Vaqueros Reservoir	Contra Costa Water District	Kellogg Creek	1997	100,000	Water Supply	X	X	-	-	-	-	X	-	-
San Joaquin River	Contra Costa	Clifton Court Forebay	Reservoir	-	DWR	Tributary Old River	1970	29,000	Water Supply	-	X	-	-	-	-	X	-	-
San Joaquin River	Contra Costa	Marsh Creek Dam	Dam	Marsh Creek Reservoir	Contra Costa County FCWCD	Marsh Creek	1963	4,425	Fish and Wildlife Protection, Flood Management, Recreation	X	-	-	X	-	-	X	-	-
San Joaquin River	Contra Costa	Contra Loma Dam	Dam	Contra Loma Reservoir	U.S. Bureau of Reclamation	San Joaquin River Offstream	1967	2,630	Water Supply	-	X	-	-	-	-	X	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Joaquin River	Contra Costa	Contra Loma Dike No. 2	Dike	Contra Loma Reservoir	U.S. Bureau of Reclamation	San Joaquin River Offstream	1967	2,630	-	-	-	-	-	-	-	-	-	-
San Joaquin River	Contra Costa	Contra Loma Dike No. 3	Dike	Contra Loma Reservoir	U.S. Bureau of Reclamation	San Joaquin River Offstream	1967	2,630	-	-	-	-	-	-	-	-	-	-
San Joaquin River	Contra Costa	Santos Reservoir	Reservoir	-	Unimin Corporation	Unknown	1987	880	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Contra Costa	Antioch Reservoir	Reservoir	Antioch Municipal	City of Antioch	Tributary San Joaquin River	1935	722	Waste Water	-	-	-	-	-	-	-	X	-
San Joaquin River	Contra Costa	Dry Creek Dam	Dam	-	Contra Costa County FCWCD	Dry Creek	1963	330	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Contra Costa	Kellogg Creek Debris Reservoir	Reservoir	-	NRCS, Contra Costa County FCWCD	Kellogg Deer	1963	233	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Contra Costa	Alhambra Lake	Weir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
San Joaquin River	Contra Costa	East Antioch Creek	Weir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
San Joaquin River	El Dorado	Sly Park Saddle Dike	Dike	Jenkinson Lake	U.S. Bureau of Reclamation	Sly Park Creek Offstream	1955	44,390	-	-	-	-	-	-	-	-	-	-
San Joaquin River	El Dorado	Sly Park Dam	Dam	Jenkinson Lake	El Dorado Irrigation District	Sly Park Creek	1955	44,300	Irrigation	-	-	x	-	-	-	-	-	-
San Joaquin River	El Dorado	New Bass Lake Dam	Dam	Bass Lake	El Dorado Irrigation District	Carson Creek	1978	745	Irrigation	-	-	x	-	-	-	x	-	-
San Joaquin River	El Dorado	Cameron Park Lake	Reservoir	-	Cameron Park CSD	Deer Creek	1951	480	Recreation	-	-	-	-	-	-	X	-	-
San Joaquin River	El Dorado	Big Canyon Creek Dam	Dam	-	N. Bruce and Barbara E. Ashwill	Big Canyon Creek	1935	395	Flood Management	X	-	-	-	-	-	-	-	-
San Joaquin River	El Dorado	D'Agostini Dam	Dam	-	Stanley and Victoria Ri	Spanish Creek	1950	355	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Joaquin River	El Dorado	Patterson Dam	Dam	-	Lake Oaks Community	Deadman Creek	1960	350	Recreation	-	-	-	-	-	-	x	-	-
San Joaquin River	El Dorado	Crystal Lake Dam	Dam	-	Bridlewood Canyon Owners Association	Tributary Deer Creek	1952	225	-	-	-	-	-	-	-	-	-	X
San Joaquin River	El Dorado	El Dorado Hills Dam	Dam	-	El Dorado Irrigation District	Offstream	1980	200	-	-	-	-	-	-	-	-	-	X
San Joaquin River	El Dorado	Holiday Lake Dam	Dam	Holiday Lake	Holiday Lake CSD	Sawmill Creek	1951	150	-	-	-	-	-	-	-	-	-	X
San Joaquin River	El Dorado	Aukum View Dam	Dam	-	Showcase Ranches CSD	Tributary Flat Creek	1962	136	-	-	-	-	-	-	-	-	-	X
San Joaquin River	El Dorado	Barnett Dam	Dam	-	Douglas Milton	Barnett Creek	1948	115	-	-	-	-	-	-	-	-	-	X
San Joaquin River	El Dorado	Sun Ridge Meadow Dam	Dam	-	Sun Ridge Meadow Owners Association	Tributary Latrobe Creek	1990	83	-	-	-	-	-	-	-	-	-	X
San Joaquin River	El Dorado	Geotherm WW EVAP3 Dam	Dam	-	Mr. R.S. Livermore	Offstream	Unknown	50	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Fresno	Friant Dike 1	Dike	Millerton Lake	U.S. Bureau of Reclamation	San Joaquin River Offstream	1942	555,500	-	-	-	-	-	-	-	-	-	-
San Joaquin River	Fresno	Friant Dike 2	Dike	Millerton Lake	U.S. Bureau of Reclamation	San Joaquin River Offstream	1942	555,500	-	-	-	-	-	-	-	-	-	-
San Joaquin River	Fresno	Friant Dike 3	Dike	Millerton Lake , Millerton Highway Embankment	U.S. Bureau of Reclamation	San Joaquin River Offstream	1942	555,500	-	-	-	-	-	-	-	-	-	-
San Joaquin River	Fresno	Friant Millerton Road Embankment A Dam	Dam	Millerton Lake	U.S. Bureau of Reclamation	San Joaquin River Offstream	1942	555,500	Water Supply	X	X	X	-	-	-	-	-	-
San Joaquin River	Fresno	Shaver Lake Dam	Dam	Shaver Lake	Southern California Edison Co.	Stevenson Creek	1927	135,283	Hydroelectricity	-	-	-	X	-	X	-	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Joaquin River	Fresno	Vermilion Valley Dam	Dam	Lake Thomas A. Edison	Southern California Edison Co.	Mono Creek	1954	125,000	Hydroelectricity	-	-	-	-	-	X	X	-	-
San Joaquin River	Fresno	Big Creek Dam No. 2	Dam	-	Southern California Edison Co.	Big Creek	1913	89,800	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Fresno	Big Creek Dam No. 3	Dam	-	Southern California Edison Co.	Big Creek	1913	89,800	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Fresno	Big Creek Dam No. 3A	Dam	-	Southern California Edison Co.	Big Creek	1917	89,800	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Fresno	Huntington Lake 1 Dam	Dam	Huntington Lake	Southern California Edison Co.	Big Creek	1917	88,834	Hydroelectricity	-	-	-	-	-	X	-	-	-
San Joaquin River	Fresno	Florence Lake Dam	Dam	Florence	Southern California Edison Co.	South Fork San Joaquin River	1926	64,406	Recreation	-	-	-	-	-	-	X	-	-
San Joaquin River	Fresno	Big Creek No. 7 Dam	Dam	Redinger Lake	Southern California Edison Co.	San Joaquin River	1951	35,000	Hydroelectricity	-	-	-	-	-	X	-	-	-
San Joaquin River	Fresno	Little Panoche Detention Basin Dam	Dam	Little Panoche Reservoir	U.S. Bureau of Reclamation	Little Panoche Creek	1966	13,270	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Fresno	Kerckhoff Diversion Dam	Dam	-	Unknown	San Joaquin River	1920	4,200	Hydroelectricity	-	-	-	-	-	X	-	-	-
San Joaquin River	Fresno	Mendota Diversion Dam	Dam	Mendota Pool	Unknown	San Joaquin River	1917	3,000	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Fresno	Balsam Meadow Dam	Dam	-	Southern California Edison Co.	West Fork Balsam Creek	1986	2,040	Irrigation	-	-	X	-	-	-	X	-	-
San Joaquin River	Fresno	Portal Forebay Dike	Dike	-	Southern California Edison Co.	Camp 61 Creek	1956	395	-	-	-	-	-	-	-	-	-	-
San Joaquin River	Fresno	Portal Powerhouse Forebay	Reservoir	Lake Edison Dam; Lake Thomas A. Edison Dam	Southern California Edison Co.	Tributary South Fork San Joaquin River	1955	325	Hydroelectricity	-	X	-	-	-	X	X	-	-
San Joaquin River	Fresno	Bear Creek Diversion Dam	Dam	Bear Diversion	Southern California Edison Co.	Bear Creek	1927	103	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Joaquin River	Fresno	Big Creek No. 4 Dam	Dam	-	Southern California Edison Co.	Big Creek	1913	100	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Fresno	Mono Creek Diversion Dam	Dam	Mono Creek	Southern California Edison Co.	Mono Creek	1927	45	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Fresno	Big Creek No. 5 Dam	Dam	-	Southern California Edison Co.	Big Creek	1921	42	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Fresno	San Joaquin River Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Madera	Friant Dam	Dam	Millerton Lake	U.S. Bureau of Reclamation	San Joaquin River	1942	555,500	Irrigation	-	-	X	X	-	X	-	-	-
San Joaquin River	Madera	Buchanan Dam	Dam	H.V. Eastman Lake	USACE	Chowchilla River	1975	150,000	Flood Management, Irrigation	X	-	X	-	-	-	-	-	-
San Joaquin River	Madera	Mammoth Pool Dam	Dam	Mammoth Pool Reservoir	Southern California Edison Co.	San Joaquin River	1960	123,000	Hydroelectricity	-	-	-	-	-	X	X	-	-
San Joaquin River	Madera	Hidden Dam	Dam	Hensley Lake	USACE	Fresno River	1975	90,000	Flood Management, Irrigation, Recreation	X	-	X	-	-	-	X	-	-
San Joaquin River	Madera	Crane Valley Storage Dam	Dam	Bass Lake	Pacific Gas and Electric Company	North Fork Willow Creek	1910	45,410	Hydroelectricity	-	-	-	-	-	X	X	-	-
San Joaquin River	Madera	Madera Lake Dam	Dam	Madera Equalization Reservoir	Madera Irrigation District	Fresno River	1958	2,300	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Madera	Big Creek No. 6 Dam	Dam	-	Southern California Edison Co.	San Joaquin River	1923	993	Hydroelectricity, Water Supply	-	X	-	-	-	X	-	-	-
San Joaquin River	Madera	Berenda Slough Dam	Dam	-	Chowchilla Water District	Berenda Slough	1962	960	Flood Management	X	-	-	-	-	-	-	-	-
San Joaquin River	Madera	Black Hawk Dam	Dam	-	Breck and Lynn Nott	Coarse Gold Creek	1971	740	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Madera	Chilkoot Dam	Dam	-	Pacific Gas and Electric Company	Chilkoot Creek	1890	308	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Joaquin River	Madera	Upper Wilcox Reservoir	Reservoir	-	C B S Development Corporation	Tributary Picayunne Creek	1930	200	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Madera	Lake Jane Dam	Dam	-	Swd Investments Fulton Ranch, Inc.	Tributary Hildreth Creek	1961	182	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Madera	No. 2 Reservoir	Reservoir	Manzanita Lake	Pacific Gas and Electric Company	North Fork Willow Creek	1912	168	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Madera	Spring Dam	Dam	Yosemite Lakes	Yosemite Lakes Owners Association	Longhollow Creek	1971	152	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Madera	Oakhurst Wastewater Treatment Facility Reservoir	Reservoir	-	Madera County Maintenance District 22A	Tributary Fresno River	2005	110	-	-	-	-	-	-	-	-	X	X
San Joaquin River	Madera	Sierra Vista Dam	Dam	-	OK Property Co., Inc.	Chowchilla River	1872	90	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Madera	Middle Lake Dam	Dam	Middle Lake	L.R. Martin, Inc.	Tributary Buzzard Canyon	1953	74	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Madera	No. 1 Forebay	Reservoir	Corrine Lake	Pacific Gas and Electric Company	Tributary North Fork San Joaquin River	1896	69	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Madera	No. 3 Forebay	Reservoir	-	Pacific Gas and Electric Company	Tributary North Fork Willow Creek	1906	20	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Madera	San Joaquin No. 3 Forebay	Reservoir	-	Pacific Gas and Electric Company	North Fork Willow Creek	1906	19	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Madera	Dry Creek Diversion Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Mariposa	Exchequer Dike	Dike	-	Merced Irrigation District	Merced River	Unknown	1,200,000	-	-	-	-	-	-	-	-	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Joaquin River	Mariposa	New Exchequer Dam	Dam	Lake McClure	Merced Irrigation District	Merced River	1967	1,032,000	Irrigation, Hydroelectricity	X	X	-	-	-	X	X	-	-
San Joaquin River	Mariposa	Mariposa Dam	Dam	Mariposa Reservoir	USACE	Mariposa Creek	1948	15,000	-	-	-	-	-	-	-	X	-	X
San Joaquin River	Mariposa	McSwain Dam	Dam	-	Merced Irrigation District	Merced River	1966	9,730	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Mariposa	Bear Dam	Dam	-	USACE	Bear Creek	1954	7,700	Flood Management	X	-	-	-	-	-	-	-	-
San Joaquin River	Mariposa	Owens Dam	Dam	-	USACE	Owens Creek	1949	3,600	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Mariposa	McMahon Dam	Dam	-	Russell S. Rolfe Et Ux.	Maxwell Creek	1957	520	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Mariposa	Stockton Creek Dam	Dam	-	Mariposa Public Utility District	Stockton Creek	1950	368	Water Supply	-	X	-	-	-	-	-	-	-
San Joaquin River	Mariposa	Green Valley Dam	Dam	-	Traian And Alina Micu	Smith Creek	1957	240	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Mariposa	Hendricks Dam	Dam	-	Joe Surprenant	Tributary Horse Creek	1958	130	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Mariposa	Metzger Dam	Dam	-	Dennis Seastrom	Dutch Creek	1956	75	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Mariposa	Whispering Oaks Dam	Dam	Bear Creek Lake	Whispering Oaks West Homeowners Association	Bear Creek	1968	69	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Mariposa	Mariposa Creek Weirs	Weir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
San Joaquin River	Merced	San Luis Dam	Dam	San Luis Reservoir	U.S. Bureau of Reclamation	San Luis Creek	1967	2,063,510	Hydroelectricity	-	-	-	-	-	X	X	-	-
San Joaquin River	Merced	San Luis Dike	Dike	-	U.S. Bureau of Reclamation	San Luis Creek Offstream	1967	2,063,510	-	-	-	-	-	-	-	-	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Joaquin River	Merced	O'Neill Forebay	Reservoir	O'Neill Forebay Reservoir, San Luis Forebay Reservoir	U.S. Bureau of Reclamation	San Luis Creek	1967	64,800	-	-	X	-	-	-	-	X	-	X
San Joaquin River	Merced	O'Neill Forebay Dike	Dike	O'Neill Forebay Reservoir, San Luis Forebay Reservoir	U.S. Bureau of Reclamation	San Luis Creek Offstream	1967	64,800	-	-	-	-	-	-	-	-	-	-
San Joaquin River	Merced	Los Banos Creek Detention Dike	Dike	Los Banos Reservoir	DWR	Los Banos Creek	1966	52,920	-	-	-	-	-	-	-	-	-	-
San Joaquin River	Merced	Lake Yosemite Dam	Dam	-	Merced Irrigation District	Merced River	1888	8,101	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Merced	Burns Creek Dam	Dam	-	USACE	Burns Creek	1950	6,800	Flood Management	X	-	-	-	-	-	-	-	-
San Joaquin River	Merced	Castle Dam	Dam	Canal Creek Flood Detention Reservoir (SJRFP System)	USACE, CVFPB, Merced irrigation District	Canal Creek	1993	6,000	Fish and Wildlife Protection, Flood Management, Irrigation	X	-	X	X	-	-	-	-	-
San Joaquin River	Merced	Los Banos Sewage Reservoir	Reservoir	-	City of Los Banos	Tributary Mud Slough	1963	1,200	-	-	-	-	-	-	-	-	X	X
San Joaquin River	Merced	Kelsey Dam	Dam	Kelsey Reservoir	H.G. Kelsey, Jr.	South Fork Dry Creek	1929	1,000	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Merced	Mustang Creek Dam	Dam	-	County of Merced	Mustang Creek	1975	700	Irrigation	-	-	X	-	-	-	-	-	-
San Joaquin River	Merced	Merced Falls Reservoir	Reservoir	-	Pacific Gas and Electric Company	Merced River	1901	620	Hydroelectricity	-	-	-	-	-	X	X	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Joaquin River	Merced	Crocker Diversion Dam	Dam	-	Merced Irrigation District	Merced River	1910	300	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Merced	Smith's Reservoir	Reservoir	-	Lloyds Bank, CA	Burns Creek	1941	218	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Merced	Owens Creek	Reservoir	-	USACE	Owens Creek	1957	8	-	-	X	X	-	-	X	-	-	X
San Joaquin River	Merced	Merced River Snelling Diversion Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Sacramento	Rancho Seco Dam	Dam	Rancho Seco Lake	Sacramento Municipal Utility District	Tributary Hadselville Creek	1972	2,950	Water Supply	-	X	-	-	-	-	X	-	-
San Joaquin River	Sacramento	Calero Dam	Dam	Calero Reservoir	Rancho Murieta Community Services District	Crevis Creek	1982	2,832	Water Supply	-	X	-	-	-	-	X	-	-
San Joaquin River	Sacramento	Van Vleck Dam	Dam	-	Van Vleck Ranch	Tributary Arkansas Creek	1950	2,000	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Sacramento	Chesbro Dam	Dam	Chesbro Reservoir	Rancho Murieta Community Services District	Tributary Cosumnes River	1972	1,250	Recreation	-	-	-	-	-	-	X	-	-
San Joaquin River	Sacramento	Clementia Dam	Dam	-	Rancho Murieta Community Services District	Tributary Cosumnes River	1976	850	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Sacramento	Michigan Bar No. 1 Dam	Dam	-	Rancho Murieta Community Services District	Tributary Cosumnes River	1989	814	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Sacramento	Hamel Dam	Dam	-	Vincent Dedomenico	Tributary Dry Creek	1957	350	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Sacramento	Mills Dam	Dam	-	Paul D. Frank	Tributary Cosumnes River	1952	195	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Joaquin River	Sacramento	Schneider Dam	Dam	-	Leland Schneider	Tributary Arkansas Creek	1941	126	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Sacramento	Galt Reservoir	Reservoir	-	City of Galt	Tributary Laguna Creek	1983	90	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Sacramento	Granlees Dam	Dam	-	Rancho Murieta CSD	Cosumnes River	1921	75	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Sacramento	Michigan Bar No. 2 Dam	Dam	-	Rancho Murieta CSD	Tributary Cosumnes River	1983	32	-	-	-	-	-	-	-	-	-	X
San Joaquin River	San Joaquin	Camanche Dam	Dam	Camanche Reservoir	East Bay Municipal Utilities District	Mokelumne River	1963	417,120	Flood Management, Water Supply	X	X	-	-	-	X	X	-	-
San Joaquin River	San Joaquin	Farmington Dam	Dam	Farmington Flood Control Basin	USACE	Rock and Little John Creeks	1951	52,000	-	-	-	-	-	-	-	-	-	X
San Joaquin River	San Joaquin	Reg Ww Cnt Oxid Dam	Dam	-	City of Stockton	Tributary San Joaquin River	1960	2,872	Water Supply	-	X	-	-	-	-	-	-	-
San Joaquin River	San Joaquin	Woodbridge Diversion Dam	Dam	Lodi Lake	Woodbridge Irrigation District	Mokelumne River	1910	2,464	-	-	-	-	-	-	-	-	-	X
San Joaquin River	San Joaquin	Davis No. 2 Dam	Dam	-	Fred Podesta, Jr.	Tributary Calaveras River	1955	1,400	-	-	-	-	-	-	-	-	-	X
San Joaquin River	San Joaquin	Gilmore Dam	Dam	-	Ann Grupe, Susan Depolo, and Luanne Malkmus	Tributary Mormon Slough	1918	550	-	-	-	-	-	-	-	-	-	X
San Joaquin River	San Joaquin	Maria Reservoir	Reservoir	-	Studley Company	Unknown	2003	277	-	-	-	-	-	-	-	-	-	X
San Joaquin River	San Joaquin	Foothill Ranch Dam	Dam	-	Lundblad Bros	Tributary Calaveras River	1952	100	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Joaquin River	San Joaquin	Beggs Dam	Dam	-	Robert Sprowls	Tributary Mokelumne River	1971	81	-	-	-	-	-	-	-	-	-	X
San Joaquin River	San Joaquin	Mine Run Dam	Dam	-	East Bay Municipal Utilities District	Mine Run Creek	1978	3	-	-	-	-	-	-	-	-	-	X
San Joaquin River	San Joaquin	Five Mile Slough	Weir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
San Joaquin River	San Joaquin	Paradise Cut Dam	Dam	Paradise Dam	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
San Joaquin River	San Joaquin	Stockton Diverting Canal Dam	Dam	Stockton Diverting Canal	-	Mormon Slough, Calaveras River	1910	Unknown	-	-	-	-	-	-	-	-	-	X
San Joaquin River	San Joaquin	Lower San Joaquin Levee Project (SJRFP system)	Reservoir	-	CVFPB, Lower San Joaquin Levee District	San Joaquin and Fresno Rivers, Bear Creek, Berenda and Ash Sloughs, Chowchilla Canal, Eastside, and Mariposa Bypasses	1966	Unknown	-	-	-	-	-	-	-	-	-	-	X
San Joaquin River	San Joaquin	Lower San Joaquin River and Tributaries Project (SJRFP system)	Reservoir	-	USACE, CVFPB, many Reclamation Districts	San Joaquin, Stanislaus, Tuolumne, Middle and Old Rivers, Littlejohns Creek, Paradise Cut	1972	Unknown	-	-	-	X	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Joaquin River	San Joaquin	Mosher Creek Diversion Dam	Dam	-	NRCS, San Joaquin County FCWCD, Bear Creek Soil Conservation District	Mosher Creek	1967	Unknown	-	X	-	-	-	-	-	-	-	X
San Joaquin River	San Luis Obispo	Las Tablas Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Stanislaus	Turlock Lake Dam	Dam	Turlock Lake	Turlock Irrigation District	Tributary Tuolumne River	1915	45,600	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Stanislaus	Woodward Reservoir	Reservoir	-	South San Joaquin Irrigation District	Simmons Creek	1918	35,000	Recreation	-	-	-	-	-	-	X	-	-
San Joaquin River	Stanislaus	Modesto Reservoir	Reservoir	Dallas Warner Reservoir	Modesto Irrigation District	Tributary Tuolumne River	1911	29,000	Recreation	-	-	-	-	-	-	X	-	-
San Joaquin River	Stanislaus	Haystack Dam	Dam	Haystack Reservoir	USACE	Black Rascal Creek	Unknown	8,800	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Stanislaus	Modesto Effluent Storage Reservoir	Reservoir	-	City of Modesto	Offstream	1987	7,830	-	-	-	-	-	-	-	-	X	X
San Joaquin River	Stanislaus	Dawson Lake Dam	Dam	-	Turlock Irrigation District	Tributary Tuolumne River	1896	960	Irrigation	-	-	x	-	-	x	x	-	-
San Joaquin River	Stanislaus	La Grange Dam	Dam	La Grange Reservoir	Turlock Irrigation District	Tuolumne River	1894	500	Irrigation, Hydroelectricity	-	-	x	-	-	x	-	-	-
San Joaquin River	Stanislaus	Orvis Dam	Dam	-	C. Bruce Orvis	Buckham Gulch	1959	500	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Stanislaus	Rodden Lake Dam	Dam	Rodden Lake	Oakdale Irrigation District	Lesnini Creek	1916	380	Irrigation	-	-	x	-	-	-	-	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Joaquin River	Tuolumne	Don Pedro Dam	Dam	Don Pedro Reservoir, Old Don Pedro Dam	Turlock Irrigation District	Tuolumne River	1971	2,030,000	Irrigation	-	-	X	-	-	-	-	-	-
San Joaquin River	Tuolumne	O'Shaughnessy Dam	Dam	Hetch Hetchy Reservoir	San Francisco Public Utilities Commission	Tuolumne River	1923	360,000	Hydroelectricity	-	-	-	-	-	X	X	-	-
San Joaquin River	Tuolumne	Cherry Valley Dam	Dam	Cherry Lake	San Francisco Public Utilities Commission	Cherry Creek	1956	273,500	Water Supply	-	X	-	-	-	X	X	-	-
San Joaquin River	Tuolumne	New Spicer Meadow Dam	Dam	New Spicer Meadow Reservoir	Calaveras County Water District	Highland Creek	1989	189,000	Water Supply, Irrigation, Recreation	-	X	X	-	-	-	X	-	-
San Joaquin River	Tuolumne	Beardsley Dam	Dam	-	TriDam Project	Middle Fork Stanislaus River	1957	77,600	Hydroelectricity, Irrigation	-	-	X	-	-	X	X	-	-
San Joaquin River	Tuolumne	Tulloch Dam	Dam	Tulloch Reservoir	TriDam Project	Stanislaus River	1958	68,400	Irrigation	-	-	X	-	-	X	-	-	-
San Joaquin River	Tuolumne	Donnells Dam	Dam	-	TriDam Project	Middle Fork Stanislaus River	1958	56,893	Hydroelectricity	-	-	-	-	-	X	X	-	-
San Joaquin River	Tuolumne	Lake Eleanor Dam	Dam	Lake Eleanor	San Francisco Public Utilities Commission	Eleanor Creek	1918	28,600	Hydroelectricity	-	-	-	-	-	X	X	-	-
San Joaquin River	Tuolumne	Main Strawberry Dam	Dam	Pinecrest Lake	Pacific Gas and Electric Company	South Fork Stanislaus River	1916	18,312	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Tuolumne	Relief Dam	Dam	Relief Reservoir	Pacific Gas and Electric Company	Summit Creek	1910	15,122	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Tuolumne	Jamestown Mine Tailings Dam	Dam	-	County of Tuolumne	Tributary Woods Creek	1994	12,100	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Joaquin River	Tuolumne	Big Creek Dam	Dam	Pine Mountain Lake	Pine Mountain Lake Association	Big Creek	1969	7,650	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Tuolumne	Lyons Dam	Dam	Lyons Reservoir	Pacific Gas and Electric Company	South Fork Stanislaus River	1930	6,228	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Tuolumne	Priest Dam	Dam	Priest Reservoir	San Francisco Public Utilities Commission	Rattlesnake Creek	1923	2,350	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Tuolumne	McKays Point Diversion Dam	Dam	-	Unknown	North Fork Stanislaus River	1989	2,100	Hydroelectricity	-	-	-	-	-	X	-	-	-
San Joaquin River	Tuolumne	Quartz Dam	Dam	-	Tuolumne Utilities District	Tributary Woods Creek	1978	1,500	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Tuolumne	Moccasin Lower Reservoir	Reservoir	-	San Francisco Public Utilities Commission	Moccasin Creek	1930	554	Hydroelectricity	-	X	-	-	-	X	-	-	-
San Joaquin River	Tuolumne	Phoenix Dam	Dam	Phoenix Reservoir	Tuolumne Utilities District	Sullivan Creek	1880	455	Hydroelectricity, Water Supply	-	X	-	-	-	X	-	-	-
San Joaquin River	Tuolumne	Grinding Rock Dam	Dam	-	Tuolumne City Sanitary District	Tributary Turnback Creek	1979	330	Waste Water	-	-	-	-	-	-	-	X	-
San Joaquin River	Tuolumne	Beardsley Afterbay	Reservoir	-	TriDam Project	Middle Fork Stanislaus River	1958	320	-	-	-	X	-	-	-	X	-	X
San Joaquin River	Tuolumne	Stanislaus Forebay	Reservoir	-	Pacific Gas and Electric Company	Tributary Stanislaus River	1908	320	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Tuolumne	Groveland Wastewater Reclamation No. 2 Dam	Dam	-	Groveland CSD	Tributary Big Creek	1981	172	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Tuolumne	Twain Harte Lake Dam	Dam	Twain Harte Lake	Twain Harte Lake Association, Inc.	Tributary Sullivan Creek	1928	143	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Joaquin River	Tuolumne	Tuolumne Log Pond	Reservoir	-	Tuolumne Band of MeWuk Indians	Turnback Creek	1912	120	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Tuolumne	Early Intake Dam	Dam	-	San Francisco Public Utilities Commission	Tuolumne River	1925	115	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Tuolumne	Kilmer Dam	Dam	-	Jack Gardella	Tributary Dry Creek	1953	99	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Tuolumne	Mid Cooperstown Reservoir	Reservoir	-	Jack Gardella	Tributary Dry Creek	1947	90	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Tuolumne	Brentwood Park Dam	Dam	-	Brentwood Lake Club, Inc.	Tributary Sullivan Creek	1964	80	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Tuolumne	Leland Meadows Dam	Dam	-	Leland Meadow Water District	Leland Creek	1978	79	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Tuolumne	Kincaid Dam	Dam	-	Tuolumne Utilities District	Tributary Curtis Creek	1860	50	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Tuolumne	San Diego Reservoir Dam	Dam	San Diego Reservoir	Yosemite Junior College District	Tributary Mormon Creek	1860	40	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Tuolumne	Beaver Creek Diversion Dam	Dam	-	Calaveras County Water District	Beaver Creek	1990	20	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Tuolumne	Don Pedro Dike A	Dike	-	Turlock and Modesto Irrigation Districts	Tuolumne River	1971	Unknown	-	-	-	-	-	-	-	-	-	-
San Joaquin River	Tuolumne	Don Pedro Dike B	Dike	-	Turlock and Modesto Irrigation Districts	Tuolumne River	1971	Unknown	-	-	-	-	-	-	-	-	-	-
San Joaquin River	Tuolumne	Don Pedro Dike C	Dike	-	Turlock and Modesto Irrigation Districts	Tuolumne River	1971	Unknown	-	-	-	-	-	-	-	-	-	-
San Joaquin River	Tuolumne	Hetch Hetchy Reservoir	Reservoir	-	City and County of San Francisco	Tuolumne River	1923	Unknown	Water Supply, Hydroelectricity	-	X	-	-	-	X	-	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
San Joaquin River	Tuolumne	Meadow Dam	Dam	Lily Creek	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Tuolumne	Pinecrest Lake Dam	Dam	Pinecrest Lake	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
San Joaquin River	Tuolumne	Sand Bar Flat Dam	Dam	Middle Fork Stanislaus River	Unknown	Beardsley Lake Offstream	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Castaic Lake Dam	Dam	Castaic Lake	DWR	Castaic Creek	1973	323,700	Water Supply, Hydroelectricity	-	X	-	-	-	X	-	-	-
South Coast	Los Angeles	Pyramid Dam	Dam	Pyramid Lake	DWR	Piru Creek	1973	180,000	Water Supply	-	X	-	-	-	X	X	-	-
South Coast	Los Angeles	Whittier Narrows Dam	Dam	Whittier Narrows Reservoir	USACE Los Angeles District	San Gabriel River	1957	66,702	Flood Management	X	-	-	-	-	-	-	-	-
South Coast	Los Angeles	Santa Fe Dam	Dam	Santa Fe Reservoir	USACE Los Angeles District	San Gabriel River	1949	45,409	Recreation	-	-	-	-	-	-	X	-	-
South Coast	Los Angeles	Hansen Dam	Dam	Hansen Reservoir	USACE Los Angeles District	Tujunga Wash	1940	44,990	Flood Management	X	-	-	-	-	-	-	-	-
South Coast	Los Angeles	San Gabriel No 1 Reservoir	Reservoir	-	LACDPW	San Gabriel River	1938	44,183	Flood Management	X	-	-	-	-	X	-	-	-
South Coast	Los Angeles	Bouquet Canyon Dam	Dam	Bouquet Reservoir	City of Los Angeles	Bouquet Creek	1934	36,505	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Elderberry Forebay Dam	Dam	-	City of Los Angeles	Castaic Creek	1974	28,400	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Sepulveda Dam	Dam	Sepulveda Reservoir	USACE Los Angeles District	Los Angeles River	1941	27,563	Flood Management	X	-	X	X	-	-	X	-	-
South Coast	Los Angeles	Morris Reservoir Dam	Reservoir	Morris Reservoir	LACDPW	San Gabriel River	1935	27,500	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Puddingstone Dam	Dam	Puddingstone Reservoir	LACDPW	Walnut Creek	1928	16,342	Flood Management	X	-	X	-	-	-	X	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Coast	Los Angeles	Stone Canyon Dam	Dam	Stone Canyon Reservoir	City of Los Angeles	Stone Canyon Creek	1924	10,372	Water Supply	-	X	-	-	-	-	-	-	X
South Coast	Los Angeles	Los Angeles Reservoir Dam	Dam	Los Angeles Reservoir	City of Los Angeles	San Fernando Creek	1977	10,000	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Lower San Fernando Dam	Dam	Lower Van Norman Lake	City of Los Angeles	San Fernando Creek	1918	10,000	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Chatsworth Dam	Dam	Chatsworth Reservoir	City of Los Angeles	Tributary Los Angeles River	1918	9,886	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Encino Dam	Dam	Encino Reservoir	City of Los Angeles	Encino Creek	1924	9,789	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Westlake Lake Dam	Dam	Westlake Lake	Las Virgenes MWD	Tree Springs Creek	1972	9,200	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Cogswell Dam	Dam	Cogswell Reservoir	LACDPW	West Fork San Gabriel River	1935	8,969	Flood Management	X	-	-	-	-	-	-	-	-
South Coast	Los Angeles	Big Tujunga No. 1 Dam	Dam	-	LACDPW	Big Tujunga Creek	1931	5,750	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Mulholland Reservoir	Reservoir	Hollywood Reservoir	City of Los Angeles	Weir Canyon	1924	4,036	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Pacoima Reservoir	Reservoir	-	LACDPW	Pacoima Creek	1929	3,777	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Devils Gate Dam	Dam	Devils Gate Reservoir	LACDPW	Arroyo Seco	1920	2,600	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Live Oak Canyon Dam	Dam	Live Oak Reservoir	LACDPW	Tributary Marshall Creek	1975	2,500	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Silver Lake Dam	Dam	Silver Lake Reservoir	City of Los Angeles	Tributary Ballona Creek	1976	2,020	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Upper San Fernando Dam	Dam	-	City of Los Angeles	San Fernando Creek	1921	1,848	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Coast	Los Angeles	Garvey Dam	Dam	Garvey Reservoir	Metropolitan Water District of Southern California	Tributary Rio Hondo	1954	1,610	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	San Dimas Dam	Dam	San Dimas Reservoir	LACDPW	San Dimas Creek	1922	1,534	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Big Dalton Dam	Dam	Big Dalton Reservoir	LACDPW	Big Dalton Wash	1929	1,290	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Dry Canyon Dam	Dam	Dry Canyon Reservoir	City of Los Angeles	Dry Canyon Creek	1912	1,140	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Palos Verdes Dam	Dam	Palos Verdes Reservoir	Metropolitan Water District of Southern California	Tributary Los Angeles Harbor	1939	1,100	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Lower Franklin Dam	Dam	Franklin Canyon Reservoir	City of Los Angeles	Franklin Canyon	1922	920	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Big Santa Anita Dam	Dam	Big Santa Ana Reservoir	LACDPW	Tributary Rio Hondo	1927	858	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Potrero Dam	Dam	Westlake Lake	Westlake Lake Management Association	Triunfo Canyon Creek	1967	791	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Eaton Wash Debris Basin	Debris Basin	-	LACDPW	Eaton Wash	1936	721	Flood Management	X	-	-	-	-	-	-	-	-
South Coast	Los Angeles	Thompson Dam	Dam	McGee Lake	LACDPW	Thompson Creek	1928	543	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Malibou Lake Club Dam	Dam	-	Malibou Lake Mountain Club, Inc.	Malibu Creek	1923	500	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Channel Diversion Dike	Dike	-	City of Los Angeles	Storm Drain Channel	1940	437	-	-	-	-	-	-	-	-	-	-
South Coast	Los Angeles	Upper Stone Canyon Reservoir	Reservoir	-	City of Los Angeles	Stone Canyon Creek	1954	425	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Coast	Los Angeles	Sawpit Dam	Dam	-	LACDPW	Sawpit Creek	1927	406	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Santa Ynez Canyon Dam	Dam	-	City of Los Angeles	Tributary Santa Ynez Canyon	1968	356	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Laguna Regulating Basin	Reservoir	-	LACDPW	Laguna Wash	1970	310	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Eagle Rock Dam	Dam	Eagle Rock Reservoir	City of Los Angeles	Offstream	1953	254	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Lower Van Norman Bypass Dam	Dam	-	City of Los Angeles	Offstream	1970	240	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Live Oak Dam	Dam	-	Metropolitan Water District of Southern California	Live Oak Creek	1922	239	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Little Dalton Debris Basin	Debris Basin	-	LACDPW	Little Dalton Canyon	1960	234	Flood Management	X	-	-	-	-	-	-	-	-
South Coast	Los Angeles	Lopez Dam	Dam	Lopez Reservoir	USACE Los Angeles District	Pacoima Wash	1954	209	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	La Tuna Debris Basin	Debris Basin	-	LACDPW	La Tuna Canyon	1960	207	Flood Management	X	-	-	-	-	-	-	-	-
South Coast	Los Angeles	Lower Franklin No. 2 Dam	Dam	-	City of Los Angeles	Franklin Canyon	1982	206	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Upper Hollywood Dam	Dam	Hollywood Reservoir	City of Los Angeles	Weir Canyon	1933	196	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Big Dalton Debris Basin	Debris Basin	-	LACDPW	Big Dalton Wash	1960	193	Flood Management	X	-	-	-	-	-	-	-	-
South Coast	Los Angeles	Diederich Reservoir Dam	Dam	Diederich Reservoir	City of Glendale	Offstream	1950	174	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Coast	Los Angeles	Elysian Dam	Dam	Elysian Reservoir	City of Los Angeles	Tributary Los Angeles River	1943	167	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Morris S. Jones Dam	Dam	-	Pasadena City Department of Water & Power	Tributary Pit River	1952	154	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Sawpit Debris Basin	Debris Basin	-	LACDPW	Sawpit Wash	1955	152	-	-	-	-	-	-	-	-	-	-
South Coast	Los Angeles	Weymouth Memorial Reservoir	Reservoir	-	Metropolitan Water District of Southern California	Offstream	1966	151	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Puddingstone Diversion Dam	Dam	-	LACDPW	San Dimas Wash	1928	150	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Porter Estate Dam	Dam	-	Porter Ranch Development Co.	Tributary Los Angeles River	1888	135	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Santa Anita Debris Basin	Debris Basin	-	LACDPW	Santa Anita Wash	1960	116	Flood Management	X	-	-	-	-	-	-	-	-
South Coast	Los Angeles	Sierra Madre Villa Debris Dam	Dam	-	LACDPW	Sierra Madre Canyon	1958	109	Flood Management	X	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Stevenson Ranch	Reservoir	-	LACDPW	Pico Canyon Creek	2004	105	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Yarnell Debris Basin	Debris Basin	-	City of Los Angeles	Tributary Bull Canyon	1963	105	-	-	-	-	-	-	-	-	-	-
South Coast	Los Angeles	Green Verdugo Dam	Dam	-	City of Los Angeles	Tributary Tujunga Wash	1953	99	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Drinkwater Dam	Dam	Drinkwater Reservoir	City of Los Angeles	Offstream	1923	92	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Lindero Dam	Dam	Lake Lindero	Lake Lindero Homeowners Association	Lindero Creek	1966	90	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Coast	Los Angeles	Hansen Recreational Lake Dam	Dam	-	City of Los Angeles	Offstream	1999	85	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Wilson Debris Basin	Debris Basin	-	LACDPW	Wilson Canyon	1961	84	Flood Management	X	-	-	-	-	-	-	-	-
South Coast	Los Angeles	Reservoir No. 5	Reservoir	-	City of Burbank	Offstream	1949	77	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Riviera Reservoir Dam	Dam	Riviera Reservoir	City of Santa Monica Department of Public Works	Offstream	1962	76	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	East Glorietta Dam	Dam	-	City of Glendale	Tributary Verdugo Canyon	1932	71	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Century Dam	Dam	-	California Department of Parks and Recreation	Malibu Creek	1913	70	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Stough Debris Basin	Debris Basin	-	LACDPW	Stough Canyon	1961	67	-	-	-	-	-	-	-	-	-	-
South Coast	Los Angeles	Greystone Reservoir Dam	Dam	Greystone Reservoir	City of Beverly Hills	Offstream	1970	60	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	18 MG Walteria Dam	Dam	None	City of Torrance	Offstream	1987	58	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Sierra Madre Dam	Dam	-	LACDPW	Lower Santa Anita Creek	1928	51	Flood Management	X	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Bailey Debris Basin	Debris Basin	-	LACDPW	Bailey Canyon Wash	1954	49	Flood Management	X	-	-	-	-	-	-	-	-
South Coast	Los Angeles	10th and Western Dam	Dam	-	City of Glendale	Offstream	1924	46	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Chevy Chase Dam	Dam	-	City of Glendale	Sycamore Creek	1927	46	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Coast	Los Angeles	J.W. Wisda Dam	Dam	-	California Department of Parks and Recreation	Tributary Topanga Canyon	1958	45	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Rubio Debris Basin	Debris Basin	-	LACDPW	Rubio Creek	1944	44	Flood Management	X	-	-	-	-	-	-	-	-
South Coast	Los Angeles	Brand Debris Basin	Debris Basin	-	LACDPW	Brand Debris Basins	1965	42	Flood Management	X	-	-	-	-	-	-	-	-
South Coast	Los Angeles	Lower Sunset Debris Basin	Debris Basin	-	LACDPW	Sunset Canyon	1963	37	Flood Management	X	-	-	-	-	-	-	-	-
South Coast	Los Angeles	Reservoir No. 4	Reservoir	-	City of Burbank	Offstream	1955	34	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Brand Park Dam	Dam	-	City of Glendale	Offstream	1930	32	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Whittier Reservoir No. 4	Reservoir	-	City of Whittier Water District	Tributary San Gabriel River	1931	32	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	10 MG Walteria Dam	Dam	None	City of Torrance	Offstream	1953	31	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Glenoaks 968 Reservoir Dam	Dam	Glenoaks 968 Reservoir	City of Glendale	Offstream	1949	28	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Blanchard Debris Basin	Debris Basin	-	LACDPW	Blanchard Canyon	1966	26	Flood Management	X	-	-	-	-	-	-	-	-
South Coast	Los Angeles	Morgan Debris Basin	Debris Basin	-	LACDPW	Morgan Canyon Creek	1962	21	Flood Management	X	-	-	-	-	-	-	-	-
South Coast	Los Angeles	Reservoir No. 1	Reservoir	-	City of Burbank	Tributary Los Angeles River	1928	21	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Schoolhouse Debris Basin	Debris Basin	-	LACDPW	Mansfield Channel	1962	19	Flood Management	X	-	-	-	-	-	-	-	-
South Coast	Los Angeles	Van Nuys Dam	Dam	-	San Gabriel County Water District	Offstream	Unknown	19	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Coast	Los Angeles	Chevy Chase 1290 Dam	Dam	-	City of Glendale	Tributary Sycamore Canyon	1940	17	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Haines Canyon Debris Dam	Debris Basin	Haines Canyon Reservoir	USACE Los Angeles District	Haines Creek	1938	15	Flood Management	X	-	-	-	-	-	-	-	-
South Coast	Los Angeles	Acton Canyon Dam	Dam	None	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
South Coast	Los Angeles	Upper Franklin Canyon Reservoir Dam	Dam	Upper Franklin Canyon Reservoir	Los Angeles County Department Of Public Works (LACDPW)	Unknown	1914	Unknown	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Santiago Creek Dam	Dam	Lake Irvine	Serrano Water District and Irvine Ranch Water District	Santiago Creek	1933	25,000	Flood Management, Recreation	X	-	-	-	-	-	X	-	-
South Coast	Orange	Villa Park Dam	Dam	Villa Park Reservoir	County of Orange	Santiago Creek	1963	15,600	Flood Management	X	-	-	-	-	-	-	-	-
South Coast	Orange	Carbon Canyon Dam	Dam	Carbon Canyon Reservoir	USACE Los Angeles District	Carbon Canyon Creek	1961	12,063	Flood Management	X	X	-	-	-	-	X	-	-
South Coast	Orange	Brea Dam	Dam	Brea Reservoir	USACE Los Angeles District	Brea Creek	1942	7,420	Flood Management	X	-	-	-	-	-	-	-	-
South Coast	Orange	Trampas Canyon Dam	Dam	-	Oglebay Norton Industrial Sands, Inc.	Trampas Canyon	1975	5,700	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Lake Mission Viejo Dam	Dam	Lake Mission Viejo	Lake Mission Viejo Association, Inc.	Oso Creek	1976	4,300	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Upper Oso Dam	Dam	Upper Oso Reservoir	Santa Margarita Water District	Oso Creek	1979	3,700	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	San Joaquin Reservoir	Reservoir	-	Irvine Ranch Water District	Tributary Bonita Creek	1966	3,036	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Coast	Orange	Walnut Canyon Reservoir	Reservoir	-	City of Anaheim	Walnut Canyon	1968	2,570	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Rattlesnake Canyon Dam	Dam	Rattlesnake Reservoir	Irvine Ranch Water District	Rattlesnake Creek	1959	1,480	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Fullerton Dam	Dam	Fullerton Reservoir	USACE Los Angeles District	East Fullerton Creek	1941	1,342	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Yorba Reservoir	Reservoir	Yorba Linda	County of Orange	Tributary Santa Ana River	1907	1,200	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Peters Canyon Dam	Dam	Peters Canyon Reservoir	County of Orange	Peters Canyon	1932	1,090	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Sand Canyon Dam	Dam	Sand Canyon Reservoir	Irvine Ranch Water District	Sand Canyon	1912	960	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	El Toro Reservoir Dam	Dam	El Toro Reservoir	El Toro Water District	Tributary Oso Creek	1967	877	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Big Canyon Dam	Dam	-	City of Newport Beach	Tributary Big Canyon Creek	1959	600	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Portola Dam	Dam	-	Santa Margarita Water District	Canada Gobernadora	1980	586	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Sulphur Creek Dam	Dam	Sulphur Creek Reservoir	County of Orange	Sulphur Creek	1966	520	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Syphon Canyon Dam	Dam	Syphon Canyon Reservoir	The Irvine Company	Tributary Newport Bay	1949	500	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Dove Canyon Dam	Dam	-	Dove Canyon Master Association	Dove Creek	1989	415	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Trabuco Retarding Basin	Reservoir	-	County of Orange	San Diego Creek	1996	390	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Bonita Canyon Dam	Dam	-	The Irvine Company	Bonita Creek	1938	323	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Coast	Orange	Laguna Dam	Dam	Laguna Reservoir	The Irvine Company	Tributary San Diego Creek	1938	300	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Round Canyon Retarding Basin	Reservoir	-	County of Orange	Round Canyon Wash	1994	286	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Marshburn Retarding Basin	Reservoir	-	County of Orange	Tributary Marshburn Channel	1998	282	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Agua Chinon Dam	Dam	-	County of Orange	Agua Chinon Wash	1998	256	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Bee Canyon Retention Basin	Reservoir	-	County of Orange	Bee Canyon Wash	1994	243	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Olive Hills Reservoir	Reservoir	-	City of Anaheim	Offstream	1962	220	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Orange County Reservoir	Reservoir	-	Metropolitan Water District of Southern California	Tributary Fullerton Creek	1941	217	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Eastfoot Retarding Basin	Reservoir	-	Irvine Community Development Company	Peters Canyon Wash	2007	213	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Lower Peters Canyon Retarding Basin	Reservoir	-	County of Orange	Peters Canyon Wash	1990	206	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Veeh Dam	Dam	Veeh Reservoir	Lake Hills Community Church	Tributary San Diego Creek	1936	185	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Rossmoor Retarding Basin	Reservoir	-	El Toro Water District	Los Alamitos Channel	2002	175	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Lambert Dam	Dam	Lambert Reservoir	The Irvine Company	Tributary Newport Bay	1929	174	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Galivan Retarding Basin	Reservoir	-	County of Orange	Oso Creek	2000	169	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Coast	Orange	Palisades Reservoir Dam	Dam	Palisades Reservoir	South Coast Water District	Tributary Prima Deshecha	1963	147	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Orchard Estates Retarding Basin	Reservoir	-	County of Orange	Tributary Rattlesnake Canyon	1999	138	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Trabuco Creek	Reservoir	-	Trabuco Canyon Water District	Tributary Dove Creek	1984	138	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Hicks Canyon Retention Basin	Reservoir	-	County of Orange	Hicks Canyon Wash	1997	110	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	30 MG Central Reservoir	Reservoir	-	City of Brea	Offstream	1924	92	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Diemer Reservoir	Reservoir	-	Metropolitan Water District of Southern California	Offstream	1963	80	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	East Hicks Canyon Retarding Basin	Reservoir	-	County of Orange	Hicks Canyon Wash	1997	75	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Robinson Ranch	Reservoir	-	William Lyon Community Inc.	Dove Creek	Unknown	43	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Rossmoor No. 1 Dam	Dam	-	El Toro Water District	Tributary San Diego Creek	1964	43	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Harbor View Dam	Dam	-	County of Orange	Jasmine Gulch	1964	28	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Diemer No. 8 Dam	Dam	-	Metropolitan Water District Of Southern California	Offstream	1968	18	-	-	-	-	-	-	-	-	-	X
South Coast	Orange	Pacific Ocean Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Diamond Valley Lake	Reservoir	-	Metropolitan Water District of Southern California	Domenigoni Valley Creek	2000	800,000	Water Supply	-	-	-	-	-	-	X	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Coast	Riverside	Prado Dam	Dam	Prado Reservoir	USACE Los Angeles District	Santa Ana River	1941	295,581	Flood Management	X	-	-	-	X	-	-	-	-
South Coast	Riverside	Mathews Dam	Dam	Lake Mathews	Metropolitan Water District of Southern California	Tributary Cajalco Creek	1938	182,000	Water Supply	-	-	-	-	-	-	-	-	-
South Coast	Riverside	Perris Dam	Dam	Lake Perris	DWR	Bernasconi Pass	1973	131,452	Water Supply	-	X	-	-	-	-	X	-	-
South Coast	Riverside	Vail Dam	Dam	Vail Lake	Rancho California Water District	Temecula Creek	1949	51,000	Water Supply, Groundwater Recharge	-	X	-	-	X	-	X	-	-
South Coast	Riverside	Skinner Clearwell Dam	Dam	Robert A. Skinner Reservoir	Metropolitan Water District of Southern California	Tucalota Creek	1973	43,800	Water Supply, Recreation	-	X	-	-	-	-	X	-	-
South Coast	Riverside	Lake Hemet Dam	Dam	Lake Hemet	Lake Hemet MWD	Tributary San Jacinto River	1895	14,000	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Railroad Canyon Dam	Dam	Canyon Lake	Elsinore Valley MWD	San Jacinto River	1928	11,586	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Mockingbird Canyon Reservoir	Reservoir	-	City of Riverside	Mockingbird Canyon	1914	1,250	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Lee Lake Dam	Dam	-	Elsinore Valley MWD	Temescal Creek	1919	1,100	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Goodhart Canyon Detention Basin	Reservoir	-	Metropolitan Water District of Southern California	Goodhart Canyon	1999	1,026	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Pigeon Pass Reservoir	Reservoir	Lake Poorman	Riverside County FCWCD	Pigeon Pass	1958	900	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Cajalco Creek Dam	Dam	-	Metropolitan Water District of Southern California	Cajalco Creek	2001	889	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Coast	Riverside	Sycamore Dam	Dam	-	Riverside County FCWCD	Sycamore Canyon	1956	860	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Lakeview Dam	Dam	-	Riverside County FCWCD	Tributary San Jacinto River	1994	530	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Diamond Valley Lake Forebay	Reservoir	-	Metropolitan Water District of Southern California	Domenigoni Valley Canyon	1999	500	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Woodcrest Dam	Dam	Woodcrest Reservoir	Riverside County FCWCD	Woodcrest Creek	1954	420	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Boxsprings Dam	Dam	-	Riverside County FCWCD	Box Springs Creek	1960	405	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Box Springs Dam	Dam	Box Springs Reservoir	Riverside County FCWCD	Box Springs River	1960	400	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Sunnymead Ranch	Reservoir	-	Sunnymead Ranch Community Association	Reche Canyon	1985	400	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Alessandro Dam	Dam	-	Riverside County FCWCD	Alessandro Creek	1956	370	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Declez Retention	Reservoir	-	San Bernardino County FCD	Tributary San Sevaine Creek	1984	331	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Mary Street	Reservoir	-	Riverside County FCWCD	Alessandro Wash	1981	320	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Harrison Street Dam	Dam	Harrison Street Reservoir	Riverside County FCWCD	Harrison Creek	1954	208	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Fairmount Park Dam	Dam	Evans Lake	City of Riverside	Tributary Santa Ana River	1923	200	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Prenda Dam	Dam	Prenda Reservoir	Riverside County FCWCD	Prenda Creek	1954	192	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Jurupa Basin	Reservoir	-	Riverside County FCWCD	Jurupa Wash	1983	167	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Coast	Riverside	El Casco Dam	Dam	-	Riverside Land Conservancy	San Timoteo Creek	1879	143	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Oak Street Dam	Dam	Oak Street Creek Reservoir	Riverside County FCWCD	Oak Street Creek	1979	138	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Quail Valley Dam	Dam	-	Forecast Homes	Tributary San Jacinto River	1959	103	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	H.J. Mills Reclamation Dam	Dam	-	Metropolitan Water District of Southern California	Offstream	1996	98	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Henry J. Mills No. 2 Dam	Dam	-	Metropolitan Water District of Southern California	Offstream	1996	92	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Dunn Ranch Dam	Dam	-	AgriEmpire, A California Corporation	Tributary Hamilton Creek	1987	90	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Metz Road Debris Basin	Debris Basin	-	Riverside County FCWCD	Tributary San Jacinto River	1981	88	-	-	-	-	-	-	-	-	-	-
South Coast	Riverside	Henry J. Mills Dam	Dam	-	Metropolitan Water District of Southern California	Offstream	1979	83	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Mabey Canyon Dam	Dam	-	Riverside County FCWCD	Mabey Creek	1974	68	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	Foster Dam	Dam	-	Idyllwild Water District	Lily Creek	1945	56	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	1001 Ranch Drain Weir	Weir	1001 Ranch Drain	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
South Coast	Riverside	1001 Ranch Drain West Tributary Weir	Weir	1001 Ranch Drain West Tributary	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Coast	Riverside	Lake Elsinore Weir	Weir	Lake Elsinore	USACE, Elsinore Valley Municipal Water District (MWD)	San Jacinto River	1929	Unknown	-	-	-	-	-	-	-	-	-	-
South Coast	Riverside	Main Street Channel Debris Dam Crest	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	San Jacinto Dam	Dam	San Jacinto Reservoir	Unknown	offstream storage for San Diego Aqueduct	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
South Coast	Riverside	San Jacinto River	Weir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
South Coast	San Bernardino	Seven Oaks Dam	Dam	-	San Bernardino County Department of Transportation and Flood	Santa Ana River	1999	145,600	Flood Management	X	-	-	-	-	-	-	-	-
South Coast	San Bernardino	Bear Valley Dam	Dam	Big Bear Lake	Unknown	Bear Creek	1911	74,000	Recreation	-	-	-	-	-	-	X	-	-
South Coast	San Bernardino	San Antonio Dam	Dam	San Antonio Reservoir	Rolling Ridge Ranch	San Antonio Creek	1956	11,880	-	-	-	-	-	-	-	-	-	X
South Coast	San Bernardino	San Sevaine Basin No. 5 Dam	Dam	-	San Bernardino County Department of Transportation and Flood	San Sevaine Creek	2004	2,765	-	-	-	-	-	-	-	-	-	X
South Coast	San Bernardino	Jurupa Basin	Reservoir	-	San Bernardino County Department of Transportation and Flood	San Sevaine Creek	2001	1,680	-	-	-	-	-	-	-	-	-	X
South Coast	San Bernardino	Devil Canyon Dam	Dam	-	San Bernardino County FCD	Offstream	1995	980	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Coast	San Bernardino	Cucamonga Creek Debris Basin	Debris Basin	-	DWR	Cucamonga Creek	1980	355	-	-	-	-	-	-	-	-	-	-
South Coast	San Bernardino	Desilting Basin 6 Dam	Dam	-	San Bernardino County Department of Transportation and Flood	Cucamonga Creek	1937	250	-	-	-	-	-	-	-	-	-	X
South Coast	San Bernardino	Hickory Basin	Reservoir	-	The Robinson Living Trust	West Fontana Channel	2001	220	-	-	-	-	-	-	-	-	-	X
South Coast	San Bernardino	Little Mountain Dam	Dam	-	San Bernardino County Department of Transportation and Flood	Devil Can Creek	1958	150	-	-	-	-	-	-	-	-	-	X
South Coast	San Bernardino	Wiggins No. 2 Dam	Dam	-	San Bernardino County FCD	Devil Creek	1957	146	-	-	-	-	-	-	-	-	-	X
South Coast	San Bernardino	Day Creek Debris Basin	Debris Basin	-	San Bernardino County Department of Transportation and Flood	Day Creek	1988	140	-	-	-	-	-	-	-	-	-	-
South Coast	San Bernardino	Chino Ranch No. 1 Dam	Dam	-	First Congregational Church of Los Angeles	Tonner Canyon Creek	1918	137	-	-	-	-	-	-	-	-	-	X
South Coast	San Bernardino	Crafton Reservoir	Reservoir	-	City of Industry Urban Development Agency	Tributary Yucaipa Creek	2001	130	-	-	-	-	-	-	-	-	-	X
South Coast	San Bernardino	Rancho Cielito Dam	Dam	Lake Los Serranos	City of San Bernardino	Tributary Chino Creek	1912	110	-	-	-	-	-	-	-	-	-	X
South Coast	San Bernardino	Yucaipa No. 2 Dam	Dam	-	San Bernardino Valley MWD	Tributary Yucaipa Creek	1978	100	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Coast	San Bernardino	Yucaipa No. 1 Dam	Dam	-	San Bernardino Valley MWD	Tributary Yucaipa Creek	1978	92	-	-	-	-	-	-	-	-	-	X
South Coast	San Bernardino	Alta Loma Basin No. 2	Reservoir	-	San Bernardino County Department of Transportation and Flood	Alta Loma Channel	1971	85	-	-	-	-	-	-	-	-	-	X
South Coast	San Bernardino	Devils Canyon Dike No. 1	Dike	-	DWR	Devils Canyon Dike 1	1934	79	-	-	-	-	-	-	-	-	-	-
South Coast	San Bernardino	Alta Loma Basin No. 1	Reservoir	-	Unknown	Alta Loma Channel	1964	70	-	-	-	-	-	-	-	-	-	X
South Coast	San Bernardino	Mineral Hot Springs Lake Dam	Dam	-	Unknown	Tributary East Twin Creek	1967	37	-	-	-	-	-	-	-	-	-	X
South Coast	San Bernardino	Demens Creek Debris Basin	Debris Basin	-	San Bernardino County Department of Transportation and Flood	Demens Creek	1980	35	-	-	-	-	-	-	-	-	-	-
South Coast	San Bernardino	Glen Martin Dam	Dam	Shadow Lake	San Bernardino County FCD	Mountain Home Creek	1950	33	-	-	-	-	-	-	-	-	-	X
South Coast	San Bernardino	Yucaipa No. 3 Dam	Dam	-	San Bernardino Valley MWD	Tributary Yucaipa Creek	1978	32	-	-	-	-	-	-	-	-	-	X
South Coast	San Bernardino	Perris Hill Reservoir Dam	Dam	Perris Hill Reservoir	Campus Crusade for Christ International	Offstream	1962	31	-	-	-	-	-	-	-	-	-	X
South Coast	San Bernardino	Cedar Lake Dam	Dam	-	Big Bear MWD	Talmadge Creek	1928	30	-	-	-	-	-	-	-	-	-	X
South Coast	San Bernardino	Deer Canyon Debris Basin	Debris Basin	-	San Bernardino County Department of Transportation and Flood	Deer Creek	1980	24	-	-	-	-	-	-	-	-	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Coast	San Bernardino	Small Canyon Dam	Dam	-	San Bernardino County Department of Transportation and Flood	Tributary City Creek	1957	20	-	-	-	-	-	-	-	-	-	X
South Coast	San Bernardino	Arnold Reservoir	Reservoir	-	San Bernardino County Department of Transportation and Flood	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
South Coast	San Bernardino	Little Sand Canyon Dam	Dam	Little Sand Creek	San Bernardino County Department of Transportation and Flood	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	El Capitan Dam	Dam	El Capitan Reservoir	City of San Diego	San Diego River	1934	112,800	Water Supply	-	X	-	-	-	-	X	-	-
South Coast	San Diego	San Vicente Dam	Dam	San Vicente Reservoir	City of San Diego	San Vicente Creek	1943	90,230	Water Storage, Flood Management, Recreation	X	-	-	-	-	-	X	-	-
South Coast	San Diego	Morena Dam	Dam	Morena Reservoir	City of San Diego	Cottonwood Creek	1912	50,206	Flood Management	X	-	-	-	-	-	X	-	-
South Coast	San Diego	Henshaw Dam	Dam	Lake Henshaw	Vista Irrigation District	San Luis Rey River	1923	50,000	Groundwater Recharge, Irrigation	-	-	X	-	X	-	-	-	-
South Coast	San Diego	Savage Dam	Dam	Lower Otay Lake Reservoir	City of San Diego	Otay River	1919	49,510	Water Supply	-	X	-	-	-	-	-	-	-
South Coast	San Diego	Barrett Dam	Dam	Barrett Reservoir	City of San Diego	Cottonwood Creek	1922	44,755	Recreation	-	-	-	-	-	-	X	-	-
South Coast	San Diego	Hodges Dam	Dam	Lake Hodges	City of San Diego	San Dieguito River	1918	37,700	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Coast	San Diego	Sutherland Dam	Dam	Lake Sutherland	City of San Diego	Santa Ysabel Creek	1954	29,000	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Sweetwater Main Dam	Dam	Sweetwater Reservoir	Sweetwater Authority	Sweetwater River	1888	27,700	Water Supply	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Lake Loveland Dam	Dam	Lake Loveland Reservoir	Sweetwater Authority	Sweetwater River	1945	25,400	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Olivenhain Dam	Dam	Olivenhain Reservoir	San Diego County Water Authority	Tributary Escondido Creek	2003	24,900	Water Supply	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Lake Ramona	Reservoir	-	Ramona MWD	Green Valley Road Creek	1988	12,200	Water Supply	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Cuyamaca Dam	Dam	-	Helix Water District	Boulder Creek	1887	11,740	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Chet Harritt Dam	Dam	Lake Jennings	Helix Water District	Quail Canyon Creek	1962	9,790	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Miramar Dam	Dam	Lake Miramar	City of San Diego	Big Surr Creek	1960	7,250	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Lake Wohlford Dam	Dam	Lake Wohlford Reservoir	City of Escondido	Escondido Creek	1924	6,950	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Murray Reservoir	Reservoir	-	City of San Diego	Chaparral	1918	4,818	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Poway Dam	Dam	Lake Poway	City of Poway	Warren Canyon	1971	3,300	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Upper Otay Reservoir	Reservoir	-	City of San Diego	Proctor Valley Creek	1901	2,825	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Dixon Dam	Dam	-	City of Escondido	Tributary Escondido Creek	1970	2,500	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Turner Dam	Dam	Turner Reservoir	Valley Center MWD	Moosa Canyon	1971	2,000	Water Supply	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Coast	San Diego	Red Mountain Reservoir Dam	Dam	Red Mountain Reservoir	Fallbrook Public Utility District	Reche Creek	1985	1,350	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Lake O'Neill Dam	Dam	Lake O'Neill	U.S. Marine Corps	Santa Margarita River Offstream	1883	1,320	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Lake Cuyamaca Dam	Dam	Lake Cuyamaca	Lake Cuyamaca Recreation and Park District	Boulder Creek	1968	1,000	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	San Dieguito Dam	Dam	San Dieguito Reservoir	Santa Fe Irrigation and San Dieguito Water District	Tributary Escondido Creek	1918	883	Water Supply	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Palo Verde Dam	Dam	Palo Verde Reservoir	Palo Verde Ranch Homeowners Association	Sweetwater River	1970	730	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Maerkle Reservoir	Reservoir	-	Carlsbad Municipal Water District	Tributary Aqua Hedionda	1963	600	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Calavera Dam	Dam	-	Carlsbad MWD	Calavera Creek	1940	520	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	San Marcos Dam	Dam	Lake San Marcos	Citizens Development Corporation	San Marcos Creek	1946	480	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	4S Ranch Reclamation Reservoir	Reservoir	-	Thomas Ralphs	Artesian Creek	2000	410	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Corte Madera Dam	Dam	-	Rancho Corta Madera, Inc.	Tributary Pine Valley Creek	1919	325	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Chollas Dam	Dam	Chollas Reservoir	City of San Diego	Tributary Chollas Creek	1901	310	Water Supply	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Upper Stehly Dam	Dam	-	Nicholas J.C. Stehly	Tributary Keys Creek	1999	229	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Coast	San Diego	Santa Maria Creek	Reservoir	-	Ramona MWD	Offstream	1995	217	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Incline Dam	Dam	-	Calmat	Unknown	Unknown	210	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Henry Jr. Dam	Dam	-	Mrs. Charlotte Frye	Skye Valley	1929	196	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	4S Ranch Dam	Dam	4S Ranch Reservoir	County of San Diego	Tributary San Dieguito River	1990	173	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	U.S. Silica FW Ponds	Reservoir	-	City of Oceanside	San Luis Rey River	1975	170	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Stanley A. Mahr Reservoir	Reservoir	-	Vallecitos Water District	Tributary Encinitas Creek	1981	166	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Lower Stehly Dam	Dam	-	Nicholas J.C. Stehly	Tributary Keys Creek	Unknown	145	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	San Vicente Storage Pond 1	Reservoir	-	Ramona MWD	Offstream	1991	137	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Santa Fe Seasonal Storage Reservoir	Reservoir	-	Santa Fe Community Services District (CSD)	Tributary San Dieguito River	Proposed	132	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Pulgas Lake Dam	Dam	Pulgas Lake	U.S. Marine Corps	Piedra De Lubre Creek	1953	125	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Earl Thomas Reservoir Dam	Dam	Lake Murray	City of San Diego	Offstream	1958	107	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Fairbanks Dam	Dam	-	Fairbanks Ranch Association	Tributary San Dieguito River	1927	100	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Black Mountain Water Tank	Reservoir	-	City of San Diego	Offstream	2002	77	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Eastlake Reservoir	Reservoir	-	Eastlake I Association	Proctor Valley Canyon	1986	77	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Coast	San Diego	San Vicente Storage Pond 3	Reservoir	-	Ramona MWD	Offstream	2002	69	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Case Springs Dam	Dam	Case Springs Lake	U.S. Marine Corps	Tributary San Onofre Creek	1900	67	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Bressi Dam	Dam	-	Lennar Homes	Tributary San Marcos Creek	1942	63	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Upper 4S Dam	Dam	None	Thomas Ralphs	Lusardi Creek	1927	63	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Agua Tibia Dam	Dam	-	Agua Tibia Ranch	Offstream	1947	62	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Mathews Dam	Dam	-	Pete Prestininzi	Tributary De Luz Creek	1967	52	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Melrose Avenue Dam	Dam	-	Rancho Carrilo Homeowners Association	Tributary San Marcos Creek	1998	52	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Pilgrim Creek Dam	Dam	Pilgrim Creek Lake	U.S. Marine Corps	Pilgrim Creek	1973	50	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Bonita Long Canyon Dam	Dam	-	City of Chula Vista	Tributary Sweetwater River	1986	49	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Bernardo Reservoir Dam	Dam	Bernardo Reservoir	City of San Diego	Offstream	1964	30	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Mount Woodson Dam	Dam	-	Ramona MWD	Offstream	1958	30	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Blossom Valley Reservoir Dam	Dam	Blossom Valley Reservoir	Padre Dam MWD	Offstream	1962	22	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Buena Creek Private Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Coast	San Diego	Carmel Valley Creek Drop Structure Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Chambers Dam	Dam	Los Penasquitas Creek	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Mary Jo Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Mount Helix Reservoir	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	River Bottom Reservoir	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Squires Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Twin Oaks Valley Creek Drop Structure No. 1 Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Twin Oaks Valley Creek Drop Structure No. 2 Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Twin Oaks Valley Creek Drop Structure No. 3 Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Twin Oaks Valley Creek Drop Structure No. 4 Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Twin Oaks Valley Creek Drop Structure No. 5 Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Coast	San Diego	Twin Oaks Valley Creek Drop Structure No. 6 Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Twin Oaks Valley Creek Drop Structure No. 7 Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Twin Oaks Valley Creek Drop Structure No. 8 Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
South Coast	San Diego	Twin Oaks Valley Creek Drop Structure No. 9	Weir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
South Coast	San Diego	Witch Creek Dam	Dam	-	Unknown	Witch Creek Stream	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
South Coast	Ventura	Casitas Dam	Dam	Lake Casitas	U.S. Bureau of Reclamation	Coyote Creek	1959	287,000	Water Supply, Irrigation	X	X	X	-	-	-	-	-	-
South Coast	Ventura	Casitas Saddle Dike	Dike	Lake Casitas	U.S. Bureau of Reclamation	Coyote Creek Offstream	1959	287,000	-	-	-	-	-	-	-	-	-	-
South Coast	Ventura	Santa Felicia Dam	Dam	Lake Piru	United Water Conservation District	Piru Creek	1955	100,000	Recreation	-	-	-	-	-	-	X	-	-
South Coast	Ventura	Wood Ranch Reservoir	Reservoir	Bard Lake	Calleguas MWD	Tributary Arroyo Simi	1965	11,000	-	-	-	-	-	-	-	-	-	X
South Coast	Ventura	Quail Reservoir	Reservoir	Peace Valley Pipeline Intake	DWR	West Branch CA Aqueduct	1981	7,770	-	-	-	-	-	-	-	-	-	X
South Coast	Ventura	Lake Sherwood Dam	Dam	Lake Sherwood	Sherwood Development Co.	Potrero Valley Creek	1904	2,600	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Coast	Ventura	Matilija Dam	Dam	-	Ventura County Watershed Protection District (WPD)	Matilija Creek	1949	1,800	-	-	-	-	-	-	-	-	-	X
South Coast	Ventura	Las Llajas Dam	Dam	-	Ventura County WPD	Las Llajas Canyon	1981	1,250	-	-	-	-	-	-	-	-	-	X
South Coast	Ventura	Sycamore Canyon Dam	Dam	-	Ventura County WPD	Sycamore Canyon River	1981	890	-	-	-	-	-	-	-	-	-	X
South Coast	Ventura	Lang Creek Detention Basin	Reservoir	-	Ventura County WPD	Lang Creek	Proposed	263	-	-	-	-	-	-	-	-	-	X
South Coast	Ventura	Sinaloa Lake Dam	Dam	Sinaloa Lake	Sinaloa Lake Owners Association Inc.	Tributary Arroyo Simi	1925	205	-	-	-	-	-	-	-	-	-	X
South Coast	Ventura	Arundell Barranca Dam	Dam	-	Ventura County WPD	Arundell Barranca	1996	155	-	-	-	-	-	-	-	-	-	X
South Coast	Ventura	Lake Eleanor Dam	Dam	Lake Eleanor	Conejo Recreation and Park District	Eleanor Creek	1881	104	-	-	-	-	-	-	-	-	-	X
South Coast	Ventura	Runkle Dam	Dam	Runkle Reservoir	Ventura County WPD	Runkle Canyon	1949	100	-	-	-	-	-	-	-	-	-	X
South Coast	Ventura	Senior Canyon Dam	Dam	Senior Canyon Reservoir	Senior Canyon Mutual Water Co.	San Antonio Creek	1964	73	-	-	-	-	-	-	-	-	-	X
South Coast	Ventura	Stewart Canyon Debris Basin	Debris Basin	-	Ventura County WPD	Tributary San Antonio Creek	1963	67	-	-	-	-	-	-	-	-	-	-
South Coast	Ventura	Ferro Debris Basin	Debris Basin	-	Ventura County WPD	Tributary Beardsley Wash	1986	24	-	-	-	-	-	-	-	-	-	-
South Coast	Ventura	Los Robles Diversion Dam	Dam	Robles Diversion Dam	U.S. Bureau of Reclamation	Ventura River	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Lahontan	Inyo	Haiwee Dam	Dam	Haiwee Reservoir	Southern California Edison Co.	Rose Valley	1913	46,600	Water Supply, Recreation	-	X	-	-	-	X	X	-	-
South Lahontan	Inyo	Tinemaha Dam	Dam	Tinemaha Reservoir	Southern California Edison Co.	Owens River	1928	16,405	-	-	-	-	-	-	-	-	-	X
South Lahontan	Inyo	Hillside Dam	Dam	South Lake	Southern California Edison Co.	South Fork Bishop Creek	1910	12,883	-	-	-	-	-	-	-	-	-	X
South Lahontan	Inyo	Sabrina Dam	Dam	Lake Sabrina	Southern California Edison Co.	Middle Fork Bishop Creek	1908	8,376	Hydroelectricity	-	-	-	-	-	X	-	-	-
South Lahontan	Inyo	Tailings Pond No. 1	Reservoir	-	Southern California Edison Co.	Unknown	Unknown	5,010	Discharge collection	-	-	-	-	-	-	-	-	-
South Lahontan	Inyo	Pleasant Valley Dam	Dam	Pleasant Valley Reservoir	Southern California Edison Co.	Owens River	1957	3,825	Flood Management	X	-	-	-	-	-	X	-	-
South Lahontan	Inyo	Tailings Pond No. 2	Reservoir	-	Southern California Edison Co.	Unknown	Unknown	1,720	Discharge collection	-	-	-	-	-	-	-	-	-
South Lahontan	Inyo	Big Pine Creek No. 2 Dam	Dam	Second Lake	City of Los Angeles Department of Water and Power (LADWP)	Big Pine Creek	Unknown	1,071	Irrigation	-	-	X	-	-	-	-	-	-
South Lahontan	Inyo	Tailings Pond No. 4	Reservoir	-	Southern California Edison Co.	Unknown	Unknown	995	-	-	-	-	-	-	-	-	-	X
South Lahontan	Inyo	Tailings Pond No. 3	Reservoir	-	Southern California Edison Co.	Unknown	Unknown	382	Discharge collection	-	-	-	-	-	-	-	-	-
South Lahontan	Inyo	Longley Dam	Dam	Longley Lake	Southern California Edison Co.	Mc Gee Creek	1910	178	Irrigation, Recreation	-	-	X	-	-	-	X	-	-
South Lahontan	Inyo	Bishop Creek Intake No. 2 Dam	Dam	-	Southern California Edison Co.	Middle Fork Bishop Creek	1908	78	Hydroelectricity	-	-	-	-	-	X	-	-	-
South Lahontan	Inyo	Bishop Creek Intake No. 4 Dam	Dam	-	Southern California Edison Co.	Bishop Creek	1908	25	Hydroelectricity	-	-	-	-	-	X	-	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Lahontan	Inyo	Bishop Creek Intake No. 6 Dam	Dam	-	Southern California Edison Co.	Bishop Creek	1908	15	Hydroelectricity	-	-	-	-	-	X	-	-	-
South Lahontan	Kern	Boron Tails Pond 5 Dam	Dam	-	Southern California Edison Co.	Tributary Rogers Dry Lake	1976	4,887	Discharge collection	-	-	-	-	-	-	-	-	-
South Lahontan	Kern	Boron Tails Pond 6 Dam	Dam	-	Southern California Edison Co.	Tributary Rogers Dry Lake	1980	2,235	-	-	-	-	-	-	-	-	-	X
South Lahontan	Kern	BAP Ponds 1,2,3,4	Reservoir	-	Southern California Edison Co.	Offstream	2003	1,986	Discharge collection	-	-	-	-	-	-	-	-	-
South Lahontan	Kern	Boron Tails Pond Dam	Dam	-	Southern California Edison Co.	Tributary Rogers Dry Lake	1975	1,480	Discharge collection	-	-	-	-	-	-	-	-	-
South Lahontan	Kern	Blackburn Dam	Dam	-	Southern California Edison Co.	Blackburn Creek	1991	625	Flood Management	X	-	-	-	-	-	-	-	-
South Lahontan	Kern	Borax Solar Evaporation Ponds	Reservoir	-	Southern California Edison Co.	Tributary Rogers Dry Lake	1984	242	Discharge collection	-	-	-	-	-	-	-	-	-
South Lahontan	Los Angeles	Fairmont Dam	Dam	Fairmont Reservoir	Southern California Edison Co.	Antelope Valley	1912	7,507	Recreation	-	-	-	-	-	-	X	-	-
South Lahontan	Los Angeles	Littlerock Dam	Dam	Littlerock Reservoir	Southern California Edison Co.	Littlerock Creek	1924	4,600	Water Supply, Recreation	-	X	-	-	-	-	X	-	-
South Lahontan	Los Angeles	Harold Reservoir Dam	Dam	Harold Reservoir	Southern California Edison Co.	Tributary Antelope Valley Creek	1891	3,870	-	-	-	-	-	-	-	-	-	X
South Lahontan	Los Angeles	Amargosa Creek Dam	Dam	-	Southern California Edison Co.	Amargosa Creek	1998	1,187	Flood Management	X	-	-	X	-	-	-	-	-
South Lahontan	Los Angeles	Fairmont No. 2 Dam	Dam	Fairmont No. 2 Reservoir	Southern California Edison Co.	Tributary Antelope Valley Creek	1982	493	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Lahontan	Los Angeles	Pearblossom Spilling Basin Dam	Dam	-	Southern California Edison Co.	Offstream	1970	106	-	-	-	-	-	-	-	-	-	X
South Lahontan	Mono	Long Valley Dam	Dam	Lake Crowley	Southern California Edison Co.	Owens River	1941	183,465	Hydroelectricity, Flood Management	X	-	-	-	-	X	-	-	-
South Lahontan	Mono	Grant Lake Dam	Dam	Grant Lake	Southern California Edison Co.	Rush Creek	1940	47,525	Water Supply, Irrigation	-	X	X	-	-	-	-	-	-
South Lahontan	Mono	Gem Lake Dam	Dam		Southern California Edison Co.	Rush Creek	1917	17,228	Hydroelectricity	-	-	-	-	-	X	-	-	-
South Lahontan	Mono	Saddlebag Dam	Dam	Saddlebag Lake	Southern California Edison Co.	Lee Vining Creek	1921	9,789	Recreation	-	-	-	-	-	-	X	-	-
South Lahontan	Mono	Rush Creek Meadows Dam	Dam	Waugh Lake	Southern California Edison Co.	Rush Creek	1925	5,277	Irrigation	-	-	X	-	-	-	-	-	-
South Lahontan	Mono	Lundy Lake Dam	Dam	Lundy Lake	Southern California Edison Co.	Mill Creek	1911	4,113	Recreation	-	-	-	-	-	-	X	-	-
South Lahontan	Mono	Tioga Lake Dam	Dam	Tioga Lake	Southern California Edison Co.	Lee Vining Creek	1928	1,254	Recreation	-	-	-	-	-	-	X	-	-
South Lahontan	Mono	Agnew Lake Dam	Dam	Agnew Lake Reservoir	Southern California Edison Co.	Rush Creek	1916	810	Hydroelectricity	-	-	-	-	-	X	-	-	-
South Lahontan	Mono	Walker Lake	Reservoir	-	City of Los Angeles	Walker Creek	1880	540	-	-	-	-	-	-	-	-	-	X
South Lahontan	Mono	Rhinedollar Dam	Dam	Ellery Lake	Southern California Edison Co.	Lee Vining Creek	1927	490	Hydroelectricity	-	-	-	-	-	X	-	-	-
South Lahontan	Mono	Upper Gorge Dam	Dam	-	LADWP	Owens River	1953	26	Hydroelectricity	-	-	-	X	-	X	-	-	-
South Lahontan	Mono	Adobe Reservoir	Reservoir	Fairmont No. 2 Dam	Southern California Edison Co.	Antelope Valley	1912	Unknown	Water Supply, Irrigation	-	X	X	-	-	-	-	-	-
South Lahontan	San Bernardino	Mojave Dam	Dam	Mojave Reservoir	USACE Los Angeles District	West Fork Mojave River	1971	179,400	Flood Management	X	-	-	-	-	-	-	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
South Lahontan	San Bernardino	Cedar Springs Dam	Dam	Silverwood Lake Recreation Area	California Department of Water Resources (DWR)	West Fork Mojave River	1971	78,000	Recreation	-	-	-	-	-	-	X	-	-
South Lahontan	San Bernardino	Lake Arrowhead Dam	Dam	Lake Arrowhead Reservoir	Arrowhead Lake Association	Little Bear Creek	1922	48,000	Water Supply, Recreation	-	X	-	-	-	-	X	-	-
South Lahontan	San Bernardino	Lake Gregory Dam	Dam	-	San Bernardino County Regional Park Division	Houston Creek	1938	2,100	Recreation	-	-	-	-	-	-	X	-	-
South Lahontan	San Bernardino	New Lake Arrowhead Dam	Dam	Papoose Lake	County of San Bernardino	Little Bear Creek	1976	1,970	-	-	-	-	-	-	-	-	-	X
South Lahontan	San Bernardino	Molycorp Tailings	Reservoir	-	Molycorp Incorporated	Offstream	1967	1,140	-	-	-	-	-	-	-	-	-	X
South Lahontan	San Bernardino	Green Valley Lake Dam	Dam	-	Green Valley Mutual Water Co.	Green Valley Creek	1925	250	Recreation	-	-	-	-	-	-	X	-	-
South Lahontan	San Bernardino	Grass Valley Dam	Dam	Grass Valley Reservoir	Arrowhead Lake Association	Grass Valley Creek	1964	243	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Fresno	Pine Flat Dam	Dam	Pine Flat Lake	USACE	Kings River	1954	1,000,000	Flood Management	X	-	X	-	X	-	X	-	-
Tulare Lake	Fresno	Wishon Auxiliary No. 1	Dam	-	Pacific Gas and Electric Company	North Fork Kings River	1958	129,000	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Fresno	Courtright Dam	Dam	Courtright Reservoir	Pacific Gas and Electric Company	Helms Creek	1958	123,300	Hydroelectricity	-	-	-	-	-	X	X	-	-
Tulare Lake	Fresno	Wishon Reservoir	Reservoir	-	Pacific Gas and Electric Company	North Fork Kings River	1958	118,000	Hydroelectricity	-	-	-	-	-	X	X	-	-
Tulare Lake	Fresno	Big Dry Creek Dam	Dam	-	Fresno Metropolitan Flood Control District (FCD)	Big Dry Creek and Dog Creek	1948	30,200	Flood Management	X	-	-	-	-	-	-	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Tulare Lake	Fresno	Fancher Creek Dam	Dam	-	Fresno Metropolitan FCD	Fancher Creek and Hog Creek	1991	9,600	Flood Management	X	-	-	-	-	-	-	-	-
Tulare Lake	Fresno	Fancher Creek Detention Basin	Reservoir	-	Fresno Metropolitan FCD	Fancher Creek	2006	1,891	Flood Management, Irrigation	X	-	X	-	-	-	-	-	-
Tulare Lake	Fresno	Sequoia Lake Dam	Dam	Sequoia Lake	Y M C A, Inc.	Mill Flat Creek	1888	1,370	Recreation	-	-	-	-	-	-	X	-	-
Tulare Lake	Fresno	Balch Diversion Dam	Dam	Black Rock Reservoir	Pacific Gas and Electric Company	North Fork Kings River	1927	1,295	Recreation	-	-	-	-	-	-	X	-	-
Tulare Lake	Fresno	Redbank Dam	Dam	-	Fresno Metropolitan FCD	Redbank Creek	1962	1,100	Flood Management	X	-	-	-	-	-	-	-	-
Tulare Lake	Fresno	Sand Creek Dam	Dam	Sand Creek Reservoir	Tulare County Resources Management Agency	Sand Creek	1980	1,050	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Fresno	Redbank Detention Basin	Reservoir	-	Fresno Metropolitan FCD	Redbank Creek	1990	940	Flood Management	X	-	-	-	-	-	-	-	-
Tulare Lake	Fresno	Giffen Reservoir Dam	Dam	Giffen Reservoir	Harris Farms, Inc.	Tributary Holland Creek	1971	900	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Fresno	Alluvial Drain Detention Basin	Reservoir	-	Fresno Metropolitan FCD	Tributary Big Dry Creek	1994	833	Flood Management	X	-	-	-	-	-	-	-	-
Tulare Lake	Fresno	Pup Creek Detention Basin	Reservoir	-	USACE, Fresno Metropolitan FCD	Pup Creek	1993	785	Flood Management	X	-	-	-	-	-	-	-	-
Tulare Lake	Fresno	Balch Afterbay Dam	Dam	-	Pacific Gas and Electric Company	North Fork Kings River	1928	318	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Fresno	Mud Dam	Dam	Mud Reservoir	James Irrigation District	Fresno Slough	1919	304	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Tulare Lake	Fresno	Big Dry Creek Detention Basin	Reservoir	-	Fresno Merced FCD	Dry Creek	Unknown	260	Flood Management	X	-	-	-	-	-	-	-	-
Tulare Lake	Fresno	Reynolds Weir	Weir	-	Laguna Irrigation District	Tributary Kings River	1928	260	-	-	-	-	-	-	-	-	-	-
Tulare Lake	Fresno	Last Chance Weir	Weir	-	Last Chance Water Ditch Co.	Kings River	1919	50	-	-	-	-	-	-	-	-	-	-
Tulare Lake	Fresno	Stinson Weir	Weir	-	Stinson Canal And Irrigation Co.	Tributary Kings River	1910	50	-	-	-	-	-	-	-	-	-	-
Tulare Lake	Fresno	Cobbles Weir	Weir	Kings River	Unknown	Unknown	Unknown	Unknown	Irrigation	-	-	X	-	-	-	-	-	-
Tulare Lake	Fresno	Cole Slough Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	Irrigation	-	-	X	-	-	-	-	-	-
Tulare Lake	Fresno	Consolidated and Fresno Canals Weirs	Weir	Kings River	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
Tulare Lake	Fresno	Dry Creek Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Fresno	Gould Canal Weir	Weir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
Tulare Lake	Fresno	Grant Canal Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Fresno	Hume Lake Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Fresno	Murphy Slough Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Fresno	Redbank Creek	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Fresno	Redbank Creek Tributary 3	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Tulare Lake	Fresno	Redbank Creek Tributary 4	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Fresno	Redbank Creek Tributary 5	Reservoir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Inyo	East Side Tailings Area Dam	Dam	-	Excell Mineral Co.	Unknown	Unknown	340	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Kern	Isabella Dam	Dam	Isabella Lake	USACE	Kern River	1953	568,000	Flood Management, Irrigation, Hydroelectricity	X	-	X	-	-	X	-	-	-
Tulare Lake	Kern	Irrigation Reservoir Dam	Dam	Irrigation Reservoir	City of Bakersfield	Offstream	1980	5,200	Irrigation	-	-	X	-	-	-	-	-	-
Tulare Lake	Kern	J.C. Jacobsen Dam	Dam	Brite Valley Dam	Tehachapi Cummings County Water District	Tributary Chanac Creek	1973	1,820	Irrigation, Flood Management	X	-	X	-	-	-	-	-	-
Tulare Lake	Kern	Tejon Storage Reservoir 2	Reservoir	-	Tejon Ranch Co.	Tributary Tejon Creek	1956	860	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Kern	Kern River County Park Dam	Dam	Lake Ming	Kern County Department of Parks & Recreation	Lake Ming, Kern River	1959	790	Recreation	-	-	-	-	-	-	X	-	-
Tulare Lake	Kern	Antelope Dam	Dam	-	Tehachapi Cummings County Water District	Antelope Creek	1987	764	Recreation	-	-	-	-	-	-	X	-	-
Tulare Lake	Kern	Antelope Stormwater Collection Facility Reservoir	Reservoir	-	Unknown	Tehachapi Creek	1986	764	Flood Management	X	-	-	-	-	-	-	-	-
Tulare Lake	Kern	Blackburn Stormwater Collection Facility Reservoir	Reservoir	-	NRCS, Tehachapi County Water District	Blackburn Creek	1990	710	Flood Management	X	-	-	-	-	-	-	-	-

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Tulare Lake	Kern	West East Tailings Area	Reservoir	-	Excell Mineral Co.	Unknown	Unknown	710	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Kern	Tejon Storage 1	Reservoir	-	Tejon Ranch Co.	Tributary El Paso Creek	1946	700	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Kern	Aerated Lagoon Dam	Dam	-	City of Bakersfield	Offstream	1980	458	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Kern	Big Four Ranch Dam	Dam	-	Kern Tulare Water District	Unknown	1970	312	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Kern	Berrenda Mesa Dam	Dam	-	Berrenda Mesa Water District	Unknown	1967	180	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Kern	Diversion No. 1 Dam	Dam	Lake Isabella Tributary	Southern California Edison Co.	Kern River	1906	150	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Kern	North East Tailings Area	Reservoir	-	Excell Mineral Co.	Unknown	Unknown	75	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Kern	Rio Bravo Diversion Dam	Dam	-	Olcese Water District	Kern River	1989	63	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Kern	Arvin Edison Canal Diversion Structure	Weir	-	Unknown	Unknown	Unknown	Unknown	Water Supply	-	X	-	-	-	-	-	-	-
Tulare Lake	Kern	Beardsley Weir	Weir	-	Unknown	Unknown	Unknown	Unknown	Hydroelectricity	-	-	-	-	-	X	-	-	-
Tulare Lake	Kern	California Aqueduct Dam	Dam	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
Tulare Lake	Kern	Calloway Weir	Weir	Kern River	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
Tulare Lake	Kern	Dry Lake	Dam	Lake Buena Vista	Unknown	Offstream	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Kern	Kern Island Canal	Weir	-	Unknown	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
Tulare Lake	Kern	Walker Basin Creek Dam	Dam	-	Unknown	Walker Basin Creek	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Tulare Lake	Kings	Avenal Effluent Storage Dam	Dam	-	California Department of Corrections	OFFSTREAM	1987	783	Wastewater	-	-	X	-	-	-	-	X	-
Tulare Lake	Kings	Empire Weir No. 2	Weir	-	Tulare Lake Basin Water Storage District	South Fork Kings River	1938	480	-	-	-	-	-	-	-	-	-	-
Tulare Lake	Kings	Island Weir	Weir	-	Laguna Irrigation District	North Fork Kings River	1926	230	Irrigation	-	-	X	-	-	-	-	-	-
Tulare Lake	Kings	Peoples Weir	Weir	-	Peoples Ditch Co.	Kings River	1936	120	Irrigation	-	-	x	-	-	-	-	-	-
Tulare Lake	Kings	Crescent Weir	Weir	-	Crescent Canal Co.	Zalda Creek	1933	50	Irrigation	-	-	X	-	-	-	-	-	-
Tulare Lake	Kings	Empire Weir No. 1	Weir	-	Empire West Side Irrigation District	South Fork Kings River	1906	50	Irrigation	-	-	X	-	-	-	-	-	-
Tulare Lake	Kings	Lemoore Div Weir	Weir	-	Lemoore Canal And Irrigation Co.	Kings River	1924	50	Irrigation	-	-	X	-	-	-	-	-	-
Tulare Lake	Tulare	Terminus Dam	Dam	Lake Kaweah	Southern California Edison Co.	Kaweah River	1962	143,000	Irrigation, Water Supply	-	X	X	-	-	-	-	-	-
Tulare Lake	Tulare	Success Dam	Dam	Success Lake	Southern California Edison Co.	Tule River	1961	82,300	Flood Management, Irrigation	X	-	X	-	-	-	-	-	-
Tulare Lake	Tulare	Bravo Lake Reservoir Dam	Reservoir	Bravo Lake Reservoir	Wutchumna Water Co.	Wutchumna Ditch	1980	3,427	Flood Management	X	-	-	-	-	-	-	-	-
Tulare Lake	Tulare	Lady Franklin Lake Dam	Dam	-	Southern California Edison Co.	East Fork Kaweah River	1905	467	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Tulare	Larson Dam	Dam	-	Southern California Edison Co.	Tributary South Tule River	1963	325	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Tulare	Upper Monarch Lake Dam	Dam	Monarch Lake	Southern California Edison Co.	East Fork Kaweah River	1905	314	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Tulare	Crystal Lake Dam	Dam	-	Southern California Edison Co.	East Fork Kaweah River	1903	162	-	-	-	-	-	-	-	-	-	X

Table C-E-1. Dams, Weirs, Debris Basins, and Reservoirs in California

Hydrologic Region	County	Dam Name	Type of Structure	Lake/Reservoir Name	Owner	Stream	Year Built	Capacity (AF)	Primary Purpose	Other Purposes								
										Flood Management	Water Supply	Irrigation	Fish and Wildlife Protection	Groundwater Recharge	Hydroelectricity	Recreation	Wastewater	Drainage
Tulare Lake	Tulare	Elk Bayou Dam	Dam	-	Southern California Edison Co.	Elk Bayou	1903	60	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Tulare	Graham Creek Dam	Dam	-	Southern California Edison Co.	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	X
Tulare Lake	Tulare	Kaweah River	Weir	-	Southern California Edison Co.	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
Tulare Lake	Tulare	Saint Johns River	Weir	-	Southern California Edison Co.	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-
Tulare Lake	Tulare	Saint Johns River Dam	Weir	-	Southern California Edison Co.	Unknown	Unknown	Unknown	-	-	-	-	-	-	-	-	-	-

Appendix F: Glossary

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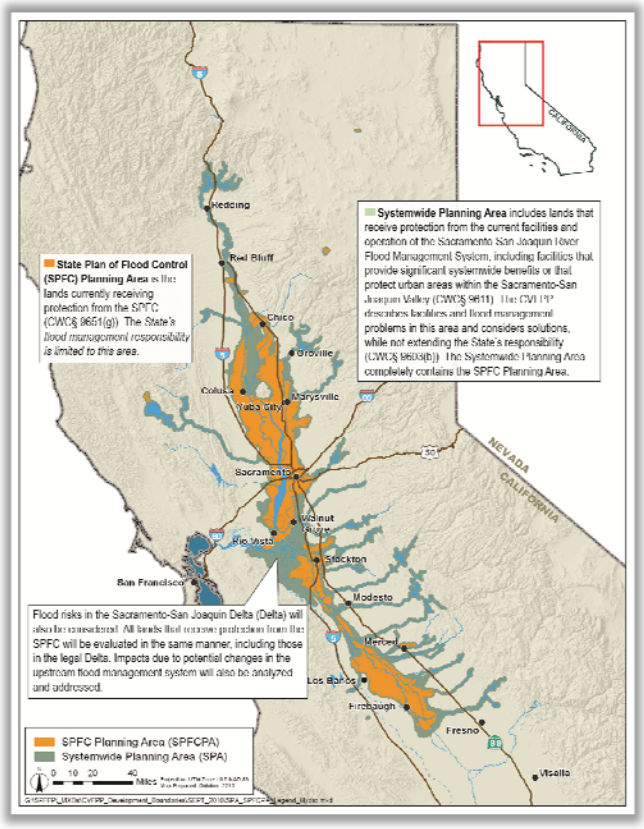
Appendix F: Glossary

2-year event	50 percent chance of exceedance in a given year
20-year event	5 percent chance of exceedance in a given year
50-year event	2 percent chance of exceedance in a given year
100-year event	(also known as a base flood) 1 percent chance of exceedance in a given year
200-year event	0.5 percent chance of exceedance in a given year
500-year event	0.2 percent chance of exceedance in a given year
A-Zone	The A-zone is an area of special flood hazard without water surface elevations determined. Flood insurance is mandatory in areas with a 1 percent annual chance of flooding.
Actions	Informed by tools and guided by plans, actions include activities that fund, manage, and oversee implementation of the projects. Actions also include fostering innovation and developing agency alignment to improve flood management policies, planning, governance, and investments. Actions based on IWM principles and thorough planning efforts will provide the most benefit to Californians.
Alluvial Fan Flooding	Flows of shallow depth and high velocity, with sediment transport, along uncertain flow paths on the surface and at the toe of alluvial fans. Typically caused by localized rainstorms, often with snowmelt.
Atmospheric River	A weather pattern that forms a narrow corridor of concentrated moisture in the atmosphere that drops torrential rains as it passes over land.
Base Flood Elevation	The elevation of surface water resulting from a flood that has a 1 percent chance of equaling or exceeding that level in any given year. The base flood elevation is shown on Flood Insurance Rate Maps for zones AE, AH, A1-A30, AR, AR/A, AR/AE, AR/A1–A30, AR/AH, AR/AO, V1–V30, and VE.
Benefit-to-Cost (B/C) Analysis	The B/C analysis is a formalized procedure for estimating the benefits that a project is expected to generate and the costs necessary to produce the project, and then comparing project alternatives. When planning for flood protection, there will be construction and implementation costs, as well as flood risk reduction benefits.
California Data Exchange Center (CDEC)	The CDEC provides a centralized location to store and process real-time hydrologic information gathered from different contributors statewide.
California Water Plan (CWP)	The CWP provides a collaborative planning framework for elected officials, agencies, tribes, water and resource managers, businesses, academia, stakeholders, and the public to develop findings and recommendations and make informed decisions for California's water future. The plan, updated every 5 years, presents the status and trends of California's water-dependent natural resources; water supplies; and agricultural, urban, and environmental water demands for a range of plausible future scenarios. The CWP also evaluates different combinations of regional and statewide resource management strategies to reduce water demand, increase water supply, reduce flood risk, improve water quality, and enhance environmental and resource stewardship.

Capacity Exceedance	Capacity exceedance implies exceedance of the capacity of a water conveyance, storage facility, or damage-reduction measure. This includes levee or reservoir capacity exceeded before overtopping, channel capacity exceedance, or rise of water above the level of raised structures.
Central Valley Flood Management Planning (CVFMP) Program	CVFMP is one program within FloodSAFE California, a multi-year initiative led and managed by the California Department of Water Resources. Primary products of the CVFMP Program are the State Plan of Flood Control Descriptive Document, the State Plan of Flood Control History Document, the Flood Control System Status Report, and the Central Valley Flood Protection Plan.
Central Valley Flood Protection Plan (CVFPP)	The CVFPP is a State plan that will describe the challenges, opportunities, and a vision for improving flood management in the context of Integrated Water Management in the Central Valley. The CVFPP will document the current and future risks associated with flooding and recommend improvements to the Federal-State flood protection system to reduce the occurrence of major flooding and the consequence of flood damage that could result. The plan was submitted to the Central Valley Flood Protection Board in January 2012 for adoption by July and will be updated every 5 years. The planning area for the CVFPP is shown below.



Central Valley Flood Protection Plan (CVFPP) Floodplain	The floodplains used for the SFMP risk characterization within portions the Central Valley are the CVFPP No Action depth grid floodplains with the addition of the flood bypasses. SFMP received the draft CVFPP floodplains on October 4, 2011. The CVFPP floodplains were based on the floodplains of the *Sacramento and San Joaquin River Basins Comprehensive Study* (USACE, 2002) and modified by the CVFPP to reflect current hydrologic, hydraulic, and geotechnical information. For the SFMP analysis, the Yolo, East Side, Upper Sacramento, Mariposa, Sutter, and Tisdale bypasses were added to the CVFPP floodplains.
Coastal Flooding	Inundation at locations normally above the level of high tide. Often caused by storm surges occurring with high tides. Impacts include property damage and beach erosion.
Community	A political entity that has the authority to adopt and enforce floodplain ordinances for the area under its jurisdiction.
Consequences	Consequences are the quantitative measures of loss, such as direct tangible monetary loss or number of lives lost, when water inundates the people and property exposed.
Critical Facilities	Essential, high potential loss, lifeline, and transportation facilities, as defined by HAZUS-point shapefiles
Debris Flow Flooding	Flows made up of water, liquefied mud, and debris. Can form and accelerate quickly, reach high velocities, and travel great distances. Commonly caused by heavy localized rainfall on hillsides denuded of vegetation.
Economic Risk	Economic risk is the likelihood of flood damage to an identified area under a given climate and land use condition.
Engineered Structure Failure Flooding	Flooding as a result of dam failure or levee failure presents the potential of catastrophic impact, depending on amount of water impounded and location of populated areas downstream.
Essential Facilities	Care facilities, emergency centers, fire stations, police stations, and schools, as defined by HAZUS-point shapefiles.
Expected Annual Damage (EAD)	EAD is the value that measures the severity of flood loss in any given year. EAD does not mean that this amount of damage will occur in any particular year, but rather that over a long period, the average damages will tend to approach that amount.
Exposure	Exposure is a description of who or what is in harm's way.
Fetch	The distance along open water or land over which the wind blows, or the distance waves can traverse unobstructed.
Flash Flooding	Quickly forming floods with high-velocity flows. Often caused by stationary or slow-moving storms. Typically occurs on steep slopes and impermeable surfaces, and in areas adjacent to local streams and creeks.

Flood Emergency Response Information System (FERIS)	FERIS is a geospatial information system that allows for integration of existing California Data Exchange Center (CDEC) systems with real-time data collection and data exchange.
Flood Hazard	The Federal Emergency Management Agency defines a flood hazard as any flood event or condition with the potential to cause fatalities, injuries, property damage, infrastructure damage, agricultural loss, environmental damage, business interruption, or other loss.
Flood Insurance Rate Map (FIRM)	A FIRM is the official map of a community on which the Federal Emergency Management Agency has delineated the Special Flood Hazard Areas, the Base Flood Elevations, and the risk premium zones applicable to the community.
Flood Management	See *flood risk management*. Generally, the terms *flood management* and *flood risk management* are used interchangeably throughout the Flood Future Report.
Flood Risk	Flood risk is the likelihood of consequence of inundation within an identified area, given a specified climate condition, land use condition, and flood management system (existing or planned) in place. The consequence may be direct or indirect economic cost, loss of life, environmental impact, or other specified measure of flood effect. Flood risk is a function of the following components: • Loading, which is the frequency and magnitude of flooding • Performance of flood management measures • Exposure and vulnerability, which are the relationship between the flood hazard (rising or flowing water) and its effect on life loss, property, and/or environmental resources • Consequence Therefore, flood management actions may reduce risk by changing loading, performance, exposure, vulnerability, or consequence.
Flood Risk Management	Flood risk management seeks to reduce flood risks by managing the floodwaters to reduce the probability of flooding (including by levees and dams) and by managing the floodplains to reduce the consequences of flooding. Flood risk management requires integrating and synchronizing programs at various levels of government designed to reduce flood risk. Source: USACE, Institute for Water Resources, a dynamic resource at http://nfrmp.us/frm_terminology.cfm#def17 (accessed March 11, 2013).
Floodplain	The extent of the flood hazard for a 100-year (1 percent chance of exceedance in a given year) or 500-year (0.2 percent chance of exceedance in a given year) event, as determined by the Central Valley Flood Protection Plan, Federal Emergency Management Agency, or U.S. Army Corps of Engineers.

FloodSAFE California	FloodSAFE California refers to the California Department of Water Resources multi-faceted initiative launched in 2006 to improve public safety through flood management in the context of Integrated Water Management and to reduce potential flood damages in areas of the state with the highest risk. Although led at the State level and initially funded by bond money from Propositions 1E (2006) and 84 (2006), FloodSAFE implementation relies on the cooperation and assistance of Federal partners, Tribal entities, local sponsors, and other stakeholders. The FloodSAFE vision is a sustainable system of flood management with an IWM approach and emergency response throughout California that improves public safety, protects and enhances environmental and cultural resources, and supports economic growth by reducing the probability of destructive floods, promoting beneficial floodplain processes, and lowering the damages caused by flooding.
Hazard Mitigation Plan (HMP)	A community's long-term strategy to reduce disaster losses and break the cycle of disaster damage, reconstruction, and repeated damage is described in an HMP. Results are accomplished through hazard mitigation, which is any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards.
Hazards United States (HAZUS) – Federal Emergency Management Agency (FEMA)	FEMA has developed a Geographic Information System-based U.S. multihazard assessment software, which contains a Flood Loss Estimation Model with flood hazard analysis and flood loss estimation modules for riverine and coastal analyses. The flood hazard analysis module (HAZUS) uses characteristics such as frequency, discharge, and ground elevation to estimate flood depth, flood elevation, and flow velocity.
High Potential-Loss Facility	Facilities such as dams and hazardous material sites, as defined by HAZUS-point shapefiles.
Hydrologic Engineering Center-Flood Damage Analysis (HEC-FDA)	The U.S. Army Corps of Engineers, Hydrologic Engineering Center (HEC) Flood Damage Analysis (FDA) model is designed to perform risk analysis as part of a flood risk study. The approach explicitly incorporates descriptions of uncertainty of key parameters and functions into project benefit and performance analyses.
Hydrologic Unit Code 8 (HUC8)	A Hydrologic Unit Code 8 is a watershed address consisting of a name and a number (for example, Lower James watershed, 02080206). The 8-digit number is a Hydrologic Unit Code or HUC. The Hydrologic Unit system is a standardized watershed classification system developed by the U.S. Geological Survey in the mid-1970s. Hydrologic units are watershed boundaries organized in a nested hierarchy by size. They range in size from regions to the smaller cataloging units, which are roughly equivalent to local watersheds.
Impact Area	Impact area is a term used for convenience to describe a geographic area for which risk is assessed.
Improvement Project	A project that will improve or add facilities to the State Plan of Flood Control to increase levels of flood protection for urban areas. Funding for improvement projects is authorized by California Public Resources Code section 5096.821(b).

Integrated Regional Water Management (IRWM)	IRWM promotes the coordinated development and management of water, land, and related resources to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.
Integrated Water Management (IWM)	IWM is a strategic approach to planning and implementation that combines specific flood management, water supply, and ecosystem actions to deliver multiple benefits. IWM relies on blending knowledge from a variety of disciplines, including engineering, economics, environmental sciences, public policy, and public information. This approach also promotes system flexibility and resiliency to accommodate changing conditions such as regional preferences, ecosystem needs, climate change, flood or drought events, and financing capabilities.
Life-Safety Risk	Life-safety risk represents the number of lives in jeopardy in an identified portion of the state, considering a given climate and land use condition, with a specified plan of flood management in place.
Loading	In the context of flood risk, loading describes the likelihood of occurrence of conditions that lead to loss of life or damage to property if the conditions are not controlled or the consequence is not managed. Loading commonly is described with a discharge-frequency function, which identifies the probability that discharge at a specified location will exceed a specified value.
Local Maintaining Agency (LMA)	LMAs include reclamation districts, State maintaining agencies, improvement districts, and individual districts like American River Flood Control District or Lower San Joaquin Levee District.
Long-Term Average (or Expected) Annual Inundation Damage	See Expected Annual Damage (EAD).
Maintenance and Inspection	Actions required for the proper care and efficient operation of various project elements. These actions may be combined or separated, as best suits the particular project. The guidance for proper maintenance and inspection are contained in ER 1130-2-303. Adaptations needed to satisfy conditions not covered in the ER are encouraged. Outlines of the maintenance and inspection records are be maintained and available for Government inspection. Government inspections will be performed in consultation with the project's sponsor. (Source: ER 1110-2-401)
Management Action	A management action is a specific structural or nonstructural strategy, action, or tactic that contributes to stated goals and addresses identified problems. Management actions could range from potential policy or institutional changes to operational and physical changes to the flood management system. Management actions are broad (not location-specific), and they vary in their level of detail.

Modification	Project modifications include changes in project operation, changes in real estate interests, the physical change of a project feature, addition of project features, or changes in the purposes of a project. (Source: ER 1165-2-119)
National Flood Insurance Program (NFIP)	The NFIP is a Federal program created by the U.S. Congress to mitigate future flood losses nationwide. The NFIP requires local communities to enforce building and zoning ordinances in exchange for access to affordable, Federally backed, flood insurance protection for property owners.
Operation	Actions that are necessary for the safe and efficient functioning of a project to produce the benefits set forth in the project authorization. The operational requirements for nonreservoir projects are to be presented as operation plans covering essentially the who, what, where, when, and how of the various project operations. An outline of operation records is to be maintained and available for inspection. The operation of reservoirs, covered in water control manuals shall be separate from this operation and maintenance manual. (Source: ER 1110-2-401)
Operation, Maintenance, Repair, Rehabilitation, and Replacement (OMRR&R)	For Federally funded projects the definition of operation and maintenance (O&M) includes the local entity's financial obligation to operate, maintain, repair, rehabilitate, and replace (OMRR&R) the implemented project. OMRR&R is a non-Federal responsibility when local, regional and/or State entities partner on a Federal project. References to O&M provided in the Flood Future Report include OMRR&R responsibilities when the project is a Federal/non-Federal partnership.
Performance	Performance refers to the effectiveness of flood or floodplain management measures.
Plans	Plans utilize information provided by tools, as well as input from stakeholders to guide the development of the flood management strategies. Plans take into account near- and long-term actions, as well as any additional considerations, such as multiple benefits, environmental concerns, overall water management, and climate change, to formulate long-lasting resilient strategies. Plans include identifying and evaluating possible multibenefit projects and the most effective means of implementing projects using an integrated, collaborative approach.
Project Management Plan	A project management plan defines how a project is executed, monitored, and controlled. It is used to define the approach, scope, and delivery of a project.

Public Law 84-99 (33 U.S.C. 701n)	USACE has authority under Public Law (PL) 84-99, Flood Control and Coastal Emergencies (33 U.S.C. 701n) (69 Stat. 186) for emergency management activities to protect human life and improved property, reduce human suffering, help communities recover from the effects of disasters, and mitigate damage and future threats. Under PL 84-99, the Chief of Engineers, acting for the Secretary of the Army, is authorized to undertake activities, including disaster preparedness, advance measures, emergency operations (flood response and post-flood response), rehabilitation of flood control works threatened or destroyed by flood, protection or repair of Federally authorized shore-protective works threatened or damaged by coastal storm, and provisions of emergency water due to drought or contaminated source.
California Public Resources Code section 75003.5	The people of California further find and declare that the growth in population of the State and the impacts of climate change pose significant challenges. These challenges must be addressed through careful planning and through improvements in land use and water management that both reduce contributions to global warming and improve the adaptability of our water and flood control systems. Improvements include better integration of water supply, water quality, flood control and ecosystem protection, as well greater water use efficiency and conservation to reduce energy consumption.
California Public Resources Code section 75032(a)	California Public Resources Code section 75032(a) provides funds for: The inspection and evaluation of the integrity and capability of existing flood control project facilities and the development of an economically viable flood control rehabilitation plan.
Reconstruction	Reconstruction consists of addressing the major performance deficiencies caused by a long-term degradation of the foundation, construction materials, and engineering systems that have exceeded their expected service lives and the resulting inability of the project to perform its authorized project functions. (Source: USACE, Program Guidance Letter on Reconstruction, August 16, 2005, http://planning.usace.army.mil/toolbox/library/MemosandLetters/reconstruction.pdf)
Rehabilitation	Rehabilitation refers to a set of activities necessary to bring a deteriorated project back to its original condition. (Source: ER 1110-2-401)
Repair	Repair refers to those activities of a routine nature that maintain the project in a well kept condition. (Source: ER 1110-2-401)
Replacement	Replacement covers those activities taken when a worn-out element or portion of a project is replaced. (Source: ER 1110-2-401)
Residual Risk	Residual risk is the likelihood of damage or other adverse consequence remaining after flood management actions are taken.
Results	Robust tools, thorough planning, and integrated actions deliver results that provide value to California's residents, environment, and economy. Results are tracked using performance measures and sustainability indicators that help improve investment performance and increase flood management benefits.

Severe Repetitive Loss (SRL)	Any NFIP-insured residential property that has met at least one of the following paid flood loss criteria since 1978, regardless of ownership: • Four or more separate claim payments of more than $5,000 each (including building and contents payments) • Two or more separate claim payments (building payments only) where the total of the payments exceeds the current value of the property In either case, two of the claim payments must have occurred within 10 years of each other. Multiple losses at the same location within 10 days of each other are counted as one loss, with the payment amounts added together. The loss history includes all ownership of the property since 1978 or since the building's construction if built after 1978.
Slow Rise Flooding	Slow rise flooding occurs as a gradual inundation as waterways or lakes overflow their banks. Most often caused by heavy precipitation, especially with heavy snowmelt. Includes riverine flooding in deep floodplains and ponding of water in low-lying urban areas, as well as gradual flooding in areas adjacent to local streams and creeks.
Special Flood Hazard Area (SFHA)	SFHAs are areas subject to inundation from a flood that has a 1 percent chance of being equaled or exceeded in a given year.
State Plan of Flood Control (SPFC)	Collectively, the facilities, lands, programs, conditions, and mode of operation and maintenance for the State-Federal flood protection system in the Central Valley. This area is shown in the figure provided under CVFPP definition.
Tools	Tools include data, models, and assessments needed for decision making in all aspects of flood management. DWR continues enhancing and sharing technical resources (tools) across all programs and projects. This includes flood, environmental, and water management data gathering, modeling, and the technical aspects of flood readiness and emergency response. Technical and modeling information help inform thorough and thoughtful planning, along with accurate design of flood management facilities.
Transportation Facility	Runways, railway bridges, rail facilities, port facilities, light-rail facilities, highway bridges, ferry facilities, bus facilities, and airport facilities, as defined by HAZUS-point shapefiles.
Tsunami Flooding	Tsunami flooding occurs as a result of high-speed ocean waves triggered by mass movement that displaces a large volume of water. Causes include earthquakes and underwater landslides. Impact on land depends on wave height and inundation area.
Utilities	Wastewater, potable water, oil, natural gas, electric power, and communications facilities, as defined by HAZUS-point shapefiles.
V-Zone	The V-zone is an area inundated by 1 percent annual chance (100-year) flooding with velocity hazard (wave action); no base flood elevations have been determined.

Vulnerability	Vulnerability is the susceptibility to loss or damage of people and property exposed to the flood hazard.
Water Data Library (WDL)	The WDL is a searchable Geographic Information System (GIS) interface on the Internet. WDL allows users to access information about monitoring gauges, groundwater data, and water quality.

STATE OF CALIFORNIA
THE NATURAL RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

UNITED STATES ARMY CORPS OF ENGINEERS
FLOOD PLAIN MANAGEMENT SERVICES PROGRAM

US Army Corps
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The complete report, *California's Flood Future: Recommendations for Managing the State's Flood Risk*, including technical attachments and other supporting information is available for review at:

http://www.water.ca.gov/SFMP