

# **Central Valley Project**

**Integrated Units of the United States Army  
Corps of Engineers**

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## **The United States Army Corps of Engineers**

The United States Army Corps of Engineers can trace its history to the American Revolution. When the Continental Congress established the Army in June 1775, it provided for a Chief Engineer. The first Chief Engineer was Colonel Richard Gridley, who immediately began directing fortification construction during the Battle of Bunker Hill. Congress added several companies of engineer troops, and in 1779, formed a Corps of Engineers. In 1781, the Corps of Engineers played an important role in the Battle of Yorktown, which forced the British to surrender. When war with Britain threatened again in 1794, Congress appointed engineers to fortify key harbor and coastal installations. In 1802, the Corps of Engineers was made a permanent part of the United States military and was given charge of the military academy at West Point.

The primary responsibility of the Corp of Engineers was construction of seacoast fortifications. Following the War of 1812, the need to improve the Nation's defense and transportation system led to the General Survey Act of 1824, that gave the President authority to use the Corps of Engineers to survey road and canal routes. In a separate measure, Congress authorized the engineers to improve navigation on the Ohio and Mississippi Rivers. This began the Corps long history of involvement in civil works projects.

In 1846, just prior to the start of the Mexican War, Congress authorized the first regular company of engineer troops. During the Civil War, the number of engineer troops grew, and engineer units conducted surveys and reconnaissance, and directed siege operations. In the years that followed the Civil War, Corps involvement in civil works grew: from 49 projects and surveys in 1866 to 371 projects and 135 surveys in 1882.

Since the Civil War, the Army Corps of Engineers has been involved in six wars. Their activities covered both combat and non-combat roles ranging from construction of hospitals, barracks and ports, to support of the troops landing at Normandy in World War II. In December 1941, the Corps of Engineers was assigned responsibility for all Army construction. This

authorization covered all military and industrial projects including construction in support of the Manhattan Project. Following World War II, the Corps became involved in less traditional roles such as design and construction for NASA, construction of support facilities for the ICBM program, and military and civil projects overseas.

As one of the primary agencies involved in water resources management, the Corps has been involved in almost 1500 water projects. They are responsible for the design, construction and operation of projects for flood control, navigation, hydroelectric power generation, water supply for municipal and industrial users, recreation, fish and wild life management, and environmental enhancement. The Corps currently operates more than 500 flood control dams and thousands of miles of levees, floodwalls, floodways, and channels. In the 1980s, Corps projects prevented flood damage in excess of \$10,000,000,000 each year. In 1986 alone, Corps projects prevented over \$27,000,000,000 in flood damage.<sup>1</sup>

### **Army Corps Units in the Central Valley Project**

Within the Central Valley there are several projects constructed by the Corps of Engineers that have been fully or partially integrated into the Central Valley Project (CVP). Units that have been fully integrated into the CVP are either operated and maintained by the Bureau of Reclamation, or they have operations coordinated with other units of the CVP. Those units that are partially integrated into the CVP are operated and maintained by the Corps, but the recovery of all projects costs not allocated to flood control or navigation are administered by Bureau of Reclamation. These costs include those allocated to irrigation and power generation.

### **Authorization**

The Department of Interior, acting through the Bureau of Reclamation, was authorized by Section 8 of the Flood Control Act of 1944, to contract on behalf of the Government for repayment of benefit costs over and above costs allocated to flood control on projects constructed by the Corps of Engineers. Several Corps projects in California fell under Section 8 of the 1944 Flood Control Act. Projects authorized under the 1944 Act included Isabella Dam,

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1. United States Army Corps of Engineers, *Essayons (Let Us Try)*, Pamphlet No. EP-360-1-22, (US Army Corps of Engineers, October 1991)

on the Kern River; New Hogan Dam, on the Calaveras River; the Kings River Project; Success Dam, on the Tule River; and Terminus Dam, on the Kaweah River. Also authorized for construction under the 1944 Act were Folsom Dam, on the American River; Black Butte Dam, on Stony Creek; and the New Melones Dam, on the Stanislaus River.

Later legislation authorized several other projects that fell under Section 8 of the 1944 Act. The Flood Control Act of 1962 authorized construction of Hidden Dam, on the Fresno River, and Buchanan Dam, on the Chowchilla River. The Flood Control Act of 1966 authorized construction of Marysville Dam on the Yuba River.

In three cases, the authorizations were modified by additional legislation. In October 1949, the American River Authorization Act, that created the American River Division of the Central Valley Project, reauthorized construction of Folsom Dam by the Corps of Engineers, but then turned operation and maintenance of the project over to the Bureau of Reclamation for integration into the Central Valley Project. The Flood Control Act of 1962 reauthorized construction of New Melones Dam by the Corps, and turned the project over to the Reclamation for integration into the Central Valley Project. In 1970, the Black Butte Integration Act integrated Black Butte Dam into the Central Valley Project, but left operation and maintenance of the unit in Corps hands. Black Butte Dam is the only unit fully integrated into the Central Valley Project that is operated and maintained by the Corps of Engineers. Folsom Dam and New Melones Dam are operated and maintained by the Bureau of Reclamation. Flood control operations at Folsom and New Melones are conducted according to procedures established by the Corps of Engineers.<sup>2</sup>

### **Unit Descriptions**

The largest unit in the Central Valley constructed by the Corps of Engineers is the Pine Flat Dam and Lake on the Kings River Project. Completed in 1954, Pine Flat Dam is a concrete

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2. United States Department on Interior, Bureau of Reclamation, *Central Valley Project, Its Historical Background and Economic Impacts*, By L. B. Christiansen, (Sacramento: Bureau of Reclamation, July 1981), 7.; Wanda Seglund, ed., *Layperson's Guide to New Melones Dam* (Sacramento: Water Education Foundation, 1982), 4.; United States Department of Interior, Bureau of Reclamation, *American River Division, Central Valley Project, California*, Pamphlet, (Bureau of Reclamation, 1959).; United States Department of Interior, Bureau of Reclamation, "Central Valley Project, New Melones Unit, East Side Division," (Bureau of Reclamation: October 1983), 1.

gravity arch, 430 feet high and 1,820 feet long. The dam is located on the Kings River, about 30 miles east of Fresno, and provides 165,000 ac/ft of supplemental water for almost 720,000 acres in Fresno, Kings, and Tulare Counties. The capacity of Pine flat Lake is 1,000,000 acre feet (ac/ft) with a surface area of 5,970 acres. In 1984, the Kings River Conservation District built for it's own operation a 165-megawatt powerplant at Pine Flat.

Success Dam and Lake, located on the Tule River about five miles east of Porterville in Tulare County, is an earthfill structure 200 ft. high and 3,490 feet long. There is also an auxiliary earthfill dike 40 feet high and 7,600 feet long. Success Lake has a capacity of 82,300 ac/ft, of which 27,000 ac/ft is available for irrigation. The surface area of the lake is 2,406 acres. The Corps completed construction of the dam and lake in 1961. Contracts for irrigation water from Success Lake have been signed by the Lower Tule River Irrigation District, Porterville Irrigation District, Vandalia Irrigation District, and the Pioneer Water Company. In 1990, the Lower Tule River Irrigation District completed construction and began operation of a 14-megawatt powerplant below Success Dam.

Located on the Kaweah River in the Sierra foothills, about 50 miles southeast of Fresno, Terminus Dam and Lake Kaweah provide 55,000 ac/ft water to the Keweah Delta Water Conservation District. The earthfill dam stands 250 feet high and is 2,375 feet long. Completed in 1962, Lake Kaweah has a total capacity of 143,000 ac/ft with a surface area of 1,945 acres. In 1987, the Kaweah Power Authority began construction of a 17-megawatt hydroelectric plant below the dam. It was completed and placed in operation in 1990.

The New Hogan Dam and Lake, completed in 1964, is located on the Calaveras River, about 30 miles northeast of Stockton. New Hogan Dam replaced "Old" Hogan Dam, which now lies beneath the waters of New Hogan Lake. The new dam is an earth and rock fill structure 200 feet tall and 1,960 feet long. New Hogan Lake, with a total capacity of 317,000 ac/ft and a surface area of 4,410 acres, makes available 40,000 ac/ft for irrigation use. The Stockton and East San Joaquin Water Conservation District, and the Calaveras County Water District contract

for a portion of the available water. A 2.5-megawatt powerplant below the dam was completed in 1986, and is operated by the Calaveras County Water District and the Modesto Water District.

Isabella Dam and Lake Isabella are units of the Kern River Project. The dam and lake are located on the Kern River about 60 northeast of Bakersfield. The dam is a 185 foot high, 1,725 foot long earthfill structure impounding a total of 568,000 ac/ft. There is also an auxiliary dike 100 feet high and 3,275 feet long. Completed in 1953, Lake Isabella, with a surface area of 1,400 acres, provides 50,000 ac/ft of water for irrigation. Among those contracting for water from Lake Isabella are the North Kern, Buena Vista, and Tulare Lake Basin Water Storage Districts. In 1991, the Central Hydroelectric Corporation completed construction of a 12-megawatt powerplant below Isabella Dam.

Buchanan Dam and H. V. Eastman Lake, completed in 1975, are located on the Chowchilla River, about 45 miles east of Los Banos. The dam is an earth and rock fill dam 205 feet high and 1,800 feet long. H. V. Eastman Lake has a total capacity of 150,000 ac/ft and a surface area of 1,780 acres. Of the 150,000 ac/ft capacity, 45,000 ac/ft is reserved for flood control, leaving over 100,000 ac/ft for irrigation, fish and wildlife enhancement, and water quality improvement. The Chowchilla and La Branza Water Districts have signed long term contracts for water service from the lake. The project includes a 1,500 acre land and water area dedicated to fish and wildlife management, and a warm water fishery.

Hidden Dam and Hensly Lake, about 25 miles northeast of Fresno, were completed in 1974. The earthfill dam, 163 feet tall and 5,730 feet long, holds back a lake containing 90,000 ac/ft of water with a surface area of 1,570 acres. The Madera Irrigation District signed contracts for the entire 23,800 ac/ft of water available for irrigation.<sup>3</sup>

The Marysville Project, although authorized for construction, was determined to be economically infeasible and has not been built. The Marysville Dam was designed as two

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3. United States Department of Interior, Bureau of Reclamation, *Statistical Compilation of Engineering Features on Bureau of Reclamation Projects* (Denver: United States Government Printing Office, 1990) 26-9, 71-3.; United States Department of Interior, Bureau of Reclamation *Repayment of Reclamation Projects* (Washington D.C.: United States Government Printing Office, 1972) 86-90.; United States Army Corps of Engineers, *Water Resources Development in California 1993* (US Army Corps of Engineers, 1993), 117-8, 126-7, 136-8.

separate dams that would combine to form a single 916,000 ac/ft reservoir. The first dam, on the Yuba River about 15 miles northeast of Marysville, would be a 368 foot high, 7,583 foot long, earthfill structure with a concrete gravity center section. The second dam, on Dry Creek, would be a earth and rock fill structure 6,000 feet long and 368 feet tall. The plan also called for the construction of a powerplant at the Yuba River Dam, and an afterbay dam 4,800 feet long and 93 feet high to regulate releases from the powerplant.<sup>4</sup>

Folsom Dam and Lake, New Melones Dam and Lake, and Black Butte Dam and Lake are covered in sections devoted to Bureau of Reclamation features of the Central Valley Project.

### **Conclusion**

The contributions of the Army Corps of Engineer units that have been partially integrated into the Central Valley Project are enormous. In addition to annually providing over 360,000 ac/ft of new and supplemental water for irrigation, Corps units protect hundreds of thousands of acres of agricultural lands from damage due to flooding. As of the end of 1993, the integrated units of the Army Corps of Engineers have prevented over \$825,000,000 in damage from floods.<sup>5</sup> In addition to the benefits of flood control and irrigation water, Corps units provide recreational opportunities, fish and wildlife enhancement, hydroelectric power, and water quality improvement. The Corps units in the Central Valley are clearly successful and significantly contribute to operations of the Central Valley Project.

### **About the Author**

William Joe Simonds was born and raised in Colorado and has a solid understanding of the importance of water in the American West and its effect on the development of that region. He attended Colorado State University where he received a BA in History in 1992 and a Masters in Public History in 1995. He lives with his wife and two children in Fort Collins, Colorado.

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4. *Repayment of Reclamation Projects*, 88.; *Water Resources Development*, 99.

5. United States Army Corps of Engineers, Public Affairs Office. Sacramento District, Sacramento, California.



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