

**California Department of
Water Resources' Mission...**

*To manage the water of California, in cooperation
with other agencies, to benefit the state's people and
protect, restore and enhance the natural and
human environments.*

The California Aqueduct



The State Water Project

Planned, constructed and operated by the California Department of Water Resources, the State Water Project is the largest state-built, multipurpose water project in the United States. The Project includes 32 storage facilities, 17 pumping plants, 3 pumping-generating plants, 5 hydroelectric power plants, and approximately 660 miles of canals and pipelines. (This doesn't include the East Branch extension which is planned for construction.)

The SWP's main purpose is water supply - that is, to divert and store surplus water during wet periods and distribute it to areas of need in Northern

California, the San Francisco Bay area, the San Joaquin Valley, the Central Coast, and Southern California. Other project purposes include flood



Construction was completed on the largest section of the Aqueduct in 1968. Part of the San Luis Canal, the section measures 200 feet wide with a water depth of 33 feet.

control, power generation, recreation, fish and wildlife enhancement, and water quality improvement in the Sacramento-San Joaquin Delta.

Twenty-nine urban and agricultural water agencies have long-term contracts for an ultimate total of just over four million acre-feet per year of water from the SWP. Of this amount, approximately 70 percent will go to urban users and 30 percent to agricultural users.



The California Aqueduct

The State Water Project delivers water to its contracting agencies through several conveyance facilities. With the exception of North Bay Aqueduct and the Oroville Facilities, water is conveyed through a main line system before branching into one of several systems.

This main line system known as the California Aqueduct was constructed from 1962 to 1973, at an estimated cost of \$1.6 billion. It is the SWP's largest conveyance facility. The Aqueduct, including the East Branch portion, is one of the longest in the world, stretching 444 miles.

From its beginning in the Sacramento-San Joaquin Delta to Lake Perris in Riverside County, the Aqueduct consists of 385 miles of concrete-lined open canal and 59 miles of tunnels, siphons, and pipelines. It transports as much as 3 million acre-feet of water each year to urban and agriculture users throughout the State.

The Aqueduct's Journey

The California Aqueduct begins at Banks Pumping Plant, which draws water from the Delta into the Aqueduct's initial reach. Here the canal measures 40 feet wide at the bottom and 138 feet at its top. Water depth is about 30 feet. The canal's

dimensions decrease with the need to convey a smaller supply as it journeys south.

From Banks Pumping Plant, water flows one and one half miles into Bethany Reservoir, where some of the water is pumped into the South Bay

Aqueduct system. The South Bay Aqueduct conveys water through 33 miles of canal and 35 miles of pipeline to serve counties south and east of San Francisco. The remaining water flows by gravity to O'Neill Forebay, about 63 miles to the south.



Located in the southern portion of the Sacramento-San Joaquin Delta, Banks Pumping Plant marks the beginning of the California Aqueduct.

O'Neill Forebay to Kettleman City

At O'Neill Forebay, water enters the San Luis Joint-Use Complex, which includes Gianelli Pumping-Generating Plant, San Luis Reservoir, Dos Amigos Pumping Plant, and a section of the Aqueduct named the San Luis Canal. The complex was built by the federal government and is operated and maintained by DWR. Water stored in San Luis Reservoir is shared by both the SWP and the federal Central Valley Project.

Water released from San Luis generates electricity at the Gianelli plant. Water then flows south to Dos Amigos Pumping Plant, which lifts it 125 feet into the San Luis Canal, where it begins an 86 mile gravity flow to Kettleman City.

Just south of Kettleman City, some of the water is diverted into the Coastal Branch Aqueduct, which serves users in two central coast counties, San Luis Obispo and Santa Barbara. Coastal Branch is a series of canals, 5 pumping plants, storage reservoirs, and over 100 miles of buried pipeline. The SWP portion of Coastal Branch ends near Vandenberg Air Force Base.

From Kettleman City, the main aqueduct continues its journey southward 79 miles to Buena Vista Pumping Plant. With the aid of two more pumping plants—Teerink and Chrisman Pumping Plants—water is brought to an elevation of 472 feet at the foot of the Tehachapi Mountains.



San Luis Dam impounds the largest off-stream storage reservoir in the United States – just over 2 million acre-feet.



Edmonston Pumping Plant lifts water higher than any single-lift pumping plant in the world – almost 2,000 feet.

The Big Lift

To cross the Tehachapi Mountains, water enters Edmonston Pumping Plant, the SWP's largest pumping plant with 14 pumps housed in two wings. Here water is lifted almost 2,000 feet, the highest single lift in the United States, before entering 10 miles of siphons and tunnels through the Tehachapi Mountains. As water exits from the south side of the mountain range, it enters the Tehachapi Afterbay, where the California Aqueduct bifurcates into the East Branch and the West Branch.

The Two Branches

Water in the West Branch is raised another 237 feet by the Oso Pumping Plant into Quail Lake. It then drops 730 feet through the Peace Valley Pipeline and Warne Powerplant, which generates electricity as the water enters Pyramid Lake in Los Angeles County. From there it flows through the Angeles Tunnel, Castaic Powerplant and Elderberry Forebay



The Tehachapi Afterbay is where the West and East Branch bifurcate.

(owned and operated by the Los Angeles Department of Water and Power) into Castaic Lake, the terminus of the West Branch.

On the East Branch, water flows by gravity from the bifurcation to the Alamo Powerplant then about 55 miles to Pearblossom Pumping Plant. Pearblossom lifts the water 540 feet to an elevation of 3,479 feet above sea level, the highest elevation along the entire California Aqueduct.

From this elevation, the water flows by gravity another 44 miles before entering another 2 miles of buried pipeline and passing through the Mojave Siphon Powerplant prior to entering Silverwood Lake in Riverside County.

From Silverwood Lake, water enters the San Bernardino Tunnel, which leads to Devil Canyon Powerplant and its two afterbays. These afterbays provide a storage buffer that allows the power plant to generate power during peak periods while making deliveries any time of day.

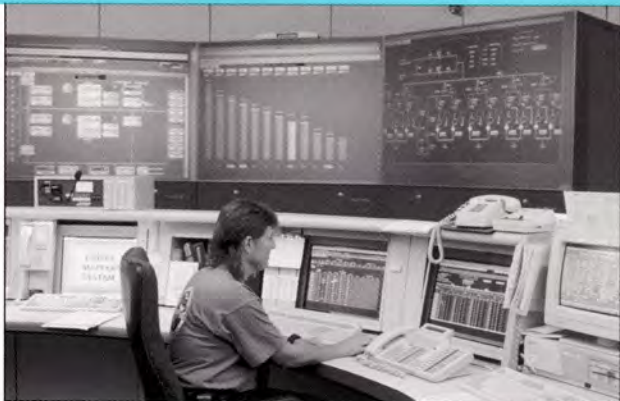
Extending from Devil Canyon Afterbay, the East Branch extension is planned for construction. This extension will consist of 13 miles of pipeline, 3 pump stations, and a storage reservoir.

The Santa Ana Pipeline originates at Devil Canyon Afterbay. The 28-mile-long pipeline represents the final leg of the aqueduct's journey south, which ends at Lake Perris.

Operations

The Department of Water Resources has five Area Control Centers that are responsible for remotely controlling specific sections of the SWP's major facilities, including the California Aqueduct. A centralized Project Operations Center in Sacramento coordinates and monitors activities in each of the ACCs or can operate all SWP facilities.

The main line of the California Aqueduct is divided into 66 sections or pools. Each pool can regulate water flows with motor-operated, com-



The area control centers can remotely operate and monitor the major facilities within their jurisdiction.

puter controlled radial gates at the pool's downstream end.

Pool levels are usually held at full design depth for efficient operations. Fluctuations in the canal water surface elevations are typically limited to a maximum of 1 to 2 feet over a 24-hour period to prevent damage to the unreinforced concrete canal lining. When a change in flow is required, pumping units are started or stopped, and radial gates are raised or lowered simultaneously to allow the same amount of water to pass through each pool.

It would take 10 days for water to travel from the Delta to Lake Perris at design flow. Water velocities are typically limited to 3 feet per second in the canal sections and 8 feet per section in tunnels and pipelines.

Recreation

Fishing is allowed along much of the California Aqueduct. There are 16 designated fishing access sites at which anglers catch a variety of fish such as catfish and striped bass. Walk-in fishing is allowed almost everywhere along the open canal sections.

Bicycling is allowed on certain stretches of the Aqueduct. A 64-mile bikeway runs from the Delta Field Division near the city of Tracy to O'Neill Forebay near Los Banos. In Southern California, the Antelope Valley Bikeway, a 28-mile trail running

along the Aqueduct, starts at 165th Street East, near the community of Pearblossom, and goes to Main Street in Hesperia in San Bernadino County.

Visitors recreating along the Aqueduct should heed safety warnings. Canal sideslopes are steep and slippery. Although the water may seem placid on the surface, it can be swift and turbulent beneath.



Biking is allowed at designated areas along the Aqueduct.

Brochures on fishing sites and safety tips are available. Call 1-800-272-8869 for copies of those and other SWP brochures.

The Aqueduct's Official Name

In December 1982, the California Aqueduct was renamed the Governor Edmund G. Brown California Aqueduct in honor of California Governor Edmund G. (Pat) Brown, who was Governor from 1959 to 1967. Under his leadership, the Legislature authorized and the voters approved the State Water Project.

Information

Visit DWR's Website at <http://www.dwr.water.ca.gov/>

If you need this publication in an alternate form, contact the Office of Water Education at 1-800-272-8869.

For TTY phone service, call (916) 653-6226