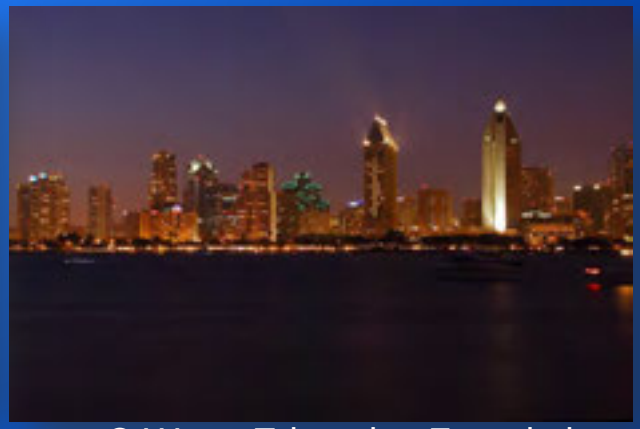
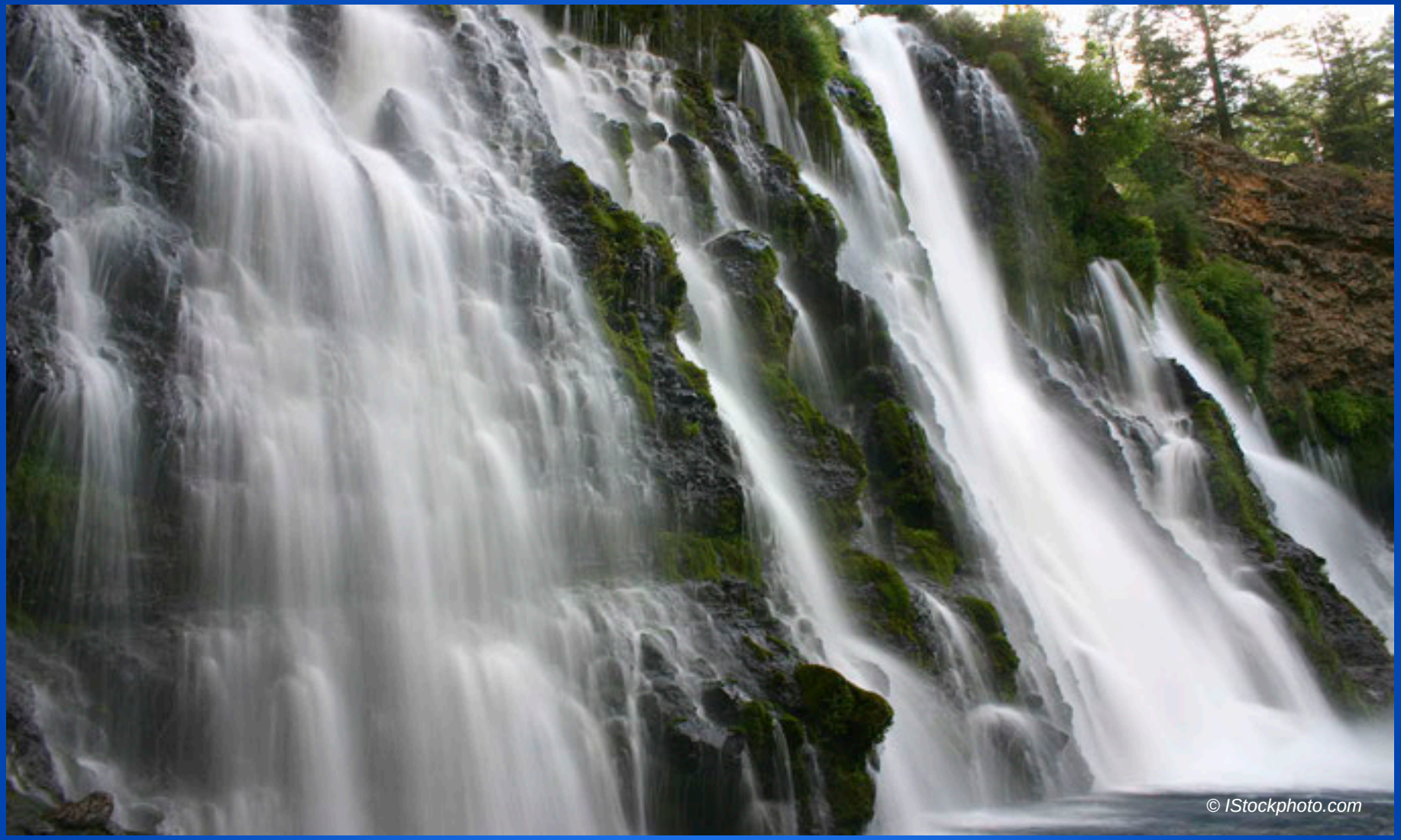


STATE WATER PROJECT:

Connecting California's Water







Water is a life force in California. It supports the state's rich natural landscape and powers the state's economy, ranked 8th largest in the world. And a major connection to the economy and environment is the monumental **California State Water Project**.

California grows half of the nation's fruits, vegetables and nuts on more than 81,500 farms. The state also produces much of the country's domestic wine and dairy products.

The state is fed by the aerospace, biotechnology and manufacturing industries, as well as Silicon Valley's cutting-edge technologies.

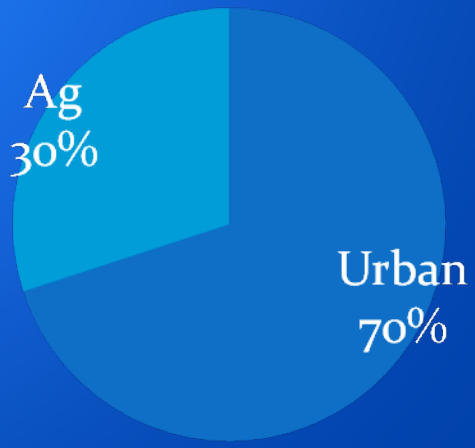
California is also known for its natural resources:

Water supports it all – people, agriculture and industry and the environment. Where does the water come from?

A primary way is the **State Water Project**. This fantastic engineering feat – celebrating its 50th anniversary of approval by the voters of California - is one of the most complex and sophisticated water transport, storage and flood management systems in the world.

The State Water Project serves municipal water users from the Bay Area to Southern California, and agricultural users in the San Joaquin Valley.

SWP Water Use



With 34 reservoirs and over 700 miles of aqueducts…

Harvey O. Banks Pumping Plant

California Aqueduct

the State Water Project is the largest state-financed water project ever built.

Warne Power Plant


Oroville Dam


San Luis Reservoir

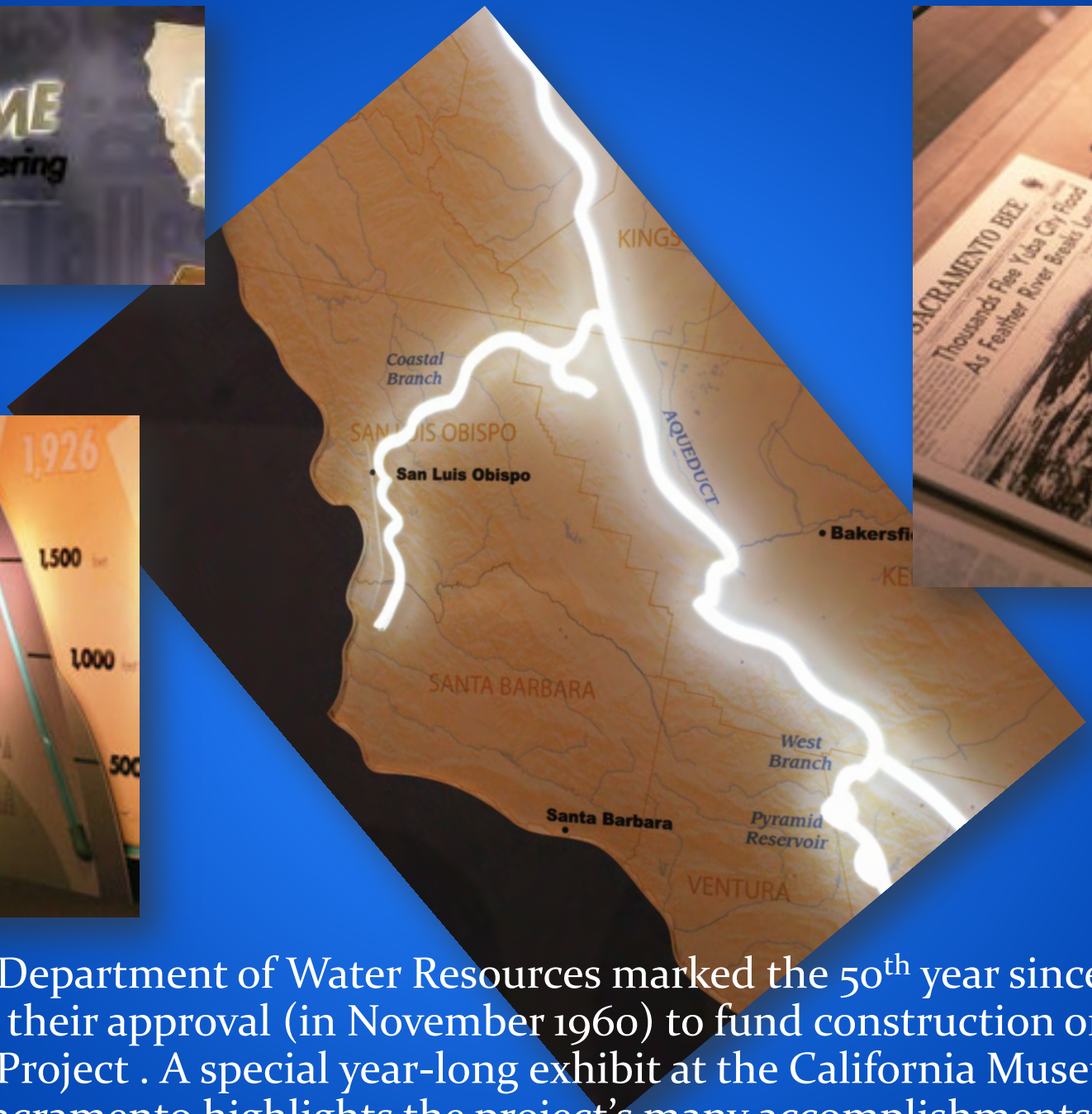

Edmonston Pumping Plant

It is a modern engineering marvel whose facilities include the tallest dam and the largest off-stream reservoir in the United States, as well as the highest water lift in the world.

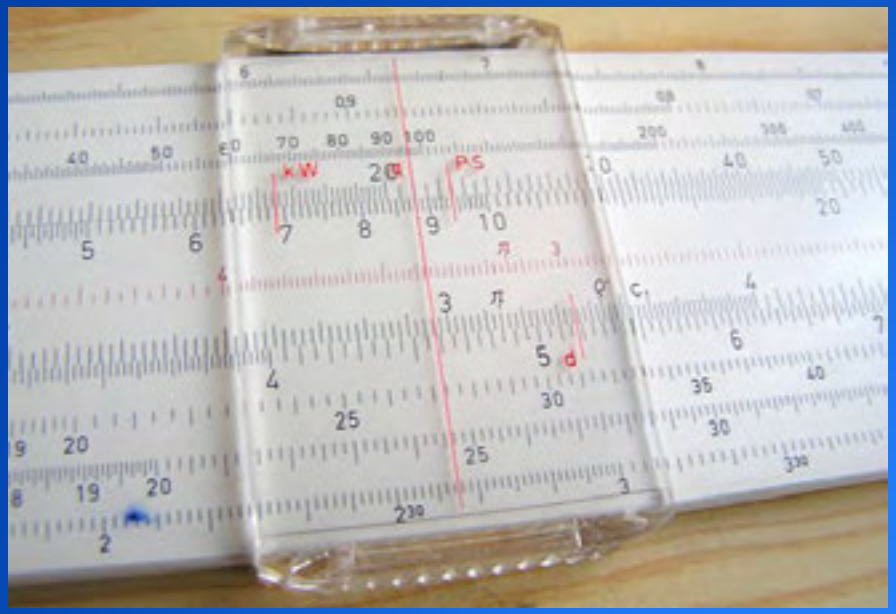
Today, over two-thirds of Californians get at least a portion of their drinking water from the State Water Project…


... and project water irrigates over
750,000 acres of farmland.

The State Water Project is operated and maintained by the Department of Water Resources.



In 2010, the Department of Water Resources marked the 50th year since California voters gave their approval (in November 1960) to fund construction of the State Water Project . A special year-long exhibit at the California Museum in Sacramento highlights the project's many accomplishments.



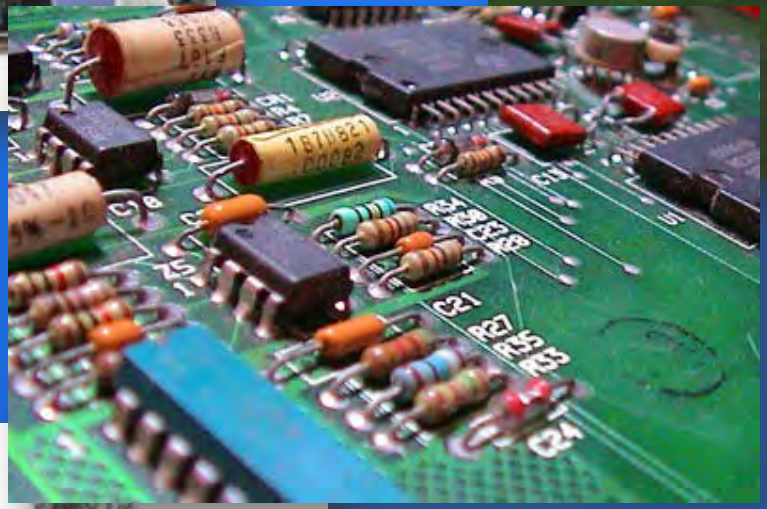
The State Water Project was planned more than 50 years ago in an era before computer modeling and laser technologies.

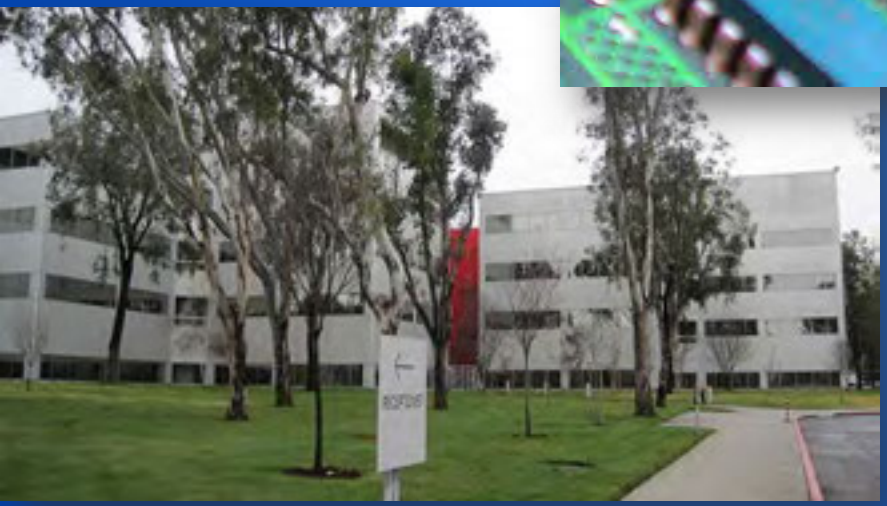
State engineers and surveyors used slide rules and compasses to calculate precise equations needed to design the project.

At the peak of development, the Department of Water Resources had about 4,480 workers, with 2,250 in Design & Construction.

In 1965, 50 major construction contracts were underway in the surge to build the system of dams, reservoirs and canals to meet California's growing water needs.

Without the State Water Project, California would never have developed into the economic powerhouse it is. The State Water Project has provided water that helped to support Southern California's population and economic growth …





... and supplied the Silicon Valley with reliable, high-quality water needed to fuel the electronics revolution.

Water from the State Water Project helps to maintain California as the nation's leading agricultural producer.


The State Water Project aids in managing the flood waters that plague the Sacramento Valley …
City of Sacramento

… and more than 4 million visitors each year enjoy the wide range of recreation opportunities available at 37 facilities statewide.

The project provides environmental protection, including the operation of the state's largest fish hatchery, streamflow maintenance and wetland development.

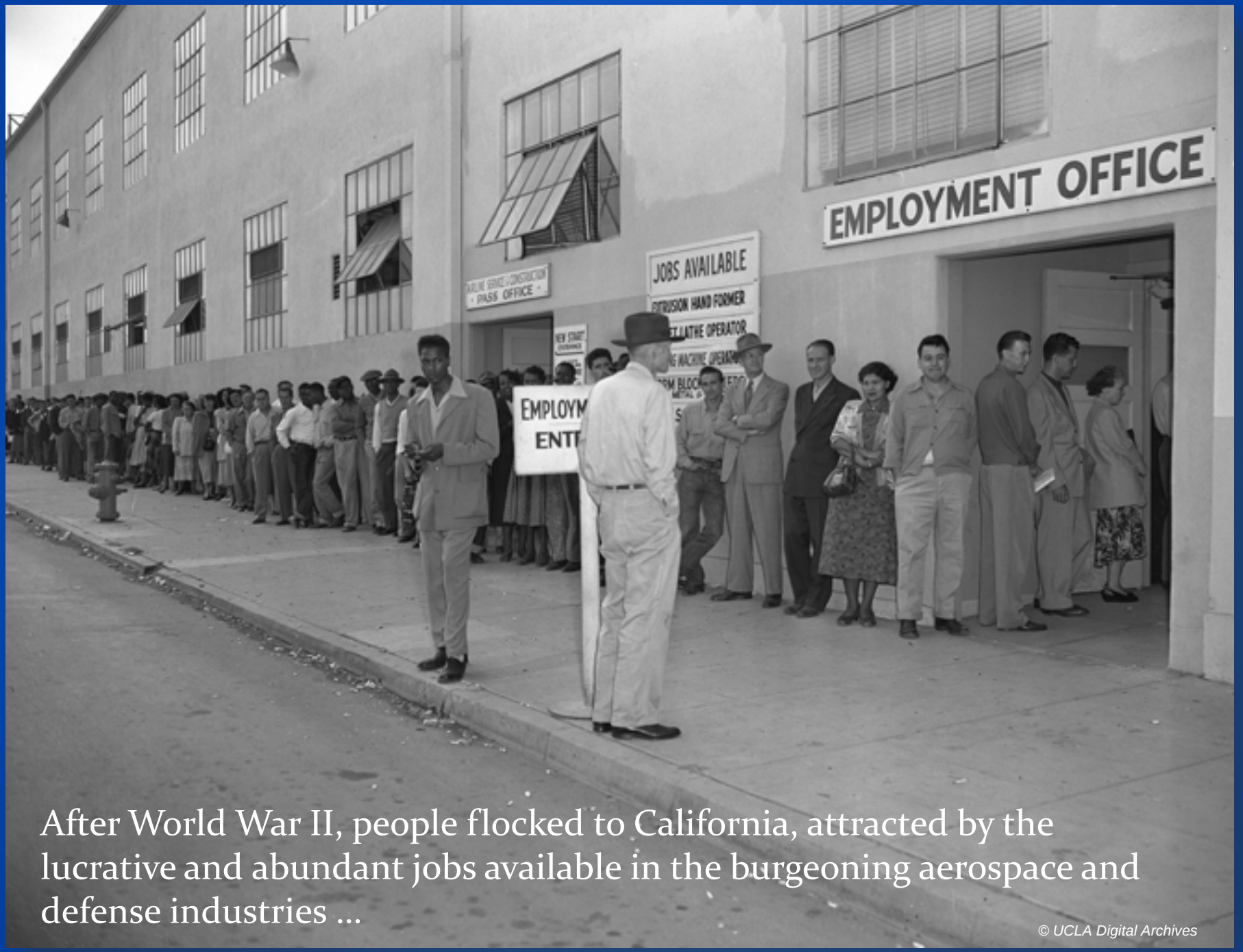
The State Water Project is the state's fourth largest generator of electricity ...

… and it's also the state's single largest user of power, with the pumps lifting the water over the mountains to reach Southern California, accounting for 40% of the State Water Project's total power consumption.

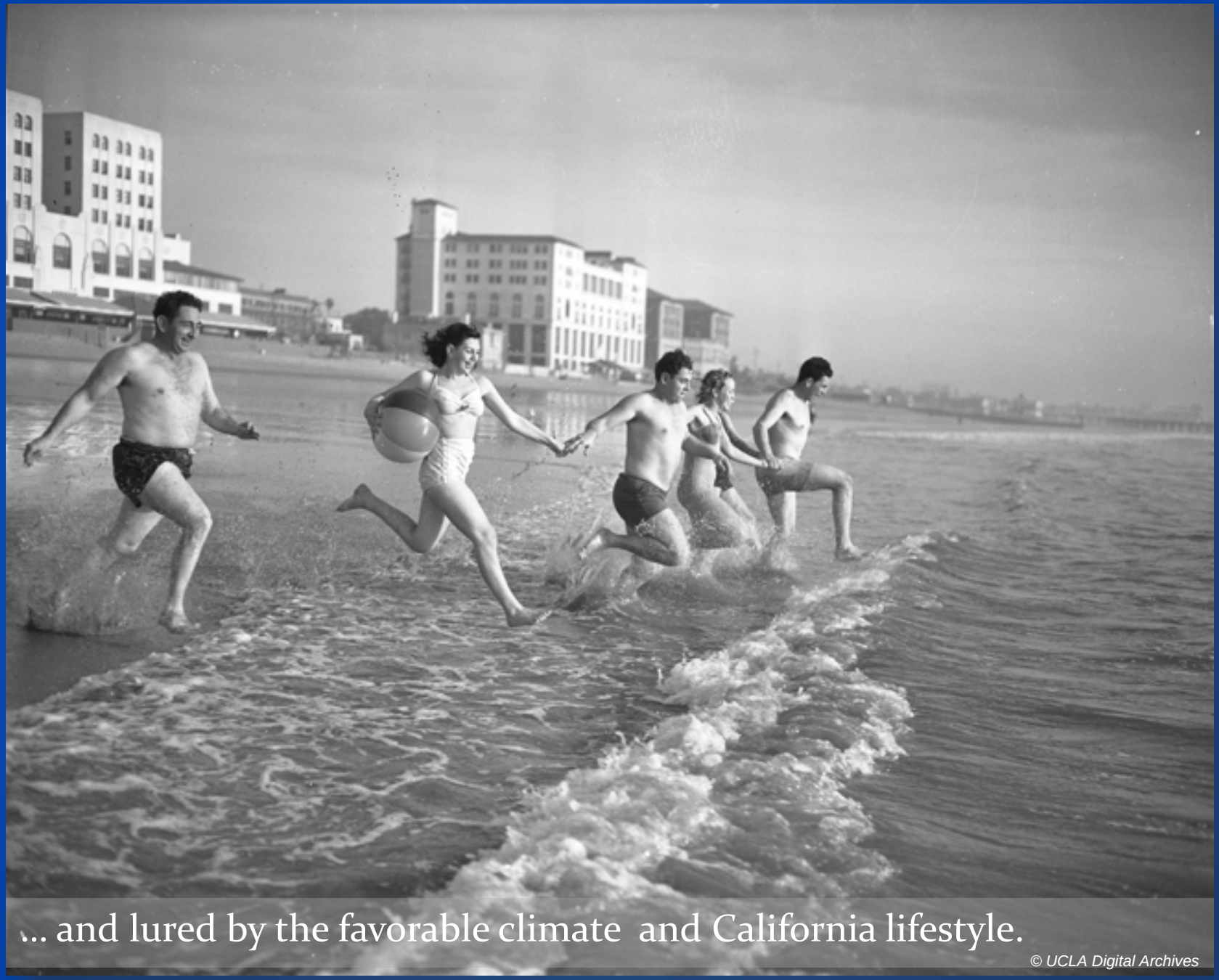
Carly V. Porter Tunnel construction

Oroville Dam construction

The California of today owes its prosperity to the forward thinking leaders of the 1950s and 1960s who built the infrastructure needed to support the state's rapid growth and economic development.



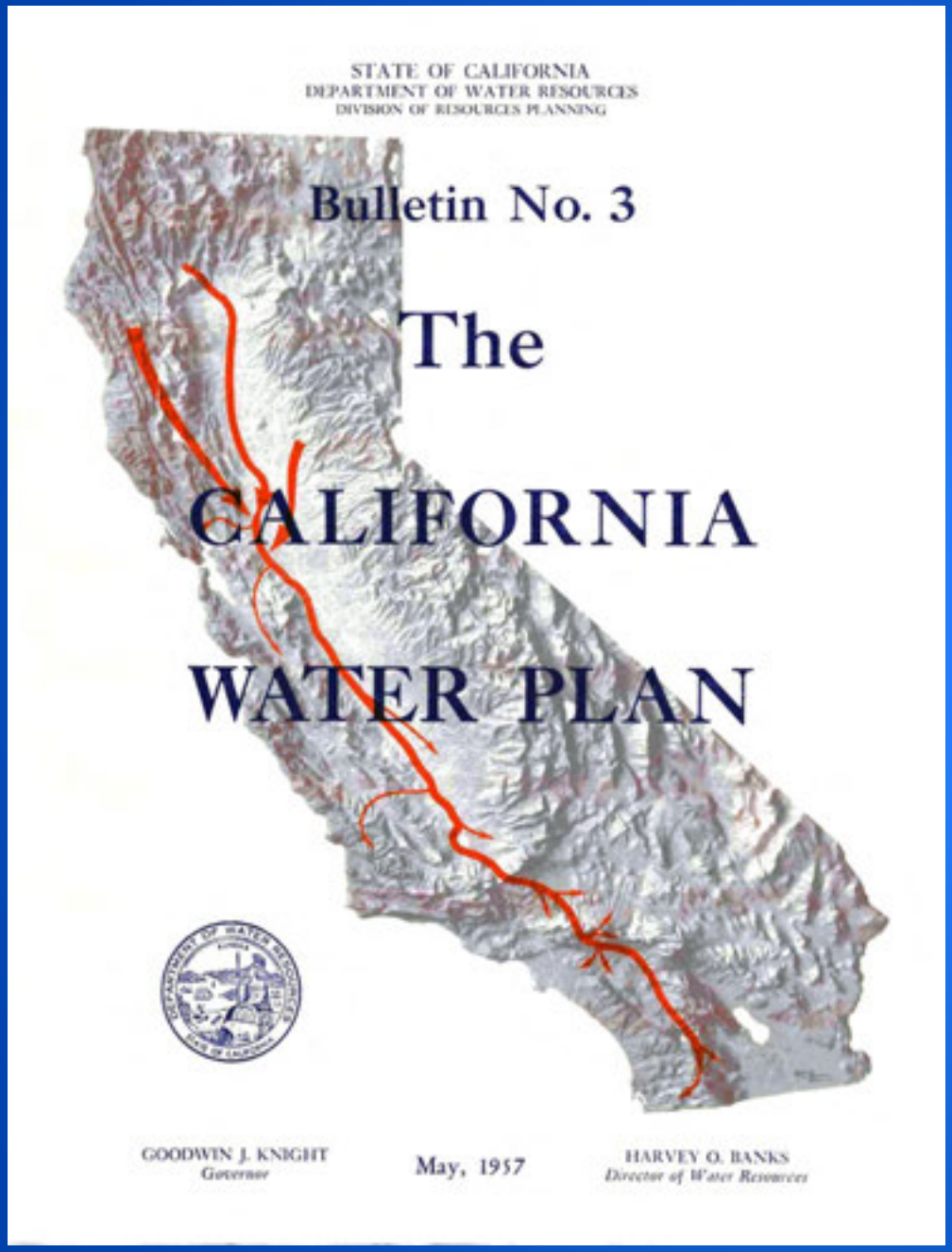
After World War II, people flocked to California, attracted by the lucrative and abundant jobs available in the burgeoning aerospace and defense industries …



... and lured by the favorable climate and California lifestyle.

New communities seemed to spring up overnight and for the next 25 years, the state added population at the rate of about 1,370 people per day, surpassing New York as the nation's most populous state by 1963. Today more than 37 million live in California.

California emerged as an agricultural powerhouse as irrigated crops flourished in the arid yet fertile soil.



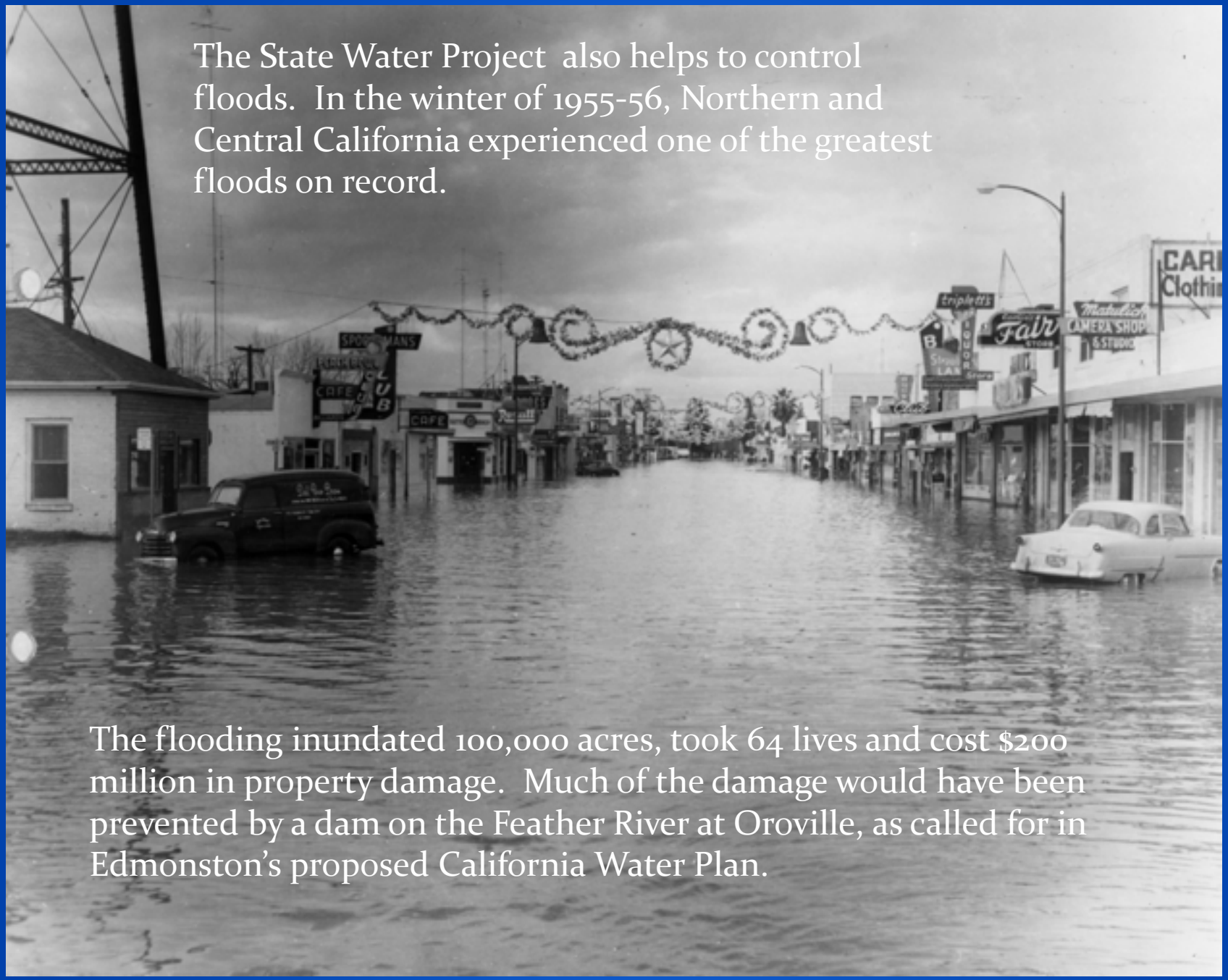
As the population grew, so did the need for water.

In the 1950s, State Engineer Arthur Edmonston proposed a statewide plan to develop the Feather River and send the water to the Bay Area, San Joaquin Valley, and Southern California.

The California Water Plan was released in 1957.

The concept of a statewide water plan was not new. Lt. Colonel Robert B. Marshall had published a plan to move water from the north to the south in 1919.

His plan was to become one of the precursors to the Federal Bureau of Reclamation's Central Valley Project.



The State Water Project also helps to control floods. In the winter of 1955-56, Northern and Central California experienced one of the greatest floods on record.

The flooding inundated 100,000 acres, took 64 lives and cost $200 million in property damage. Much of the damage would have been prevented by a dam on the Feather River at Oroville, as called for in Edmonston's proposed California Water Plan.

"I was absolutely determined that I was going to pass this California water project."

Governor Pat Brown was elected in 1958. Although many of his predecessors had tried but failed, Gov. Brown made passing the State Water Project a priority of his administration.

In 1959, Gov. Brown saw his hard work come to fruition as the state Legislature authorized construction of the State Water Project through the California Water Resources Development Bond Act, also known as the Burns-Porter Act. The Governor signed it on July 10, 1959.

In November 1960, voters approved by the thinnest of margins Proposition 1, which authorized the issuance of bonds to build the State Water Project.

At the time, $1.75 billion dollars (equivalent to $12.7 billion in 2010 dollars) was a record sum for a water project and the largest bond issue ever considered by any state.

Repayment of the bond principal and interest, as well as the project's operating and maintenance costs are paid by the 29 water contractors who buy the water for distribution to their users.

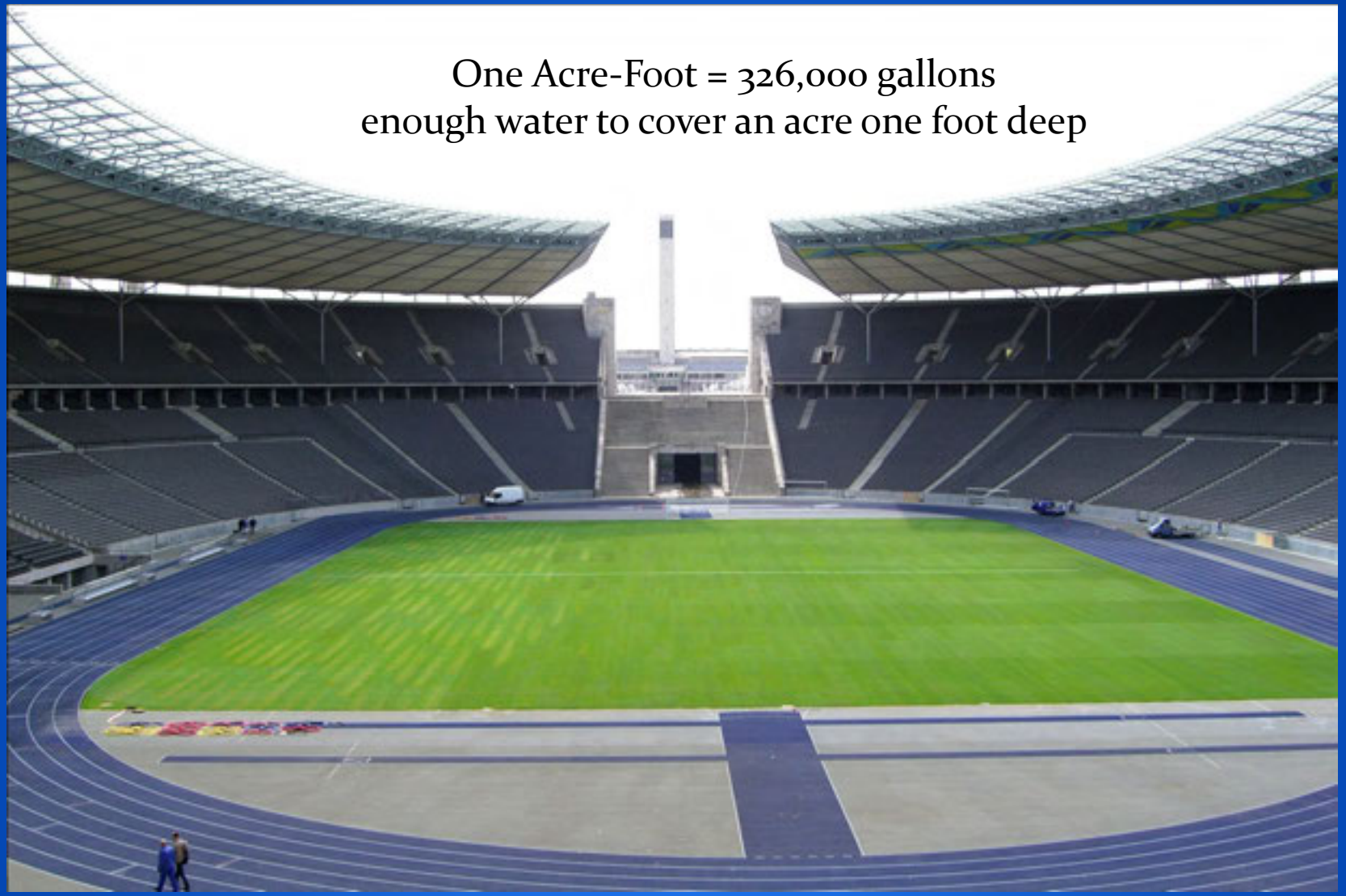
Learn more about the State Water Contractors by clicking here.

Construction began in earnest in the fall of 1961. Facilities were built from north to south.

Gov. Brown was on hand to set off the first blast for the diversion tunnel at Oroville Dam, declaring that the sound “would echo in California history for generations to come.”

It was an enormous undertaking.
A water project of this size and scope had never before been attempted.

The project that had begun under Gov. Pat Brown's administration would see its completion a decade later under Gov. Ronald Reagan.



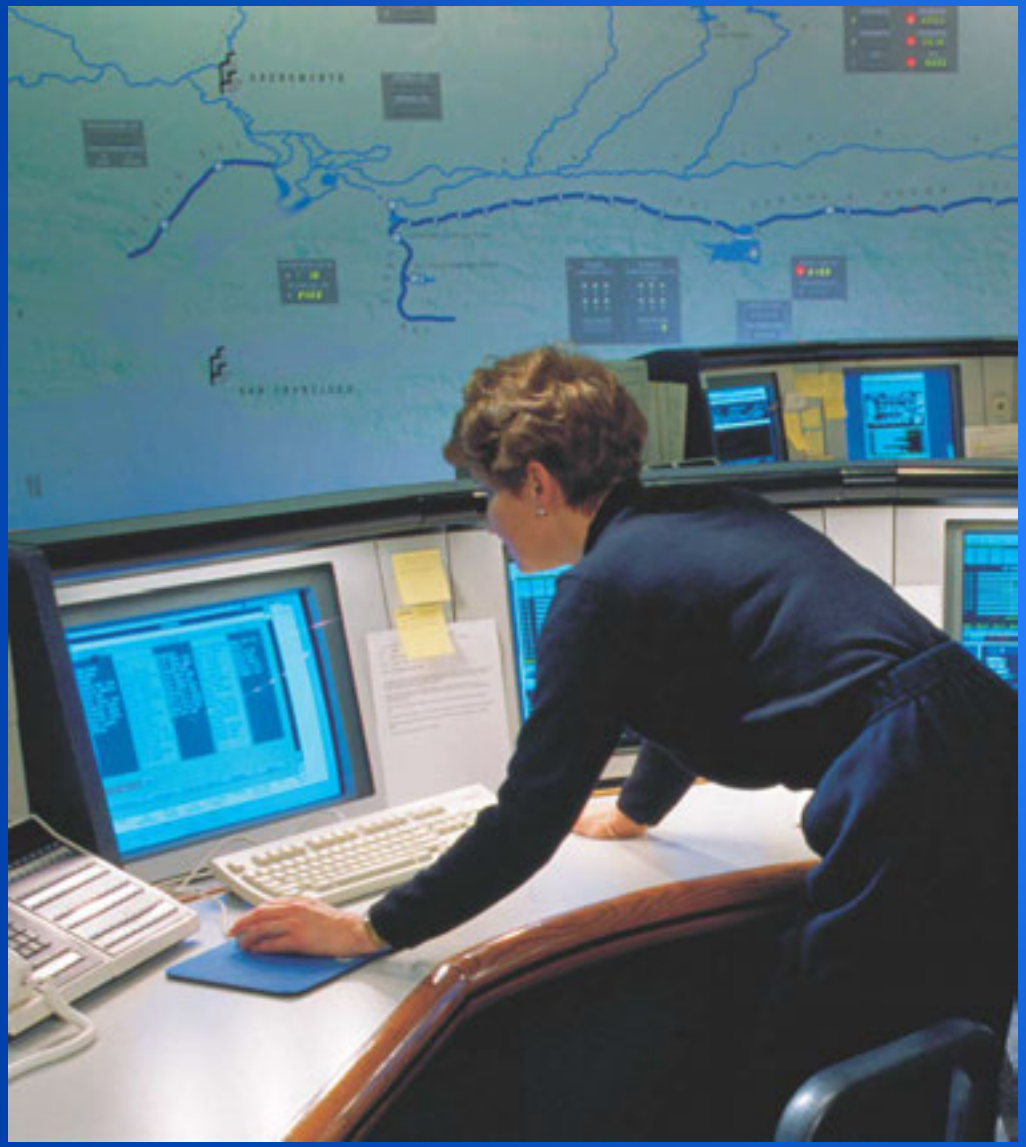
Every year, the State Water Project delivers an average 2.5 million acre-feet.

An acre-foot is the amount of water needed to cover a football field to the depth of 1-foot and meet annual supplies for two households.

The Department of Water Resources monitors snowpack conditions with an extensive network of electronic sensors, and also conducts monthly snow surveys during the winter season. DWR uses this information to help predict how much water will be available for California's cities and farms during the summer.

Find out more about statewide water conditions and snow surveys by clicking here.

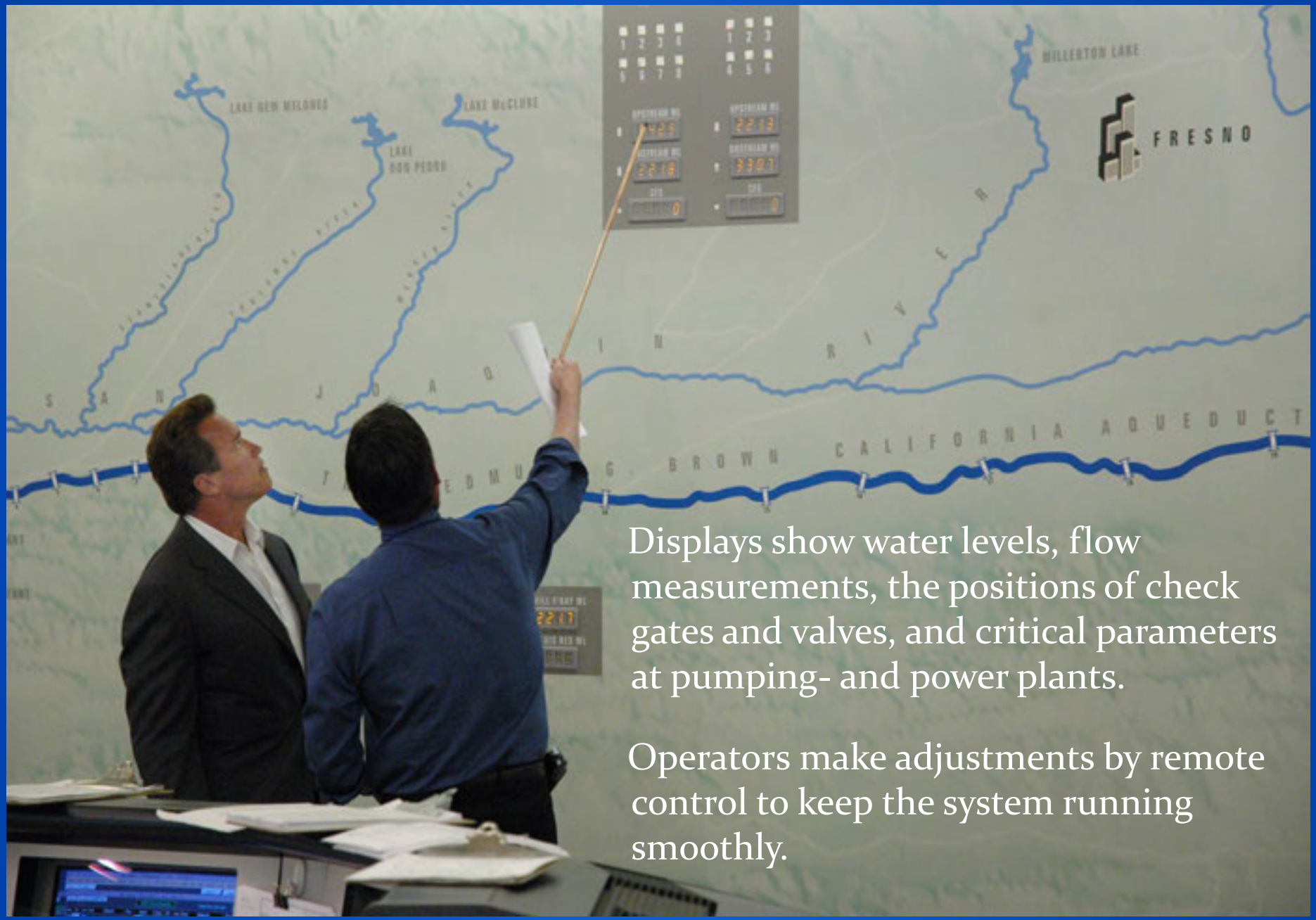
PROJECT OPERATIONS CENTER



Watching over this 600-mile journey of water from Lake Oroville to Southern California is the Project Operations Center in Sacramento.

Here, dispatchers monitor project operations around the clock, coordinating operations and schedules for water delivery, as well as power sales and purchases.

A communications network monitors the operation and status of all the major facilities and structures, displaying the information on a huge mapboard.

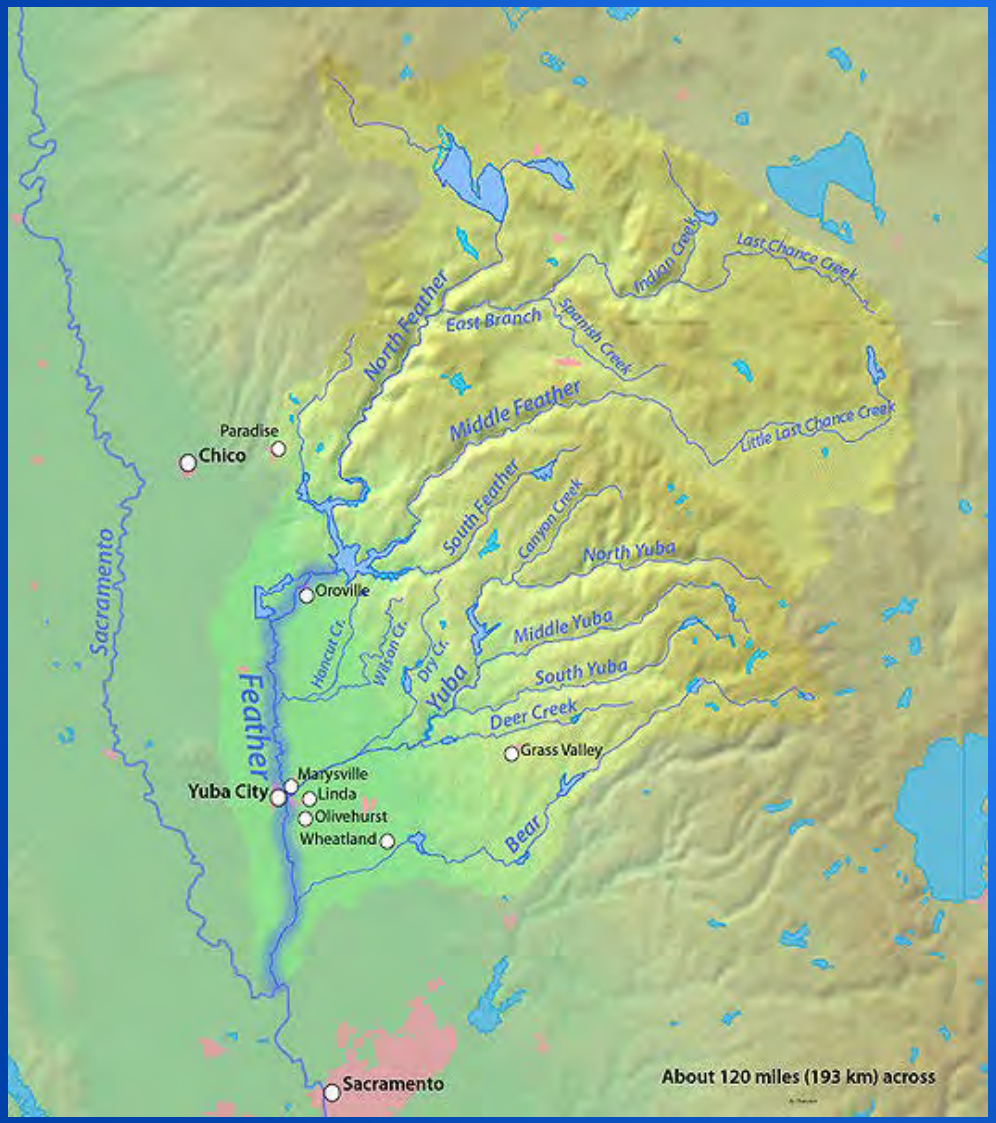


Displays show water levels, flow measurements, the positions of check gates and valves, and critical parameters at pumping- and power plants.

Operators make adjustments by remote control to keep the system running smoothly.

Daily operations and maintenance responsibilities are divided among five field divisions located throughout the state.

Let's follow the water from its origin to its final destination:



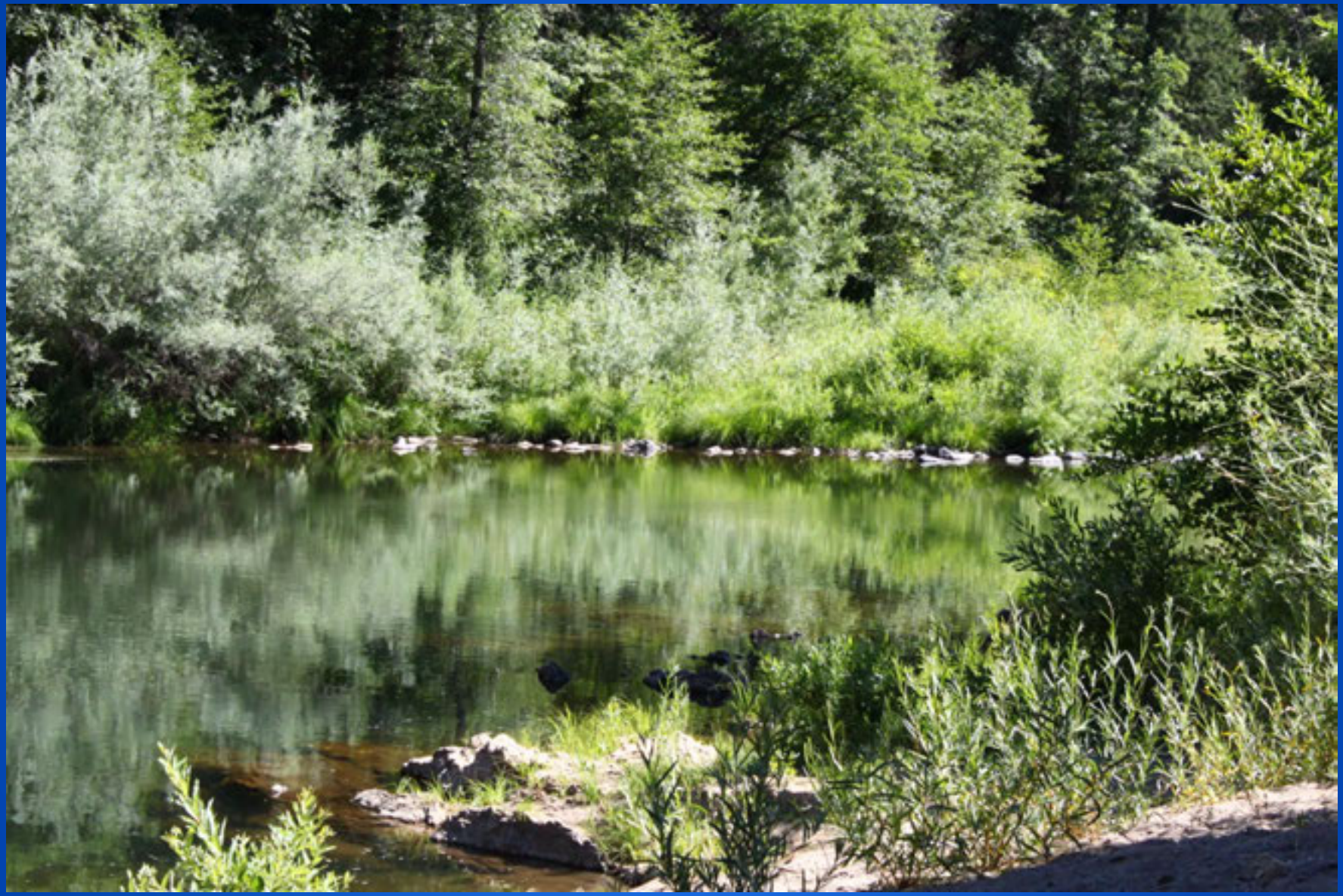
The main source of water for the State Water Project is the 3,900-square mile Feather River watershed.

Originating in the high country of Plumas and Sierra counties …

... the river rises in three forks within the Sierra Nevada range.

UPPER FEATHER RIVER LAKES

The Upper Feather River lakes are the northernmost facilities of the State Water Project, providing recreation and water supply for the local area, as well as water for fish and wildlife.



The melting snow in springtime fills the many streams and creeks that feed into the river …

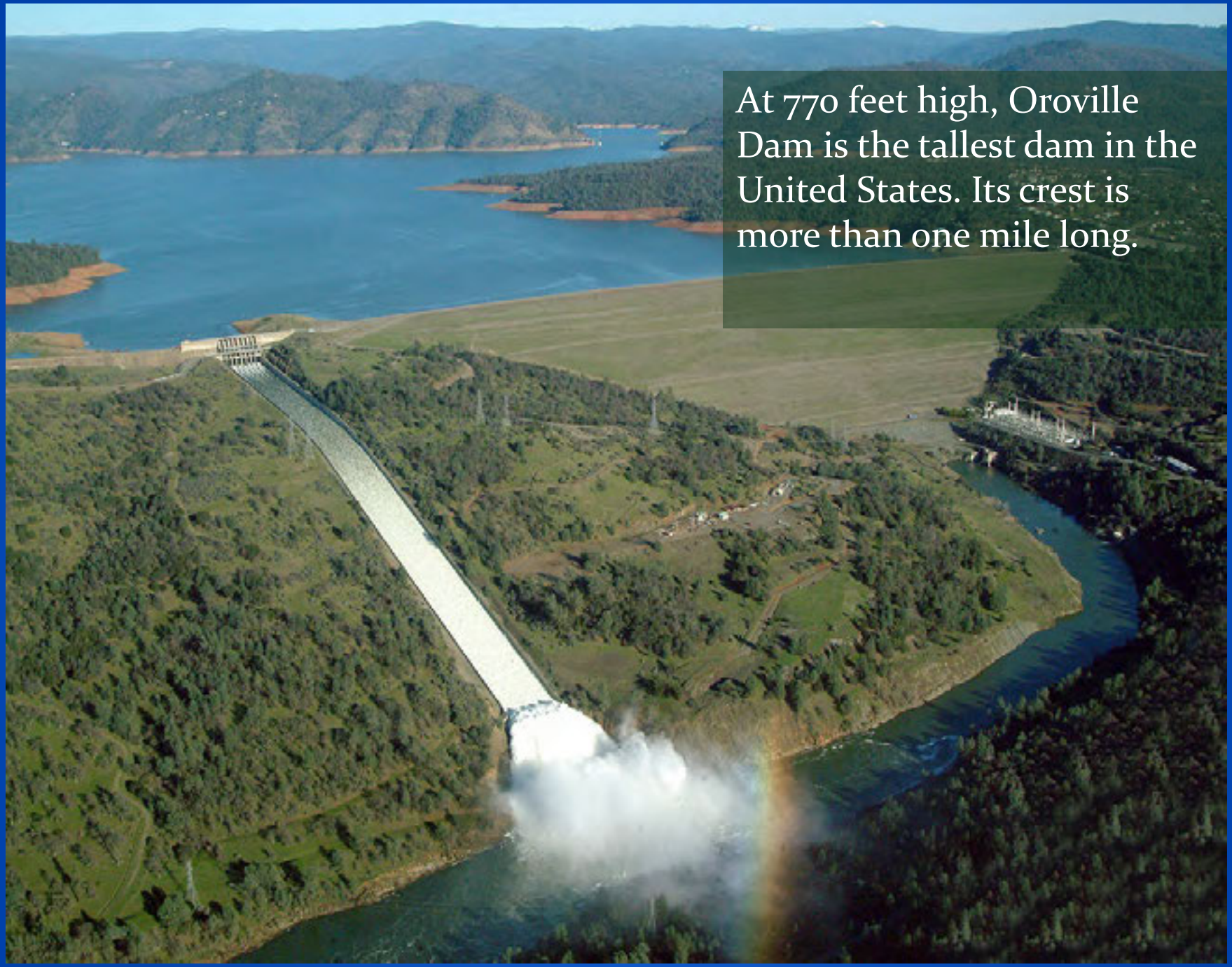
… and the river's forks gain strength as the water flows south.

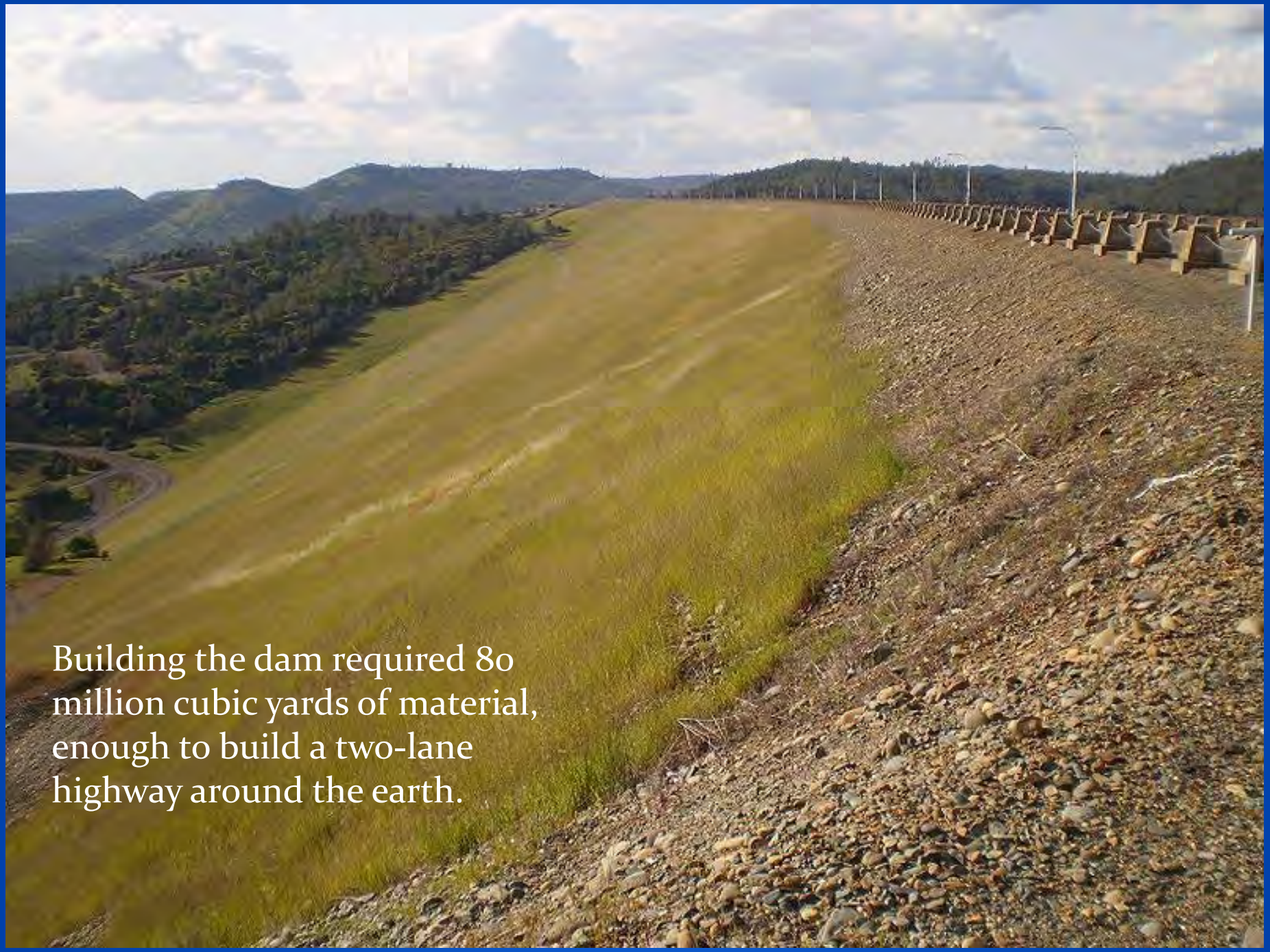
Click here to learn more about the Feather River watershed.

LAKE OROVILLE

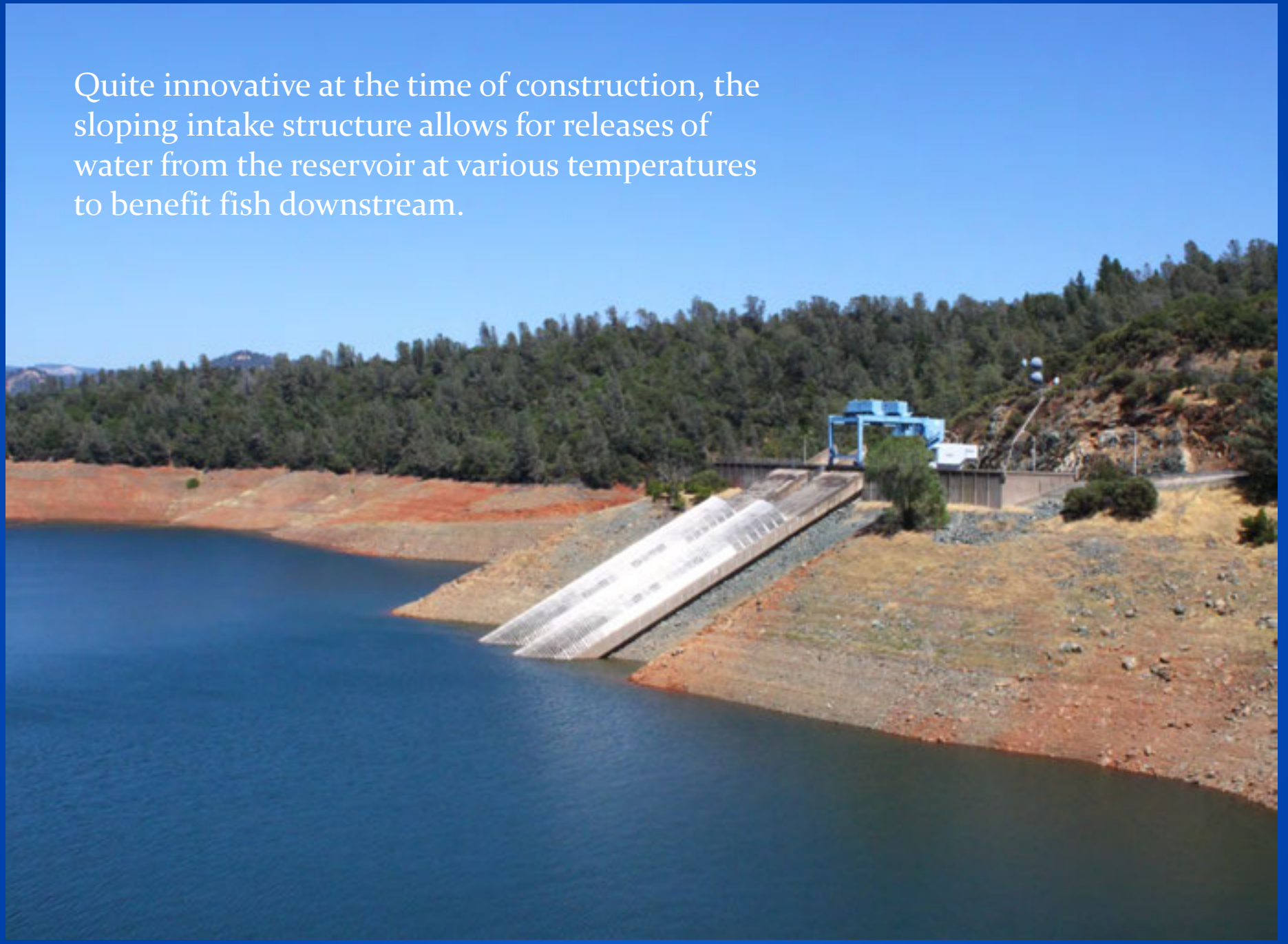
The forks of the Feather River converge at Lake Oroville, the State Water Project's largest reservoir.

It is capable of storing 3.5 million acre-feet of water, which is enough water to satisfy about 40% of California's urban water needs for one year.

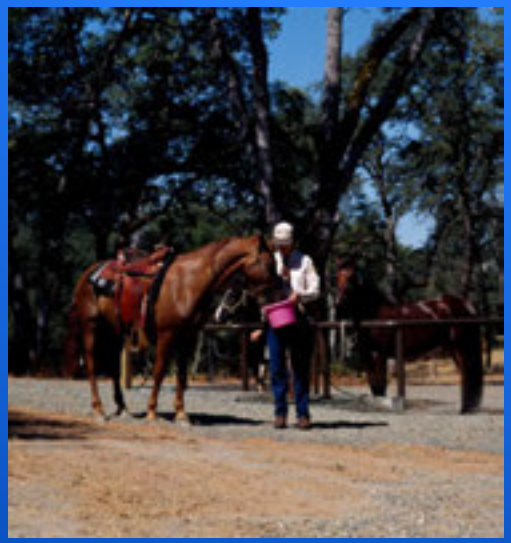

At 770 feet high, Oroville Dam is the tallest dam in the United States. Its crest is more than one mile long.


Building the dam required 80 million cubic yards of material, enough to build a two-lane highway around the earth.

Quite innovative at the time of construction, the sloping intake structure allows for releases of water from the reservoir at various temperatures to benefit fish downstream.



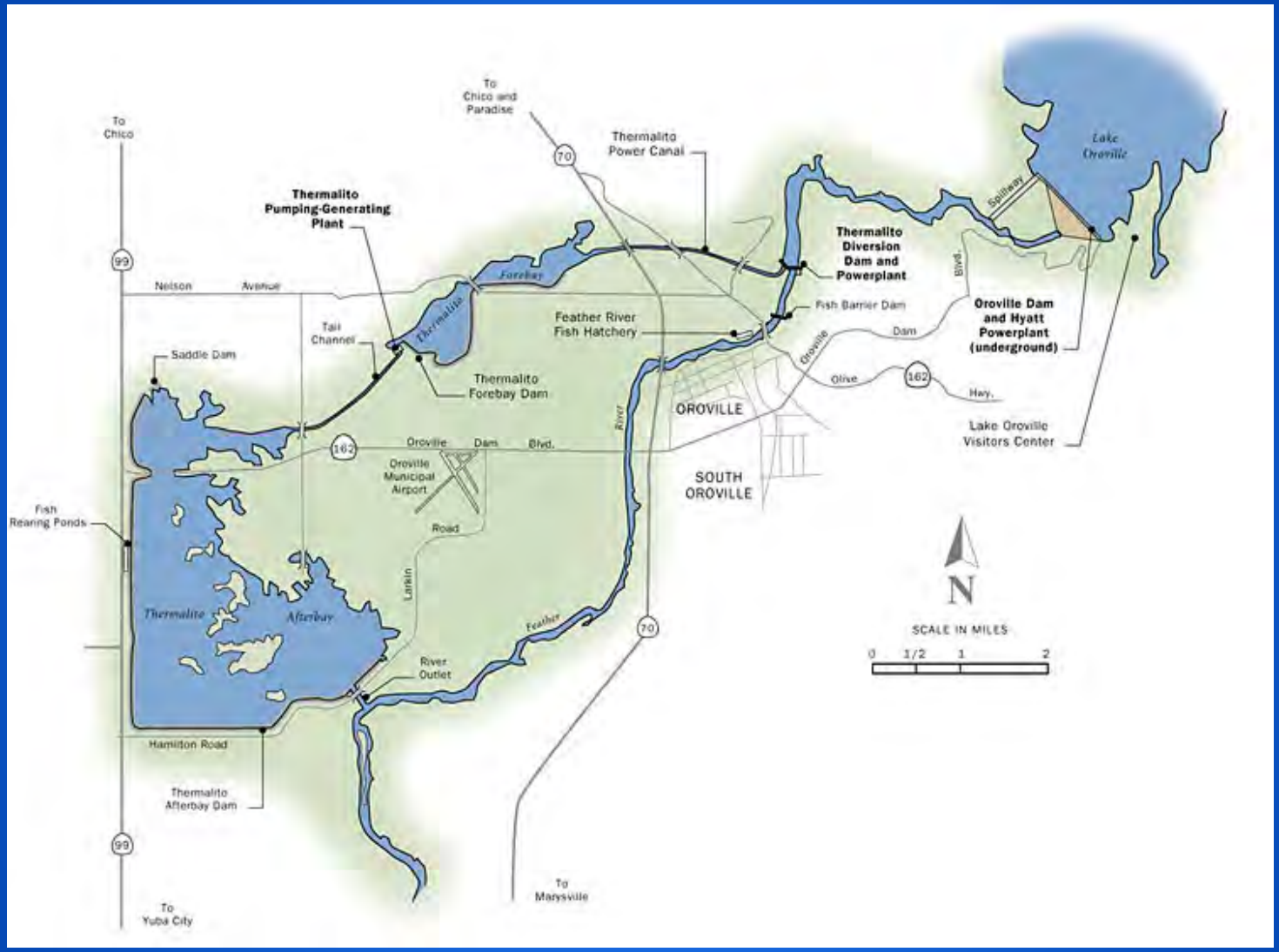
Lake Oroville's large size and 167-mile shoreline offer a wide variety of recreational opportunities …



… even including floating campsites!

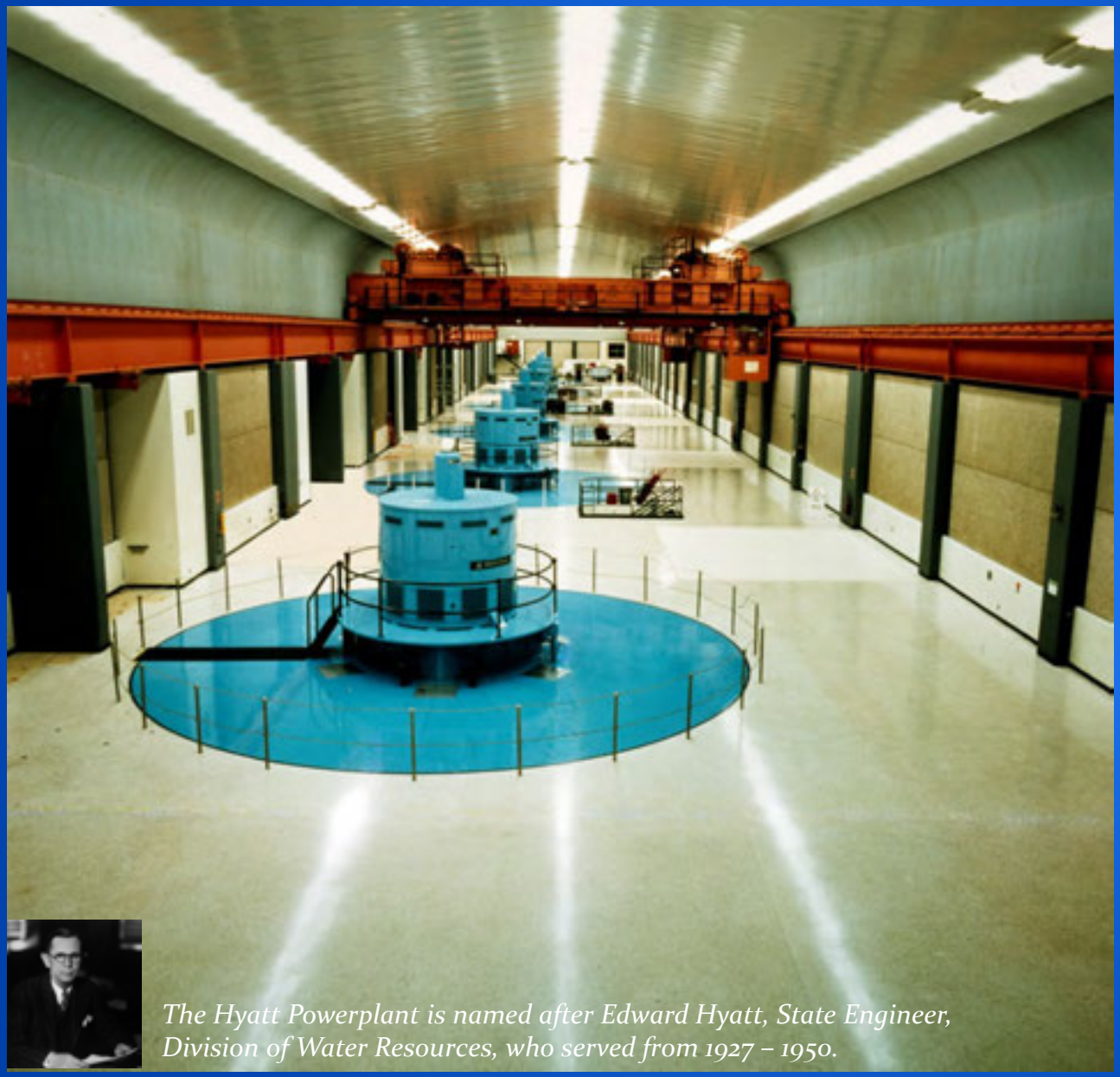
Click here to learn more about the Lake Oroville State Recreation Area.

OROVILLE-THERMALITO COMPLEX



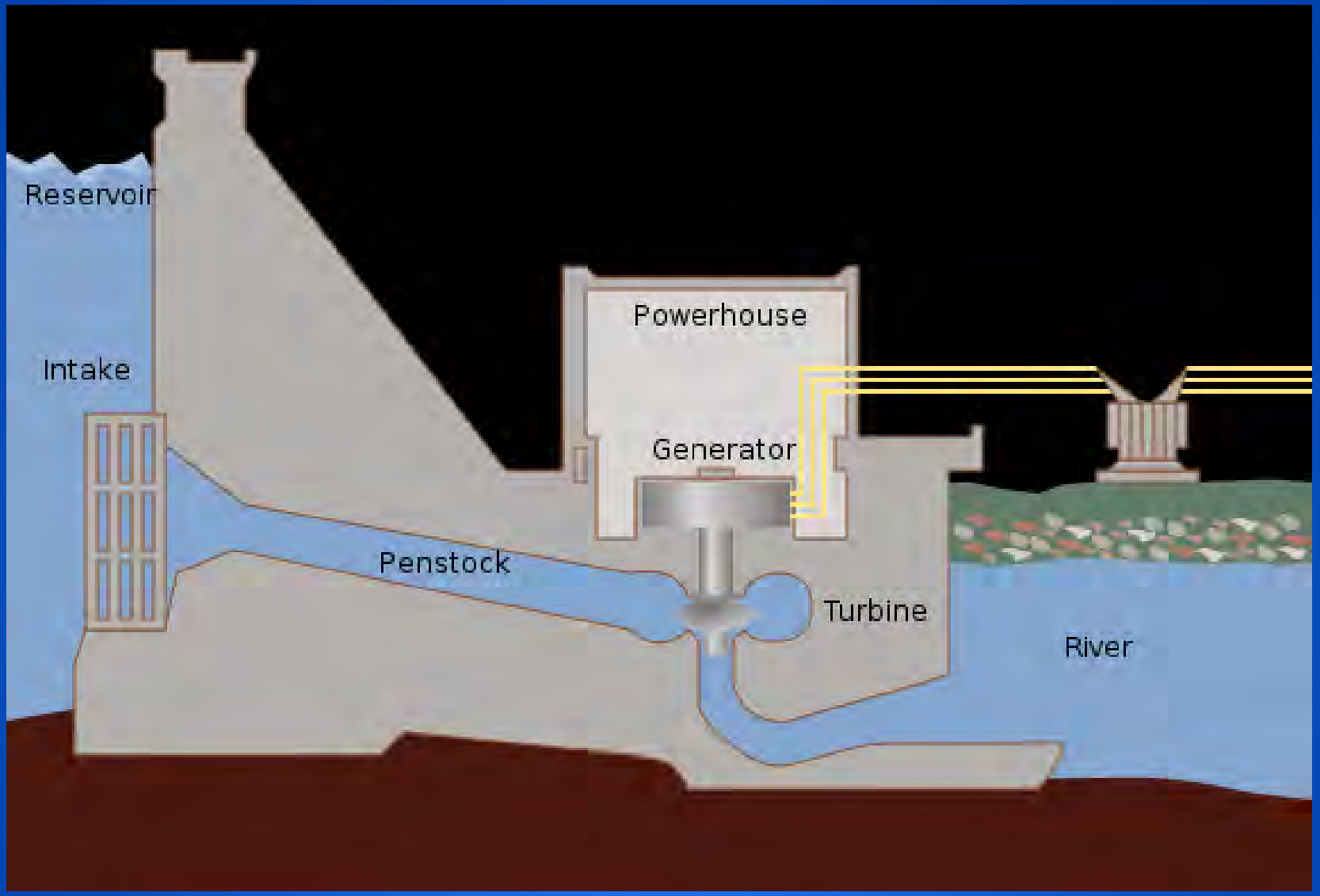
The key hydroelectric power-generating facilities for the State Water Project are located at the Oroville-Thermalito Complex.

HYATT POWERPLANT



The Hyatt Powerplant is named after Edward Hyatt, State Engineer, Division of Water Resources, who served from 1927 – 1950.

The Hyatt Powerplant is underneath the dam and lake. It generates electricity when water is released from Lake Oroville.

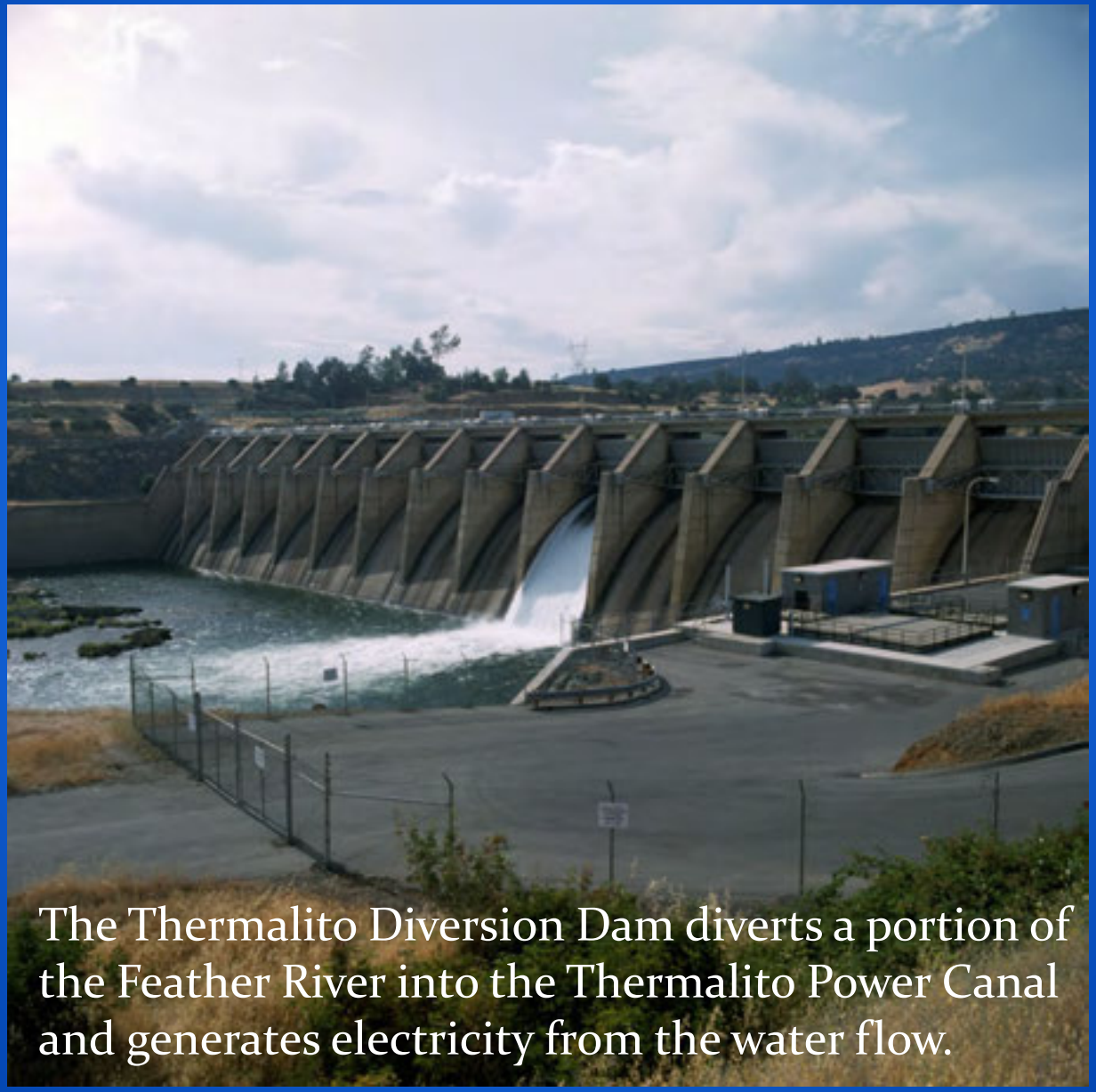


Hydroelectric power uses the gravitational force of falling water through the penstock to turn the turbine propeller. The shaft from the turbine is connected to a generator, which produces electrical power.

Learn more about hydroelectric power by clicking here.

Space for the power plant was created by blasting through the rock formation to create a chamber nearly two football fields long.

THERMALITO COMPLEX



The Thermalito Diversion Dam diverts a portion of the Feather River into the Thermalito Power Canal and generates electricity from the water flow.

The Thermalito Power Canal delivers the diverted water to the Thermalito Forebay.

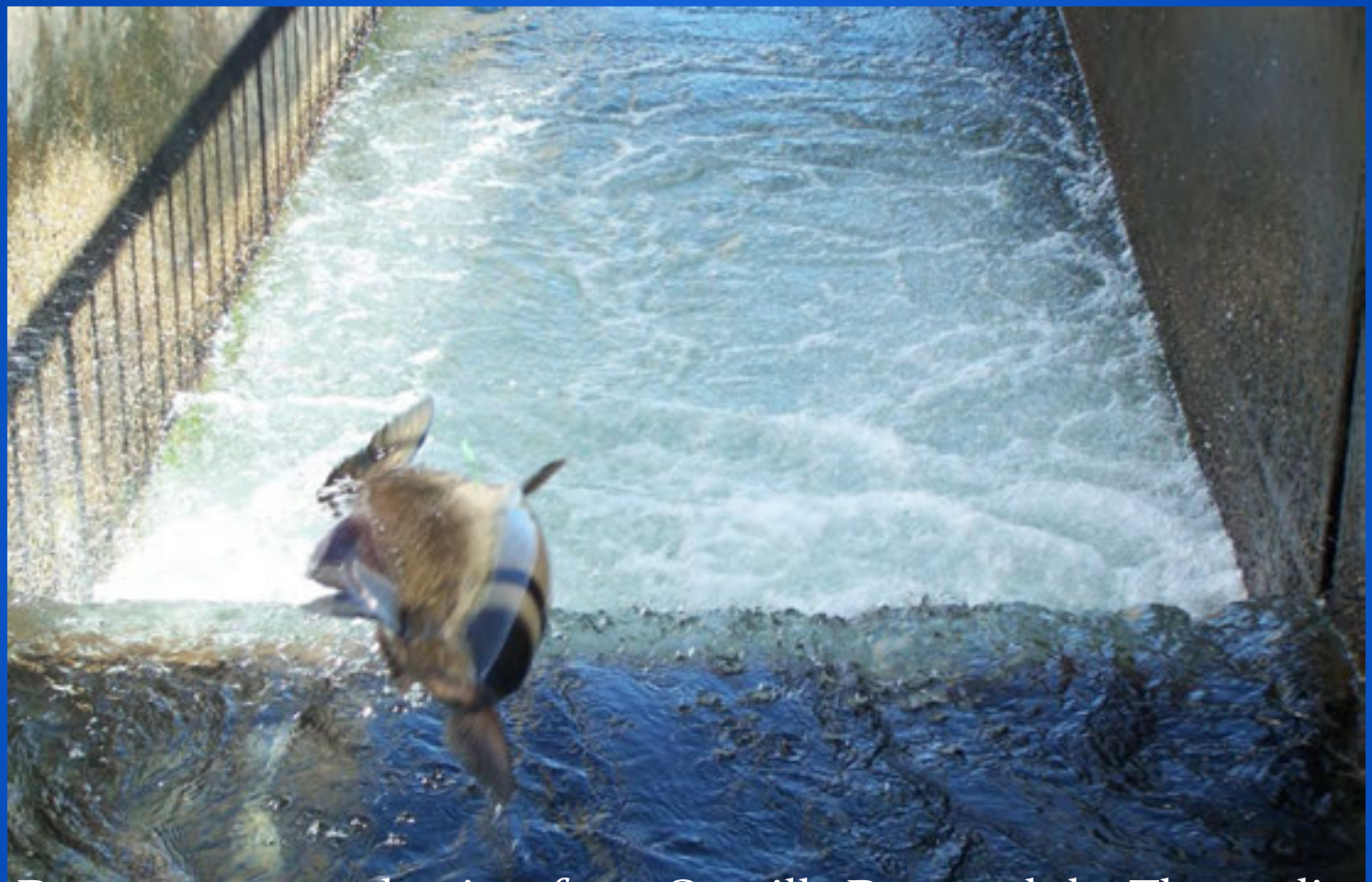

As the water leaves the forebay, it flows through the Thermalito Pumping-Generating Plant …

... into the Thermalito Afterbay.

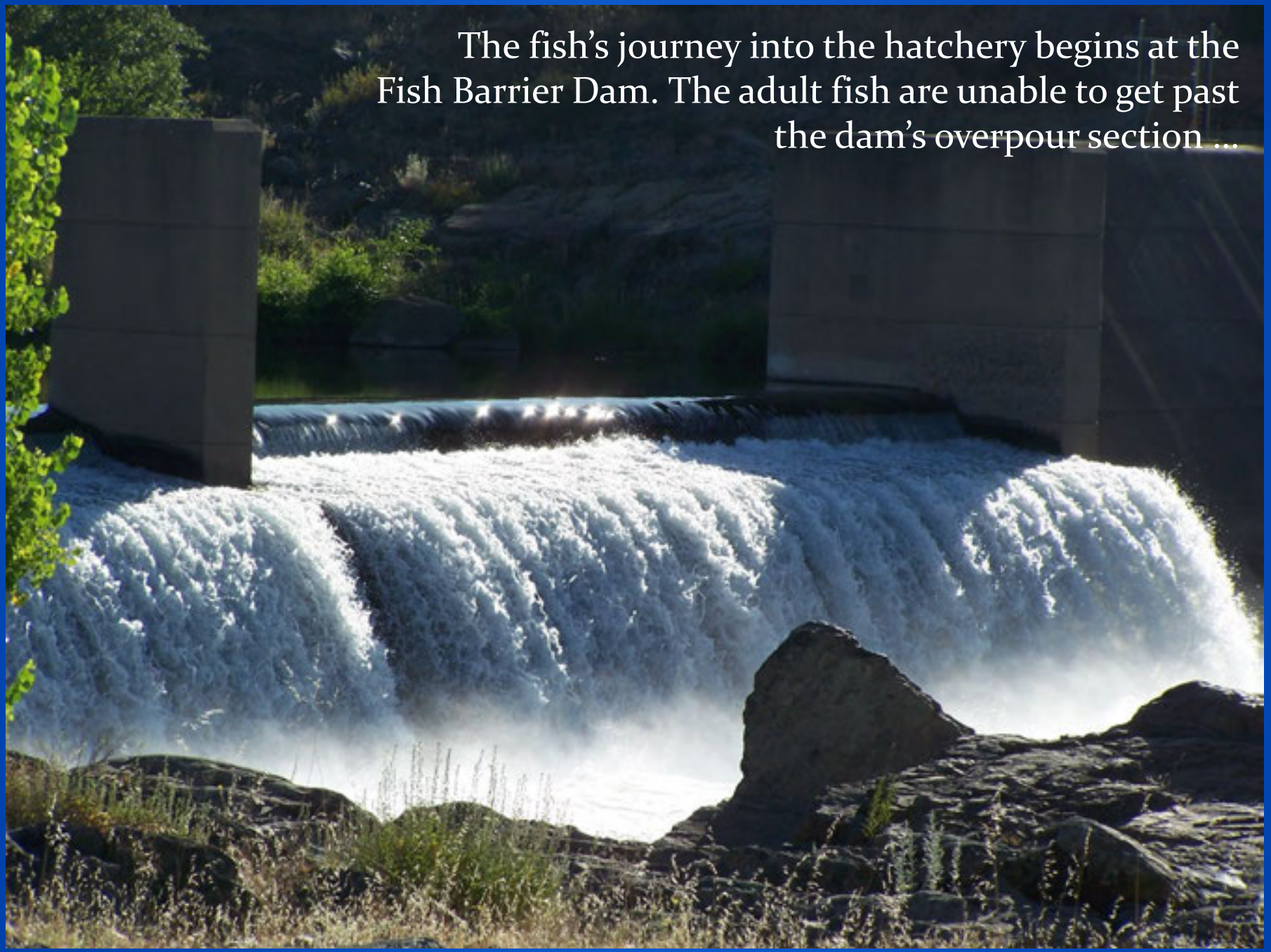
The forebay and afterbay store water that is used to regulate pumping and power generation within the Oroville-Thermalito complex.

The bays provide habitat for fish and wildlife and also offer recreation opportunities.

FEATHER RIVER FISH HATCHERY



Downstream on the river from Oroville Dam and the Thermalito diversion is the Feather River Fish Hatchery, one of California's largest hatcheries. Built to compensate for loss of spawning grounds from the Oroville dam construction, the hatchery produces 20% of the sport and commercial catch in the Pacific Ocean.


The fish's journey into the hatchery begins at the
Fish Barrier Dam. The adult fish are unable to get past
the dam's overpour section …

… so they enter the fish ladder instead.

.

At the end of the ladder, a gathering tank holds the fish before they begin spawning.

The eggs are collected from the fish, fertilized and then incubated until they hatch.

Young fish live in raceways until they are old enough to be released. When they are ready, they will be transported by truck to their release sites.

Take a virtual tour of the Feather River Fish Hatchery

Below the Fish Barrier Dam, the Feather River continues its journey south.

Near Yuba City, the flow of the Yuba River joins the Feather River ...


... and soon after is joined by the flow of the
Bear River.

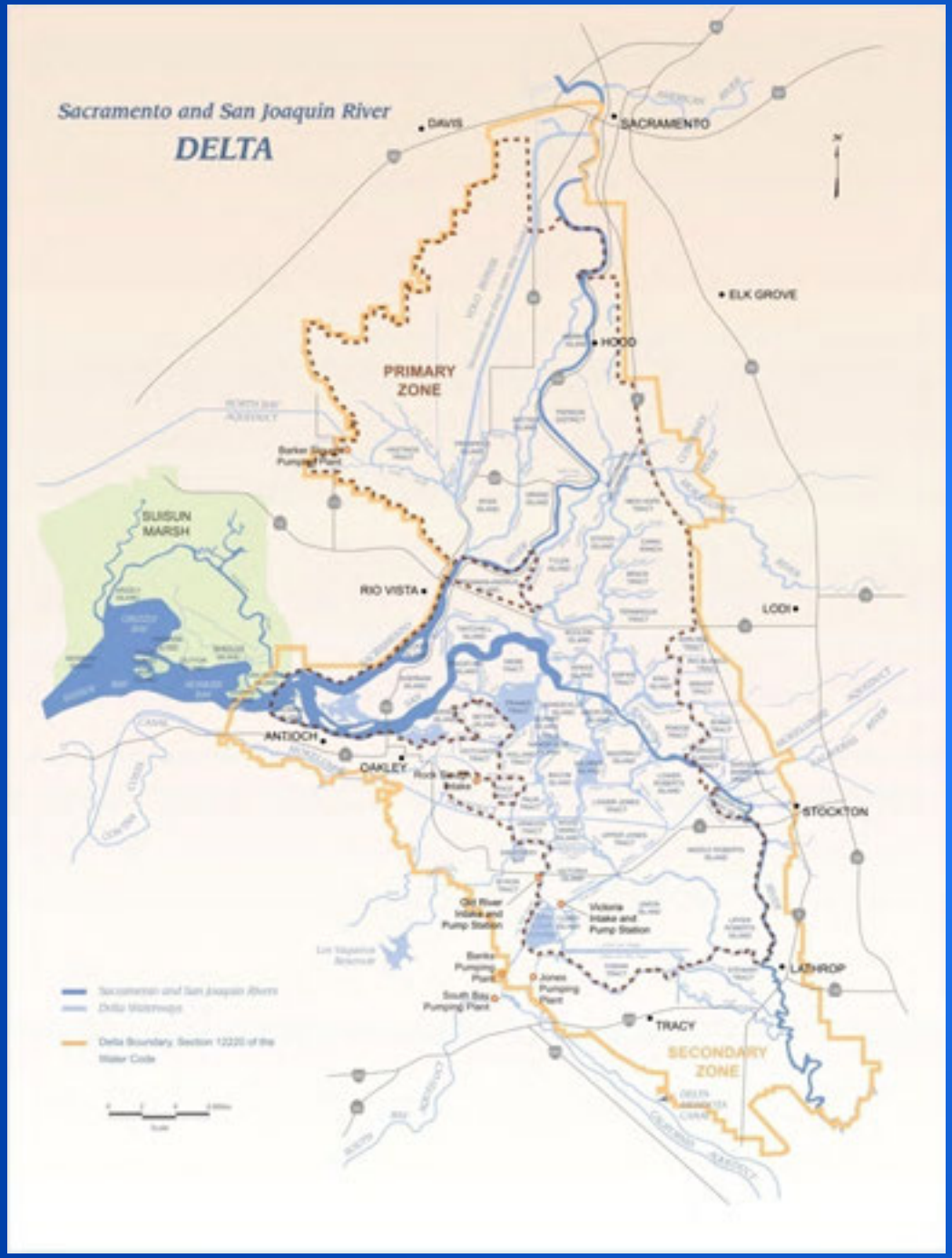
The Feather River merges with the Sacramento River
20 miles north of Sacramento.


The American River flowing west out of the Sierra Nevada …

… meets up with the Sacramento River in Sacramento, and the combined flow of all the rivers heads out into the Sacramento-San Joaquin Delta.


ENTERING
CALIFORNIA DELTA

THE DELTA



The Delta forms a 700-mile maze of sloughs and waterways that surround more than 60 leveed tracts and islands.

Some water will move through the Delta to connect with the California Aqueduct on its journey south.

Two-thirds of the state's water comingles in this fragile, sensitive area.

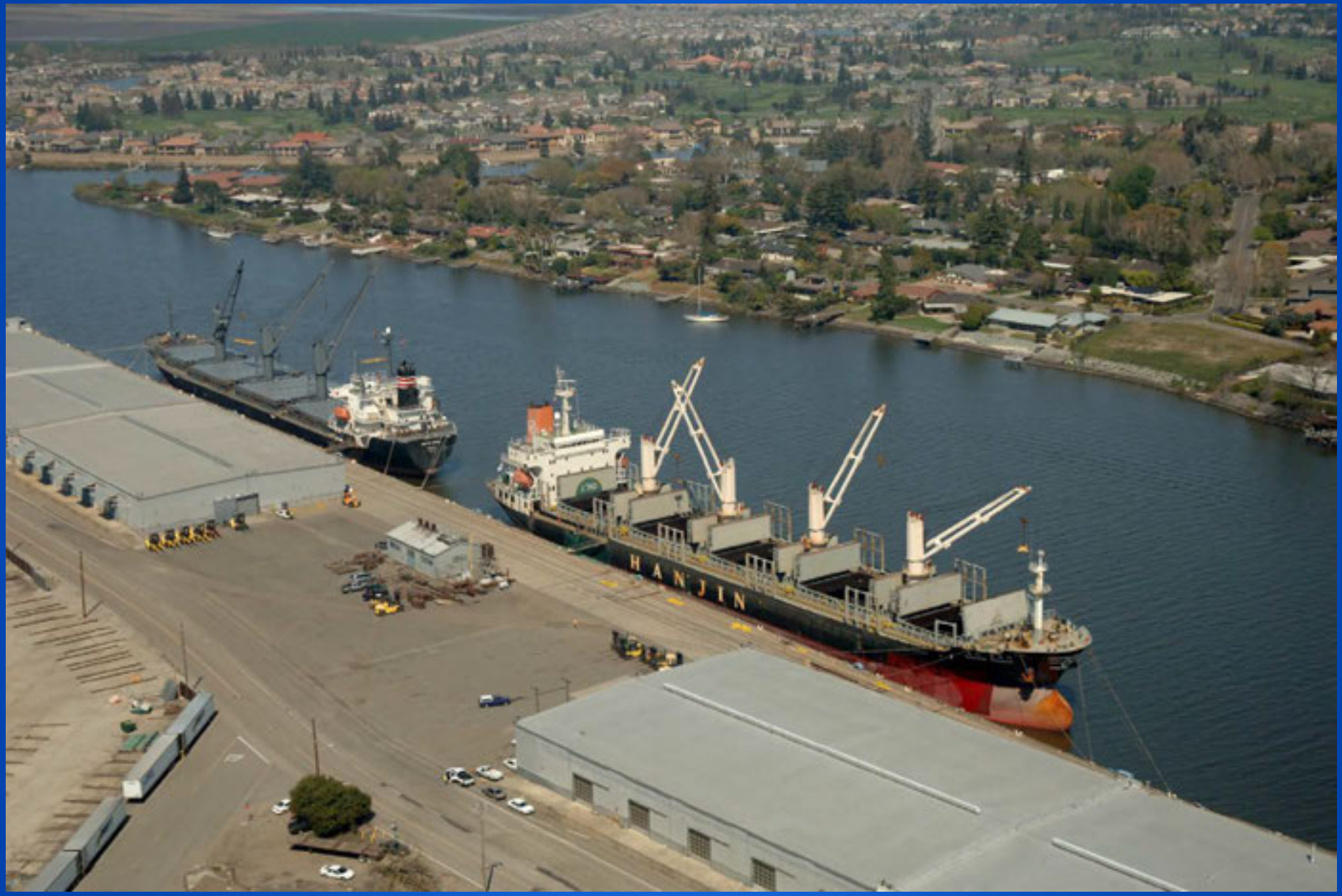
Agriculture has been and still remains the largest use of land in the Delta. More than 7,000 water users – mostly farmers – obtain water from Delta tributaries or the Delta itself.

Delta farms produce more than $500 million of agricultural products.

The Delta is home to over 500,000 people, some of whom live in small and historic communities …


Discovery Bay

… and some of whom live in modern subdivisions.



The import/export industry thrives, with ships entering the Delta every day to access the Port of Stockton and the Port of Sacramento.

Many important highways and rail lines pass across it
headed to and from the Bay Area.

Natural gas and water pipelines pass across it …

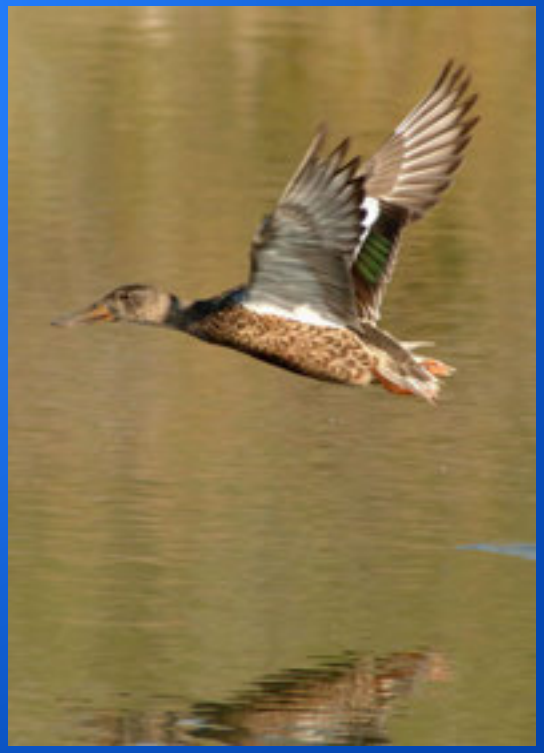
… as do critical electrical transmission lines delivering power to the Bay Area.

The Delta is popular for a variety of water sports …

… and a popular spot for fishing, too.

The Delta forms an estuary – a delicate environment where the fresh water and salt water mix together.

The Delta is home to a rich and diverse ecosystem that supports 750 different species of plants and animals …




Green Sturgeon

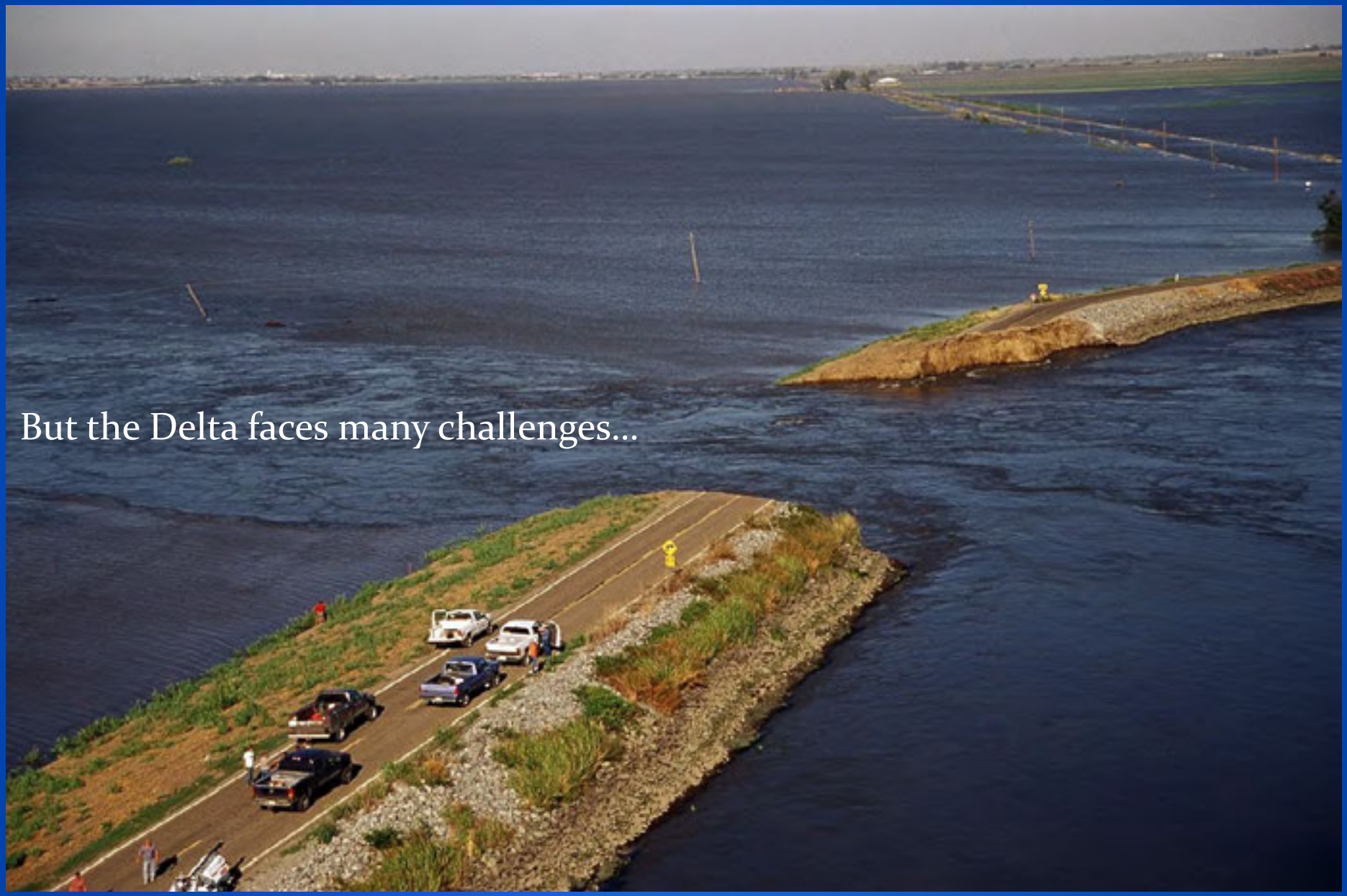

Delta smelt (Endangered)


winter run Chinook salmon

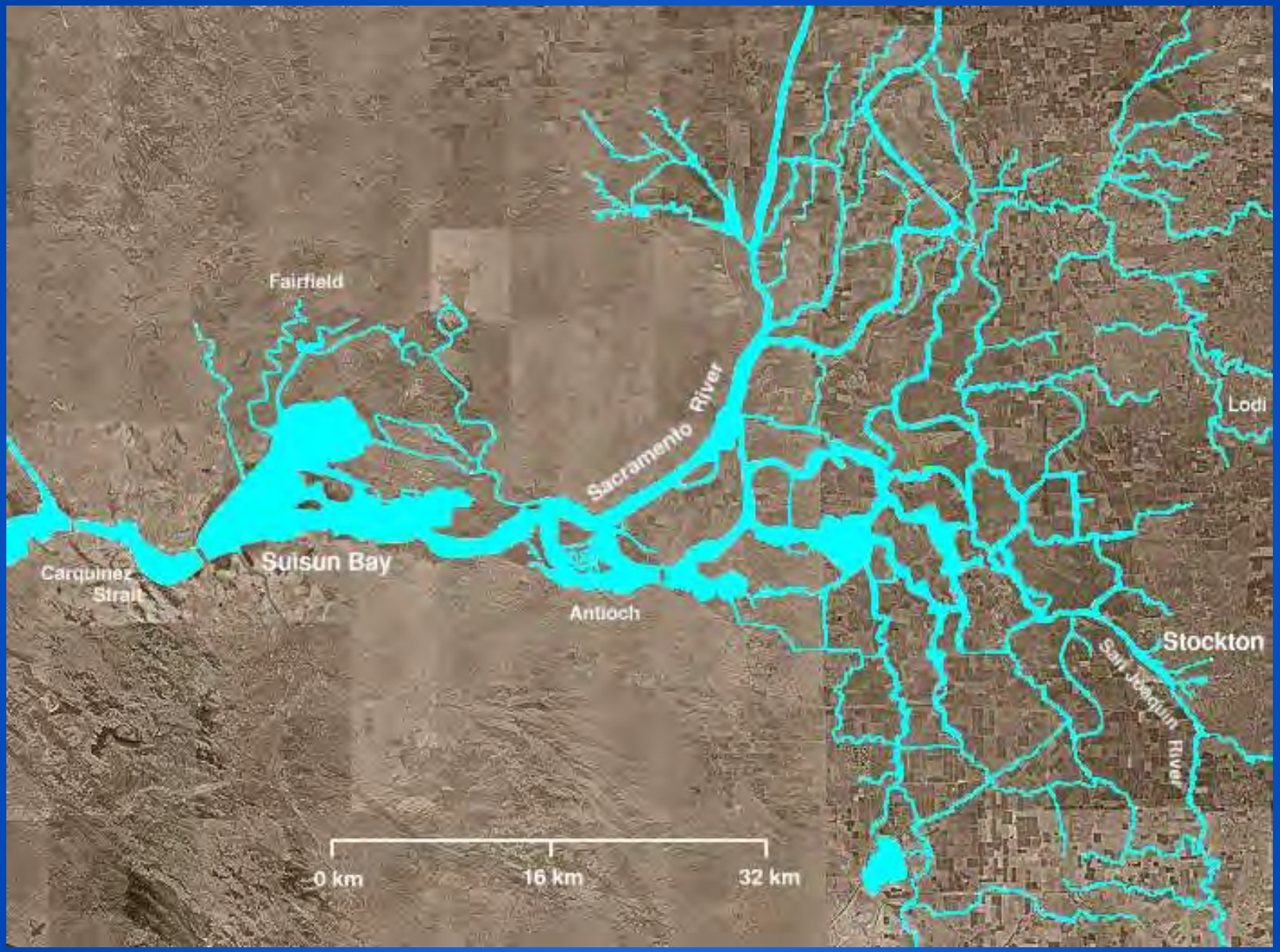
several of them listed as threatened or endangered.

Learn more about endangered and threatened Delta species by clicking here.

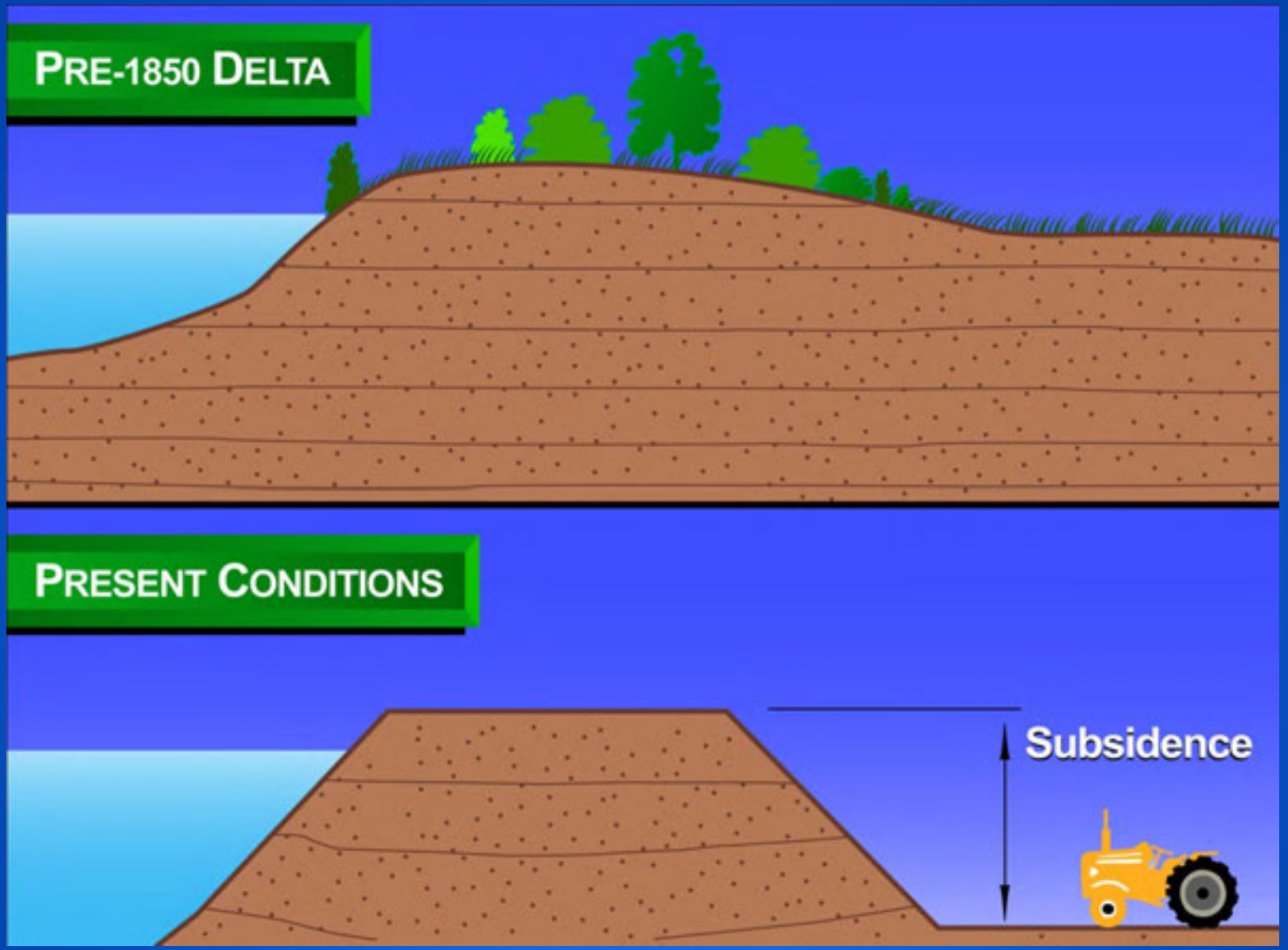
It is home to four distinct runs of salmon.
It is estimated that 25% of all sport-fishing species and 80% of the state's commercial fishery species live in or migrate through the Delta.



The aging levees are at risk of failure due to earthquakes, flooding events, and rising sea levels.



Water project operations that draw the water south through the Delta have altered flow patterns in Delta, including the duration, direction, and timing of water flows.

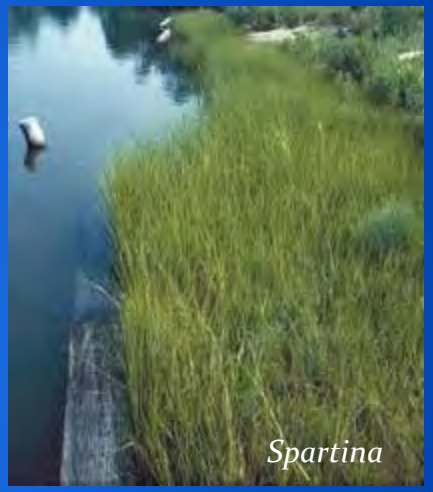


Additionally, the Delta's rich peat soils have subsided, leaving many of the islands 25 feet or more below the water level in the surrounding channels and putting pressure on the already fragile levees.

More than 200 non-native species have been introduced, both intentionally and accidentally. Some of these invasive species have colonized quite successfully, altering the ecosystem to the detriment of native species, and making the Delta one of the most invaded estuaries in the world.


Asian Clam


Hydrilla


Spartina


Water Hyacinth


Chinese mitten crab

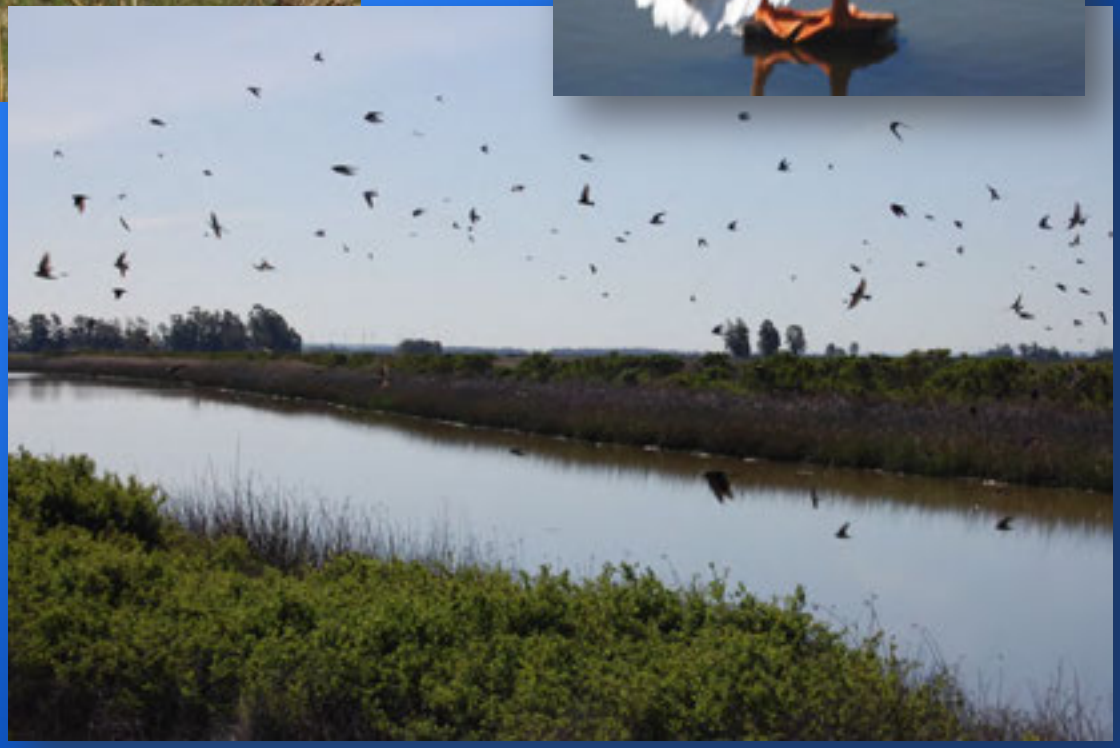
http://extension.entm.purdue.edu/caps/pestInfo/hydrilla.htm

Learn more about invasive species in the Delta by clicking here.

The Delta serves as the distribution hub for California's water systems.

SUISUN MARSH

The Suisun Marsh lies at the western edge of the Delta. It is the largest contiguous brackish water marsh remaining on the West Coast of North America, and constitutes 10% of California's remaining wetlands.



The marsh provides essential habitat for birds, reptiles and fish, and is an important stop for migrating waterfowl on the Pacific Flyway.

The Suisun Marsh Salinity Gates help to maintain proper salinity levels in the marsh and are operated as needed between October and May.

The gates control salinity by limiting the upstream movement of salty tidal flows into the marsh.

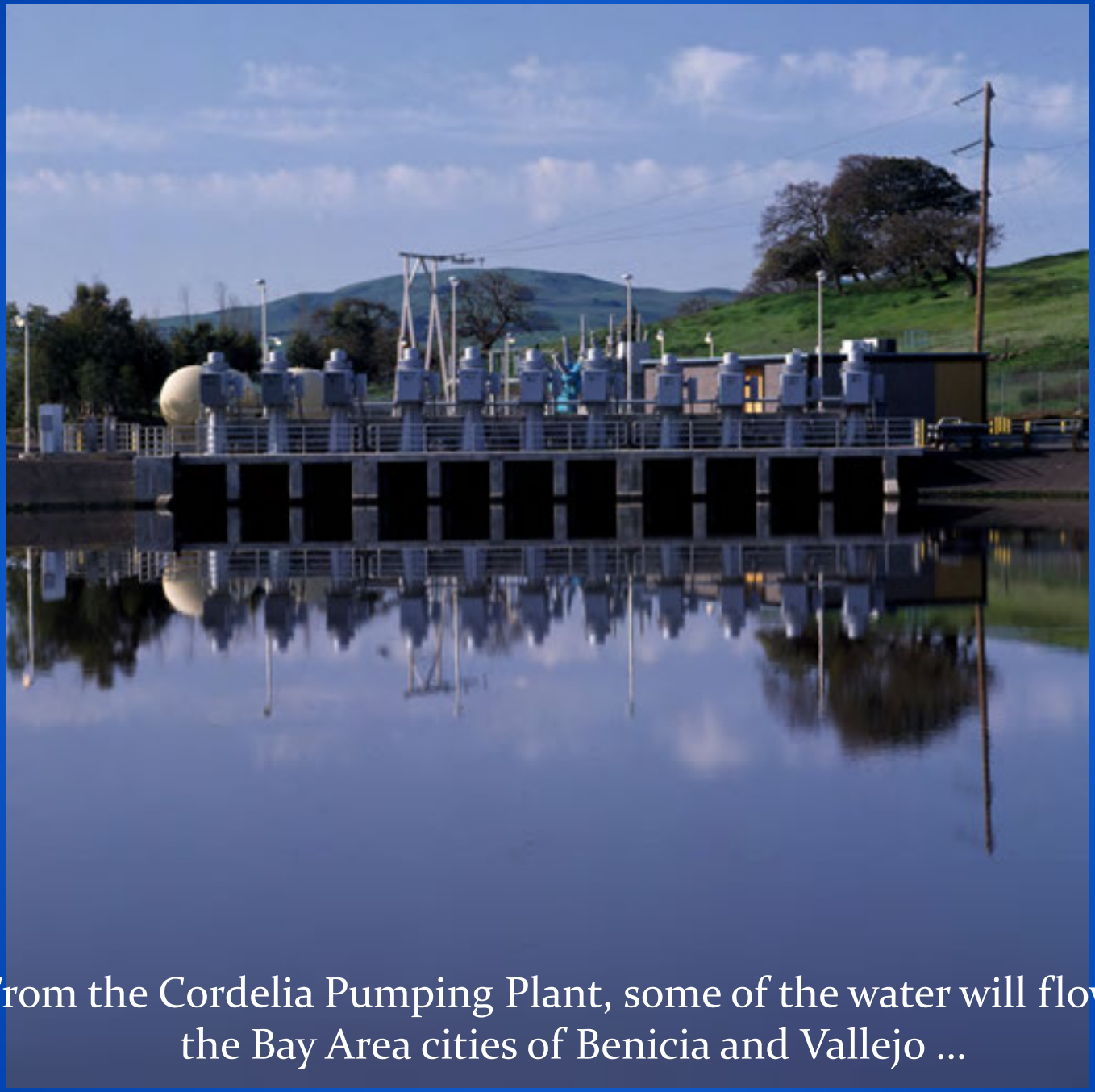
To learn more about the Suisun Marsh, click here: http://www.water.ca.gov/suisun/

NORTH BAY AQUEDUCT

The North Bay Aqueduct is a 27-mile underground pipeline serving supplemental water to Napa and Solano counties.

The North Bay Aqueduct begins at Barker Slough on the western edge of the Delta.

The water heads westward to the Cordelia Pumping Plant Forebay, serving the Sacramento Valley cities of Fairfield, Suisun City and Vacaville along the way.



From the Cordelia Pumping Plant, some of the water will flow to the Bay Area cities of Benicia and Vallejo …

… while the remainder of the water continues on to serve Napa Valley, the end point for the North Bay Aqueduct.

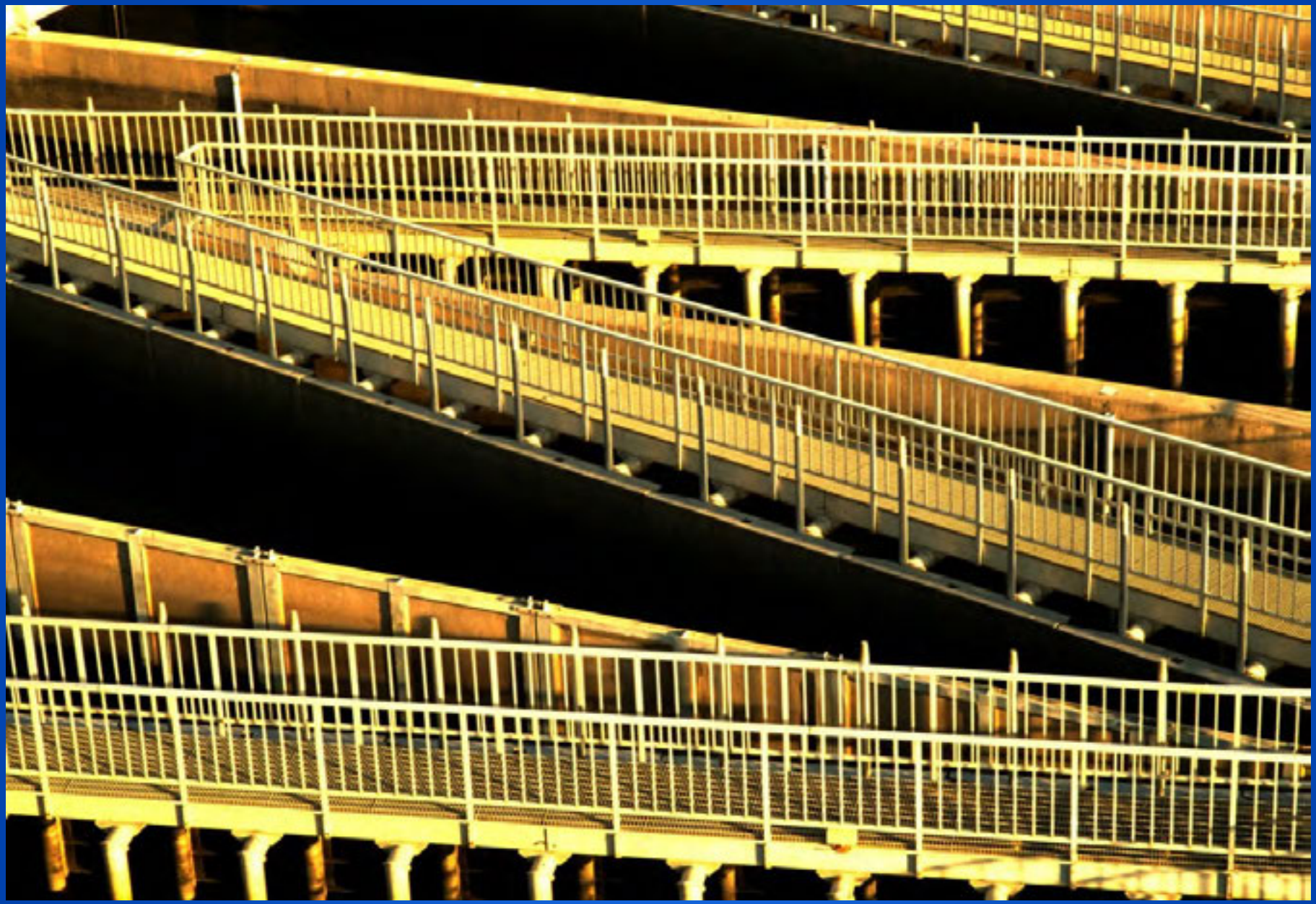
SOUTH DELTA FACILITIES

The Delta's channels are used to convey the water to the south end of the Delta, where it enters the Clifton Court Forebay, a shallow reservoir that provides storage and regulation of flows into the Banks Pumping Plant.

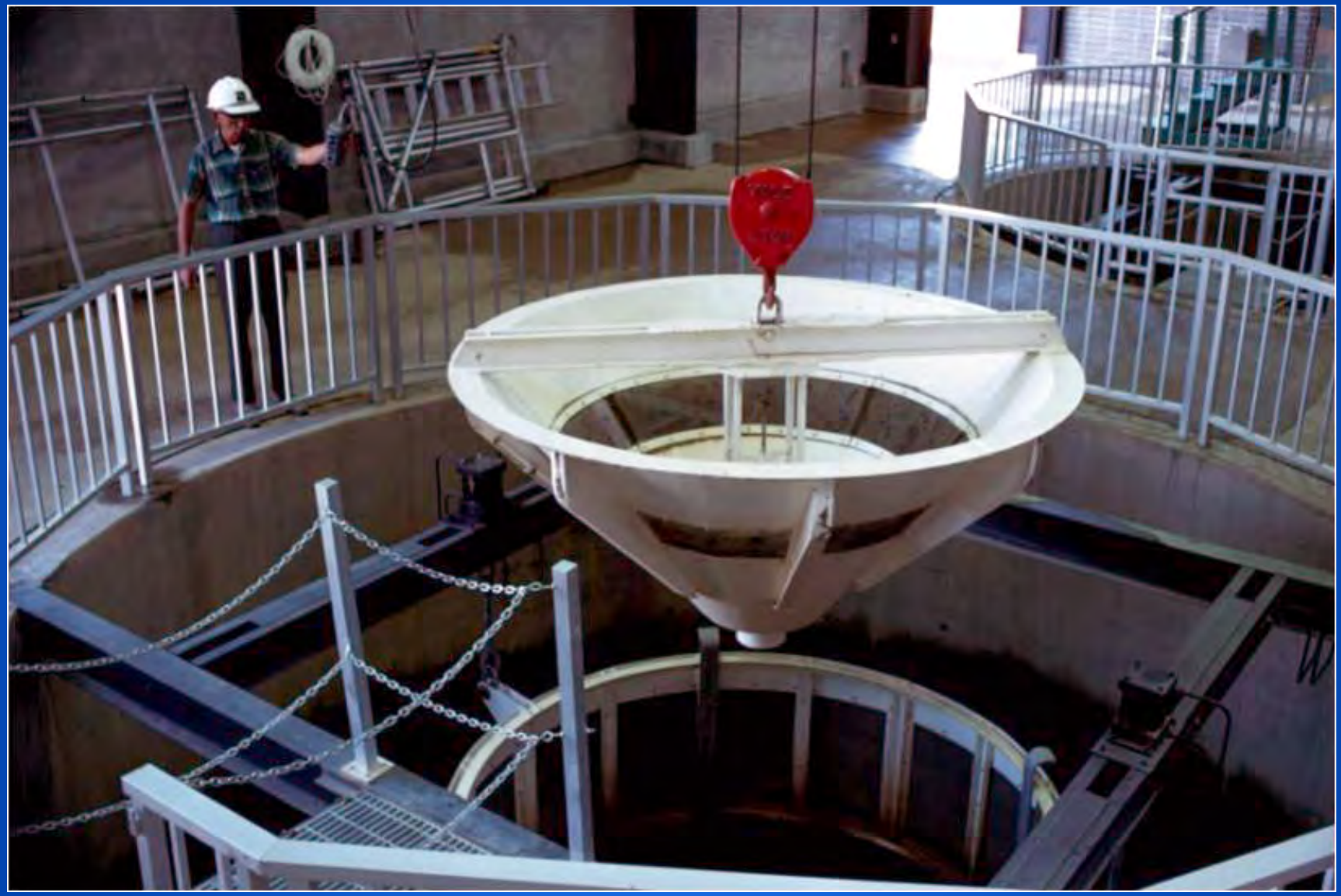
SKINNER FISH FACILITY

The Skinner Fish Facility is named after John. E. Skinner, who served the California Dept. of Fish & Game from 1954 to 1978.

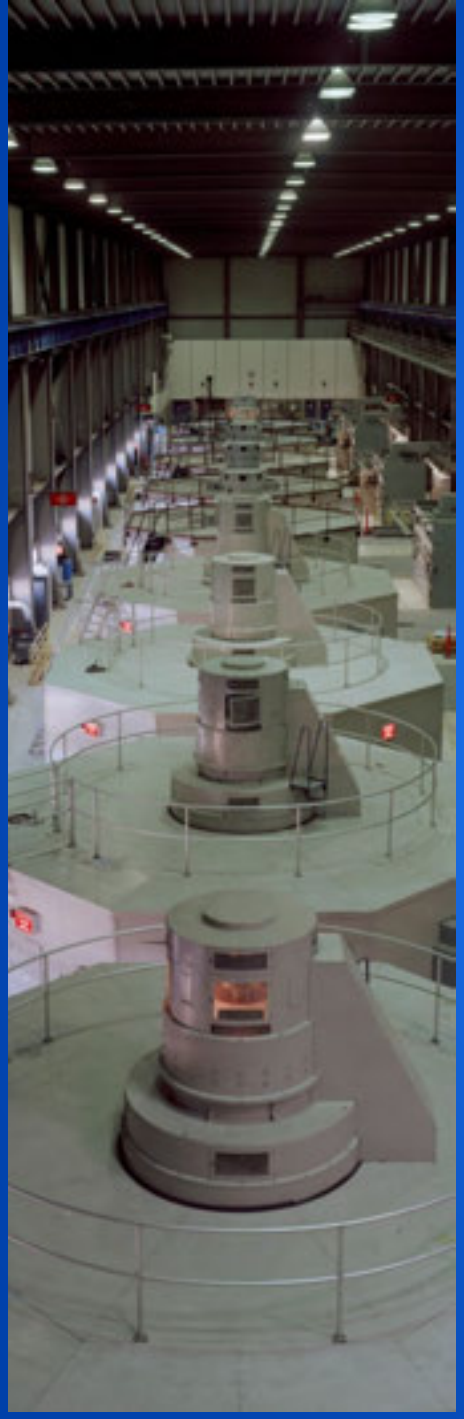
Before entering the Banks Pumping Plant, the water flows through the Skinner Fish Facility where a round-the-clock salvation operation aims to keep fish away from the pumps.



Fish that swim into the intake channel from Clifton Court Forebay are diverted into the bypass system by a system of metal louvers.



The fish are routed into a holding tank where they are retrieved, counted, recorded and then transported by truck to release points in the Delta.

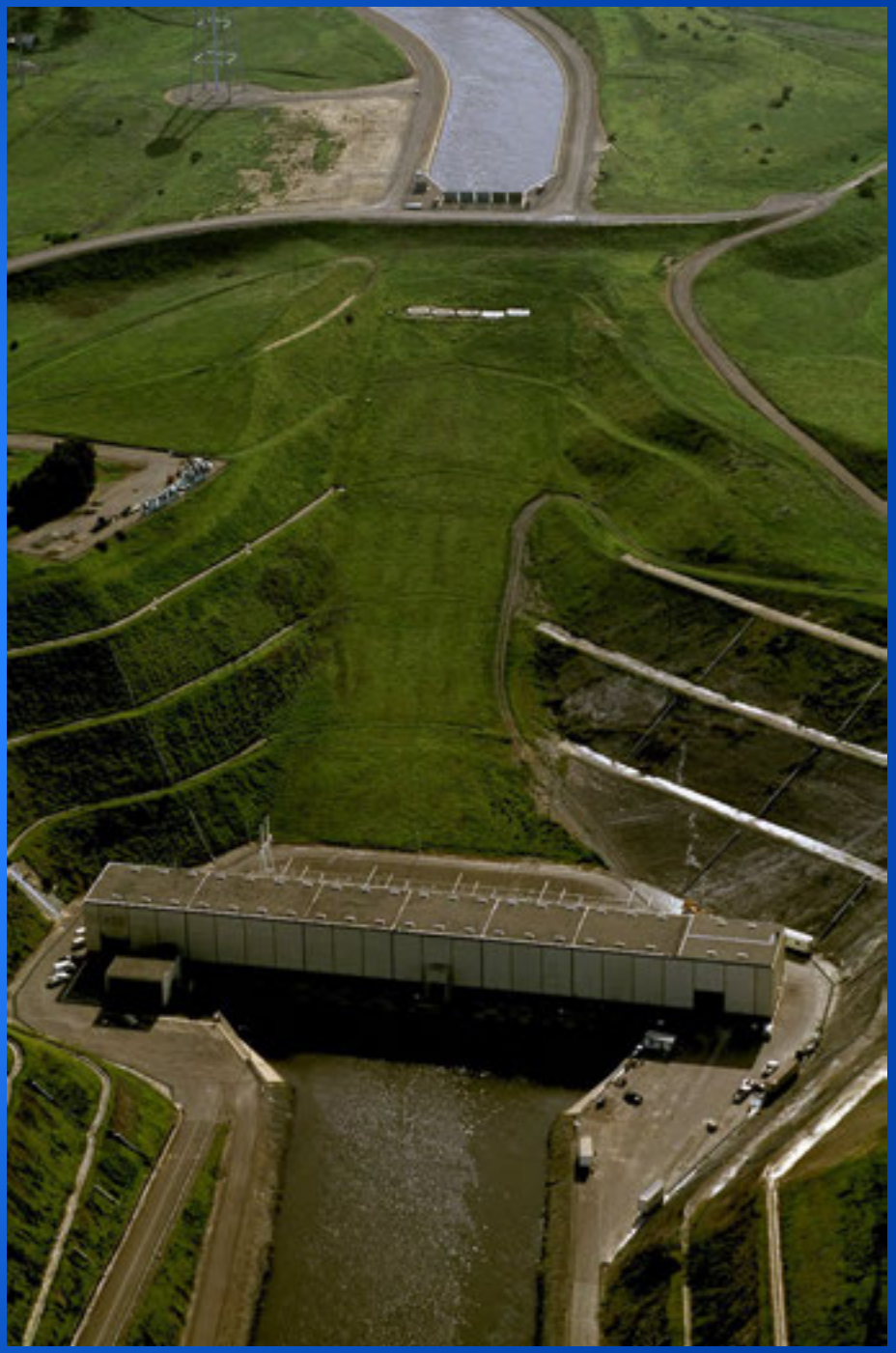


This facility is named after Harvey O. Banks, the first Director of the Dept. of Water Resources, 1956-1960.

The water flows from the Skinner Fish Facility to the Banks Pumping Plant. When the plant was constructed in 1969, seven pumps were installed. In 1992 four more pumps were installed, boosting the capacity to the amount called for in the Burns-Porter Act. However, operation of all eleven pumps simultaneously only occurs during wet periods.

The giant pumps lift up the water 244 feet to begin the flow of the California Aqueduct.

From here, the water begins its 444-mile journey south through the San Joaquin Valley to Southern California.



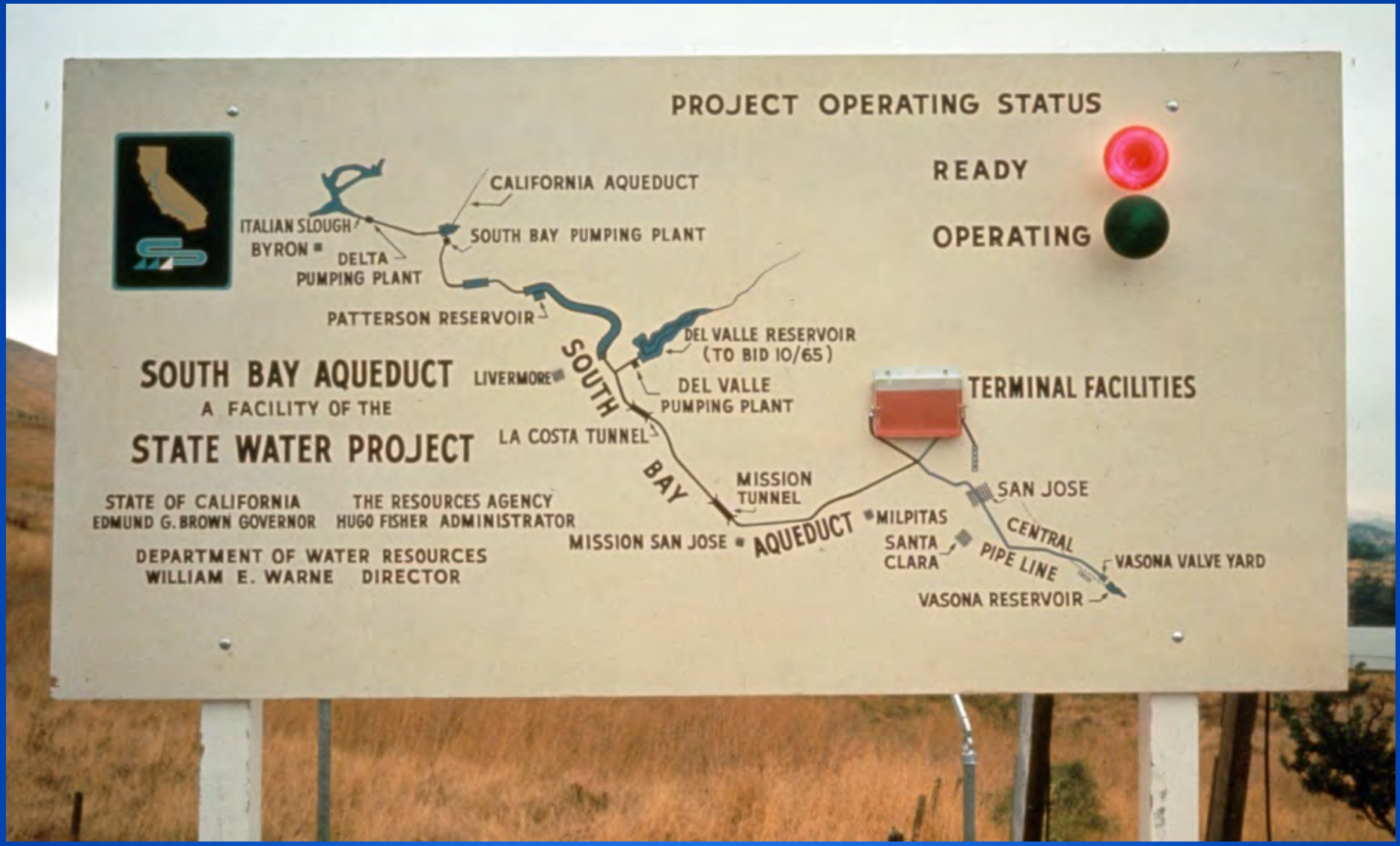
It can take anywhere from 14 days to 75 days for the water to reach the end of the aqueduct, depending upon how many pumps are in operation.

BETHANY RESERVOIR

One and a half miles downstream on the California Aqueduct is the Bethany Reservoir, the starting point for the South Bay Aqueduct.

SOUTH BAY AQUEDUCT

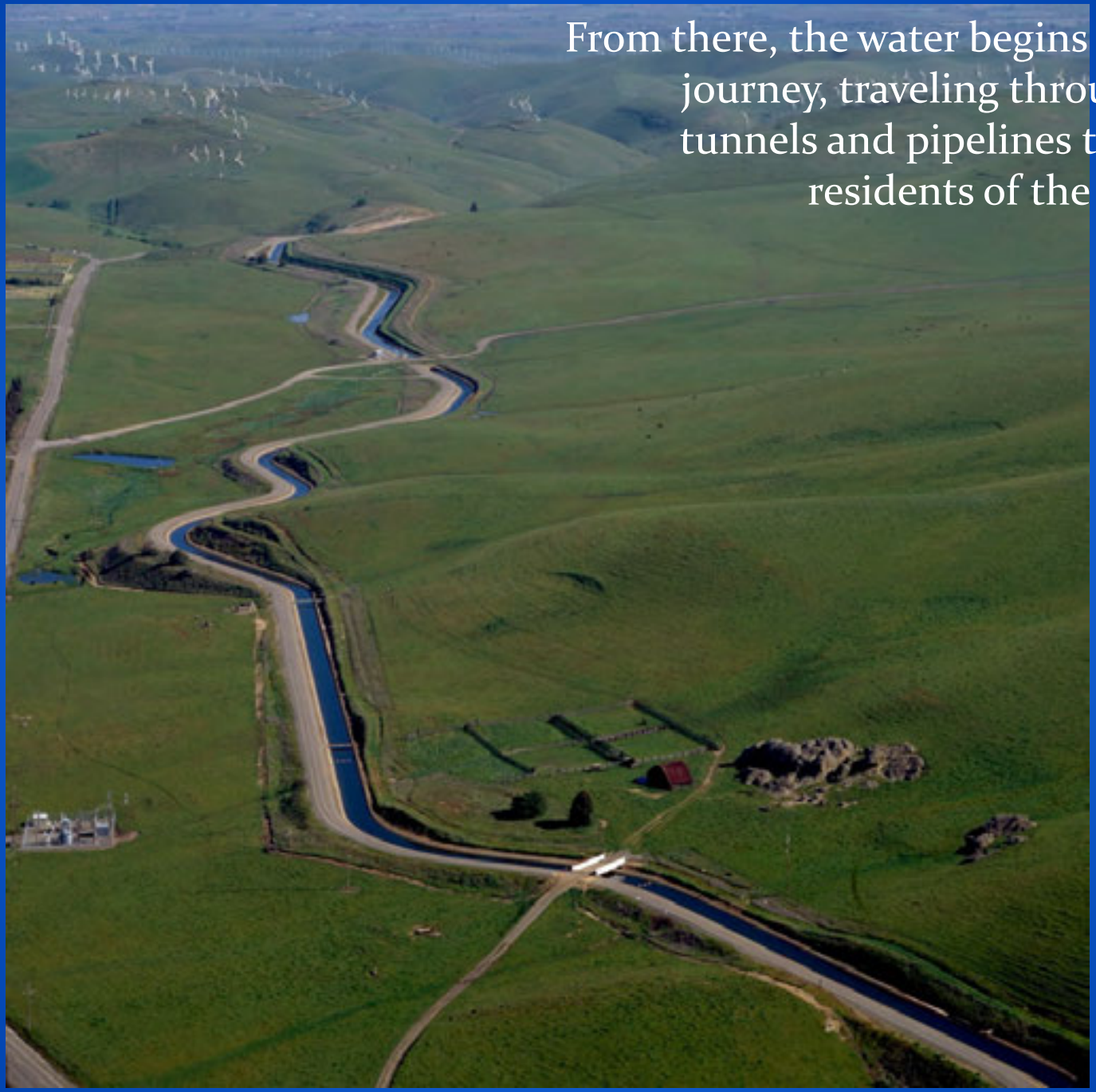
The South Bay Aqueduct delivers water to Alameda and Santa Clara counties.



The South Bay Aqueduct was the first SWP delivery system completed, beginning service to Alameda County in 1962. It reached Santa Clara County in 1965.

SOUTH BAY PUMPING PLANT

South Bay Pumping Plant, located at the upper end of the reservoir, lifts the water 566 feet up into the first reach of the South Bay Aqueduct.



From there, the water begins its 42-mile journey, traveling through canals, tunnels and pipelines to serve the residents of the South Bay.

Alameda County and the Livermore Valley receive their water from Patterson Reservoir.

The water then continues down to the 77,100 acre-foot Lake Del Valle, which provides storage for the South Bay Aqueduct, as well as flood control and habitat for fish and wildlife.

Boating, fishing, camping and horseback riding are popular activities.

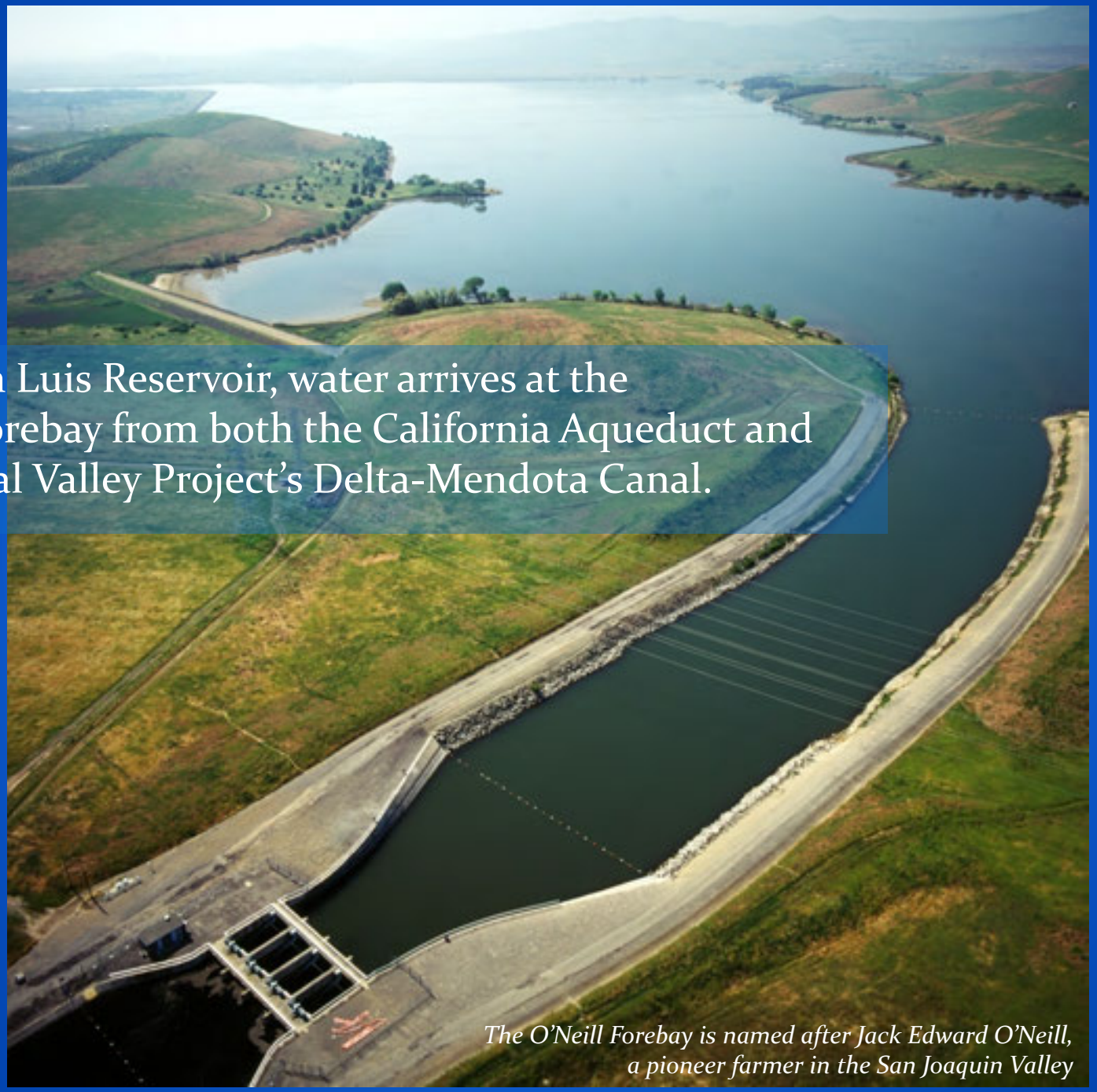
The water continues through pipelines and tunnels to serve the urban and industrial users of the Silicon Valley, the end point for the South Bay Aqueduct.

SAN LUIS RESERVOIR JOINT USE COMPLEX

Water not diverted to the South Bay Aqueduct continues on to the San Luis Reservoir, a joint use facility that is part of both the State Water Project and the federal Central Valley Project.

With more than 2 million acre-feet of storage, the San Luis Reservoir is the largest off-stream reservoir in the U.S. An off-stream reservoir is one that is not located on a natural river.

President John F. Kennedy joined Gov. Pat Brown for the groundbreaking ceremony at the reservoir in 1962.



Below San Luis Reservoir, water arrives at the O'Neill Forebay from both the California Aqueduct and the Central Valley Project's Delta-Mendota Canal.

The O'Neill Forebay is named after Jack Edward O'Neill, a pioneer farmer in the San Joaquin Valley

The Gianelli Pumping Plant pumps water from the O'Neill Forebay into the San Luis Reservoir. When water is released from the reservoir, the plant generates electricity.

This facility is named after William R. Gianelli, Director of the Dept. of Water Resources, 1967-1973, and Assistant Secretary of the Army for Civil Works, 1981-1984

Water leaves the O'Neill Forebay to continue its journey south.

DOS AMIGOS PUMPING PLANT

The water flows to the Dos Amigos Pumping Plant, which lifts the water 113 feet. Pumping plants are necessary along the length of the California Aqueduct to match the increased elevation as the aqueduct moves southward.

COASTAL BRANCH

Beginning 11 miles south of Kettleman City, the Coastal Aqueduct extends 115 miles through five pumping plants and three tunnels to deliver water to the Central Coast.

LAS PERILLAS & BADGER HILL PUMPING PLANTS

Las Perillas Pumping Plant

The pumping plants at Las Perillas and Badger Hill provide the lift needed for the first 15 miles of the Coastal Branch. Western Kern County and Kings County are served by this portion of the branch.

DEVIL'S DEN, BLUESTONE & POLONIO PASS PUMPING PLANTS

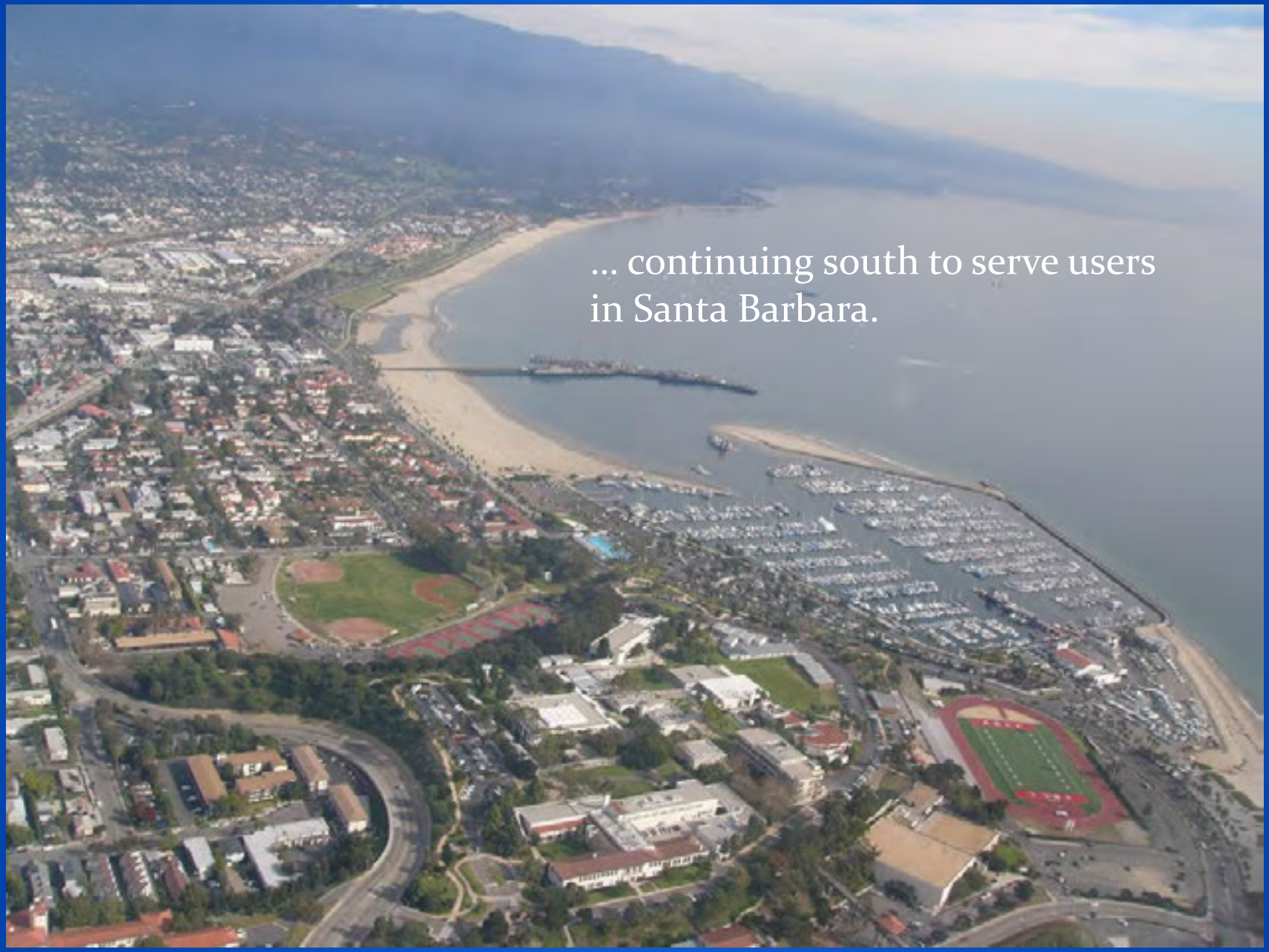
Devil's Den Pumping Plant

Bluestone Pumping Plant

Polonio Pass Pumping Plant

Three pumping plants are needed to lift the water - now in a buried pipeline - 1,500 feet up over the Temblor Mountain Range to the top of Polonio Pass.

From there, the water flows by pressure and gravity on to San Luis Obispo …


… continuing south to serve users
in Santa Barbara.

After suffering through the long drought from 1987 to 1992, voters approved financing for the extension, which was completed in 1997.

CALIFORNIA AQUEDUCT

Water not diverted to the Coastal Branch continues south through the Central Valley.

The majority of the State Water Project's agricultural customers are served from the more than 40 turnouts located between Kettleman City and the foot of the Tehachapi Mountains.

Kern County Water Agency is the project's largest agricultural contractor and the state's fourth most productive agricultural county.


State Water Project water is conveyed to Kern County through the 22-mile long Cross Valley Connector.

The aqueduct's route hugs the west side of the San Joaquin Valley, paralleling the San Andreas Fault and crossing other major earthquake faults along the way.

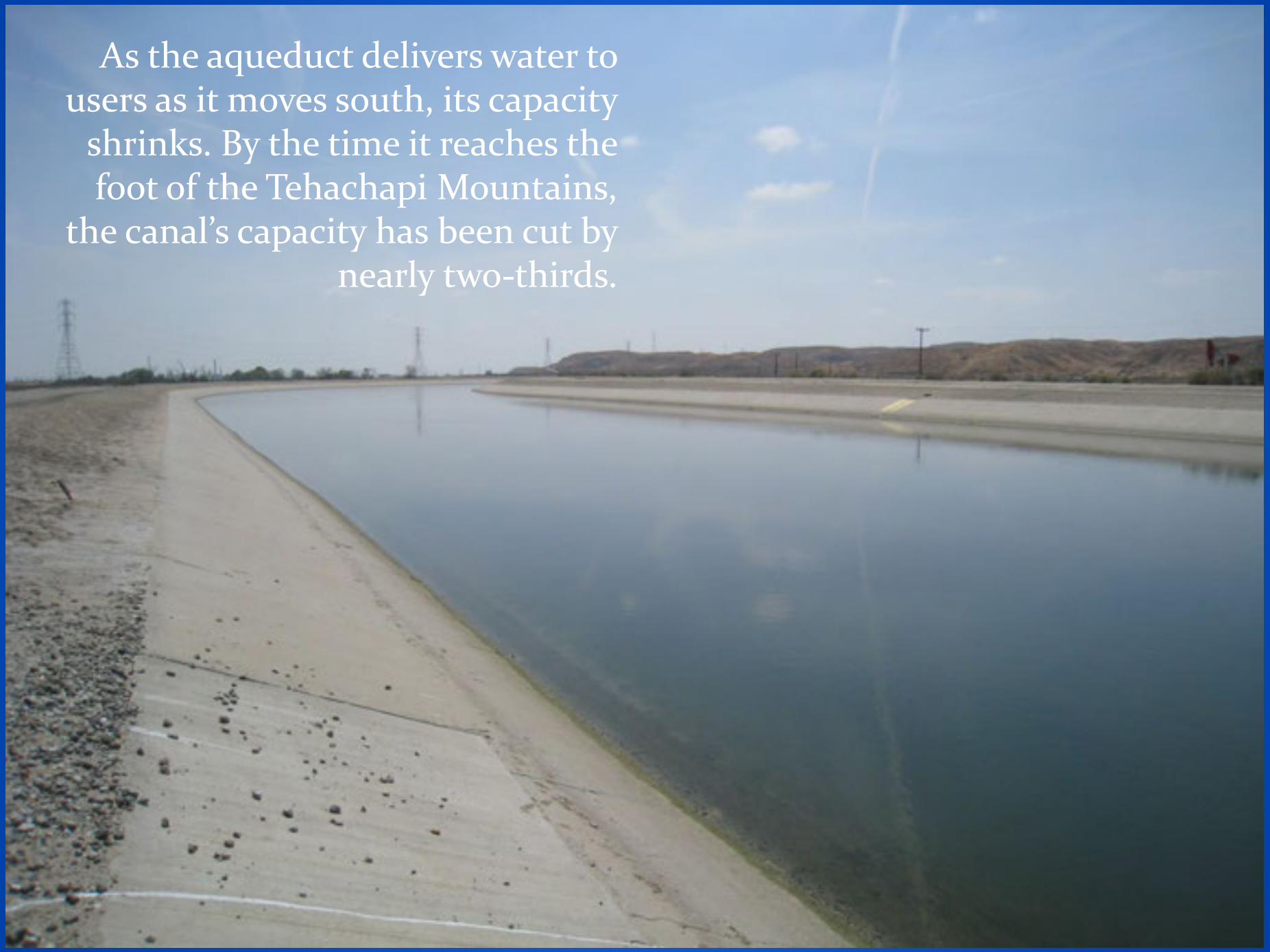
The loose soils of the west side proved challenging to the engineers. Tests showed the soils were particularly prone to heavy subsidence when saturated.

To solve the problem, hundreds of ponds were built and filled along the aqueduct's route to pre-saturate the soils, ensuring they were well settled before construction began.

Lining the aqueduct required a specialized combination of equipment which formed a giant paving train.

Building the California Aqueduct took five years. It was completed in 1968.

The aqueduct is divided into 66 sections by remote-controlled check gates which control the flow of water in the canal.


As the aqueduct delivers water to users as it moves south, its capacity shrinks. By the time it reaches the foot of the Tehachapi Mountains, the canal's capacity has been cut by nearly two-thirds.

SOUTH SAN JOAQUIN VALLEY

At the south end of the San Joaquin Valley, four pumping plants lift the water over the Tehachapi Mountains.

BUENA VISTA PUMPING PLANT

The first pumping plant in the series of four is the Buena Vista Pumping Plant, which lifts the water 205.2 feet.

TEERINK PUMPING PLANT

Further downstream from the Buena Vista Pumping Plant, the Teerink Pumping Plant lifts the water another 232.5 feet.

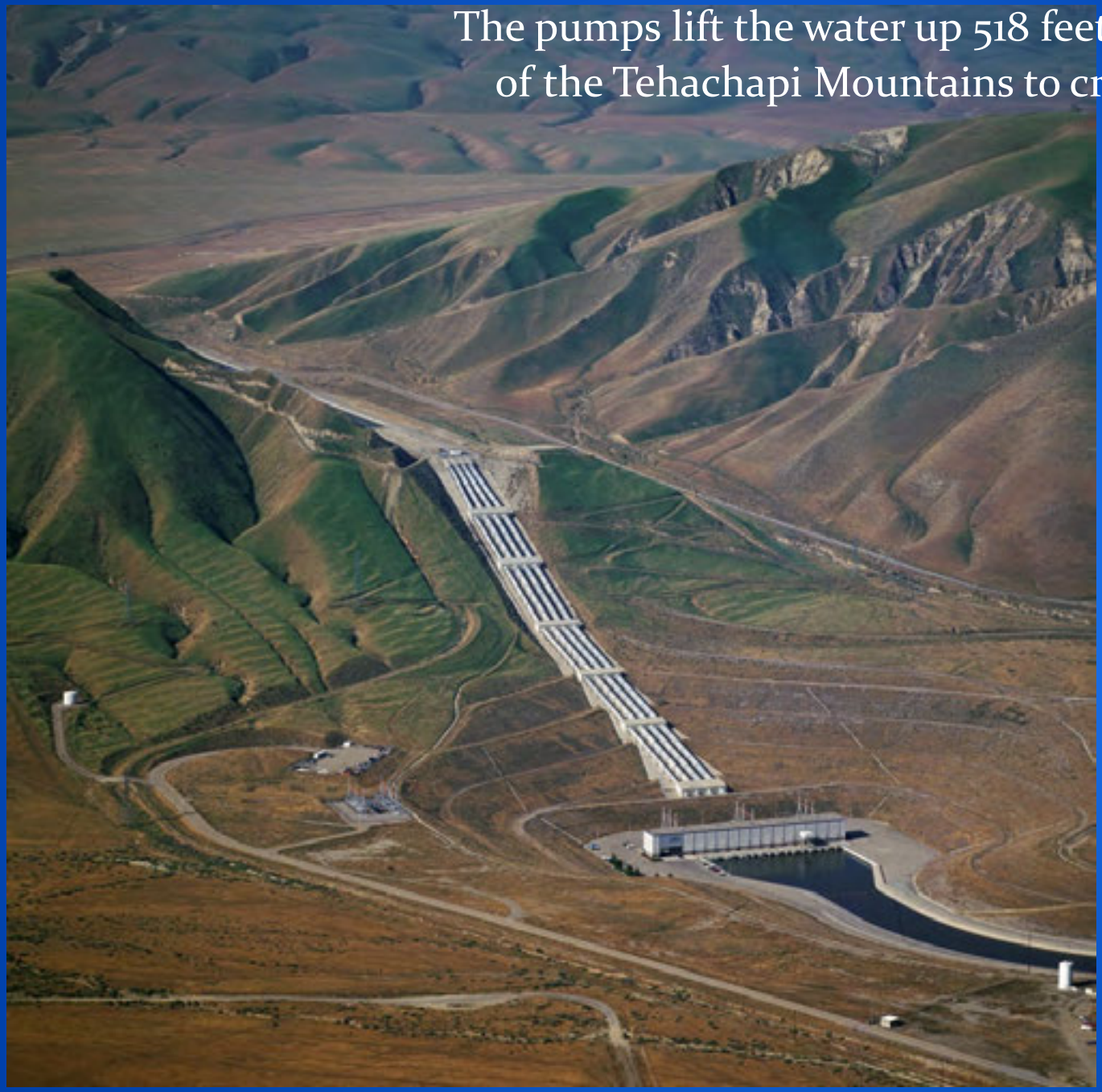
This facility is named after John. R. Teerink, Director of the Dept. of Water Resources from 1973-1975.

CHRISMAN WIND GAP PUMPING PLANT

The most visually impressive of the pumping plants, the Chrisman Wind Gap Pumping Plant is visible to drivers on Interstate-5 in the Southern San Joaquin Valley.

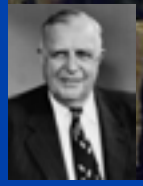
This facility is named after Ira J. Chrisman, member of the California Water Commission from 1960-1976.

The pumps lift the water up 518 feet up into the foothills of the Tehachapi Mountains to cross the Tejon Ranch.

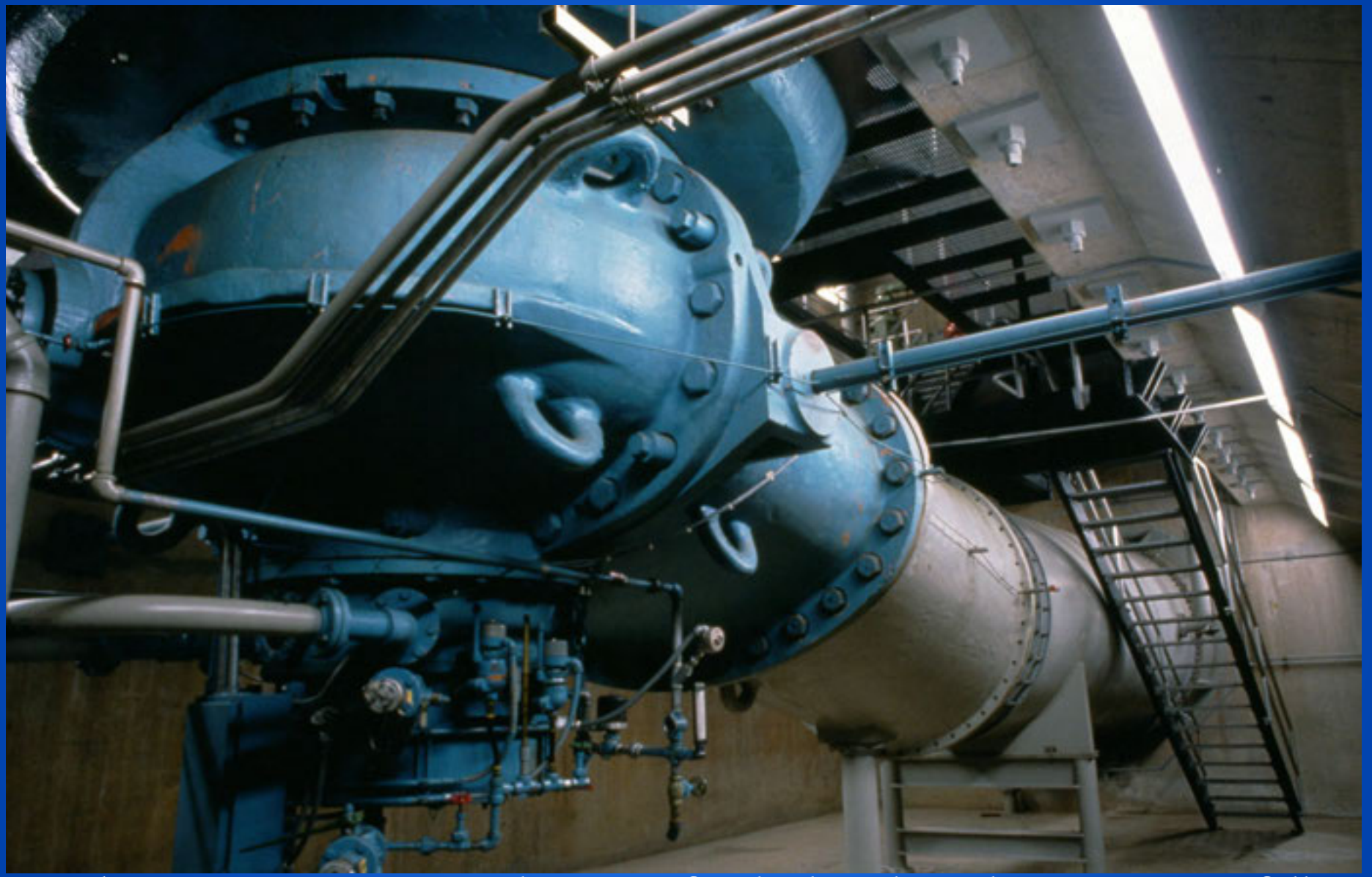


EDMONSTON PUMPING PLANT

At the Edmonston Pumping Plant, 14 pumps lift the water nearly 2,000 feet to traverse the mountains to reach Southern California. It is the highest lift in the world.



This facility is named after A. D. Edmonston, State Engineer and Chief of the Division of Water Resources from 1950 to 1955.

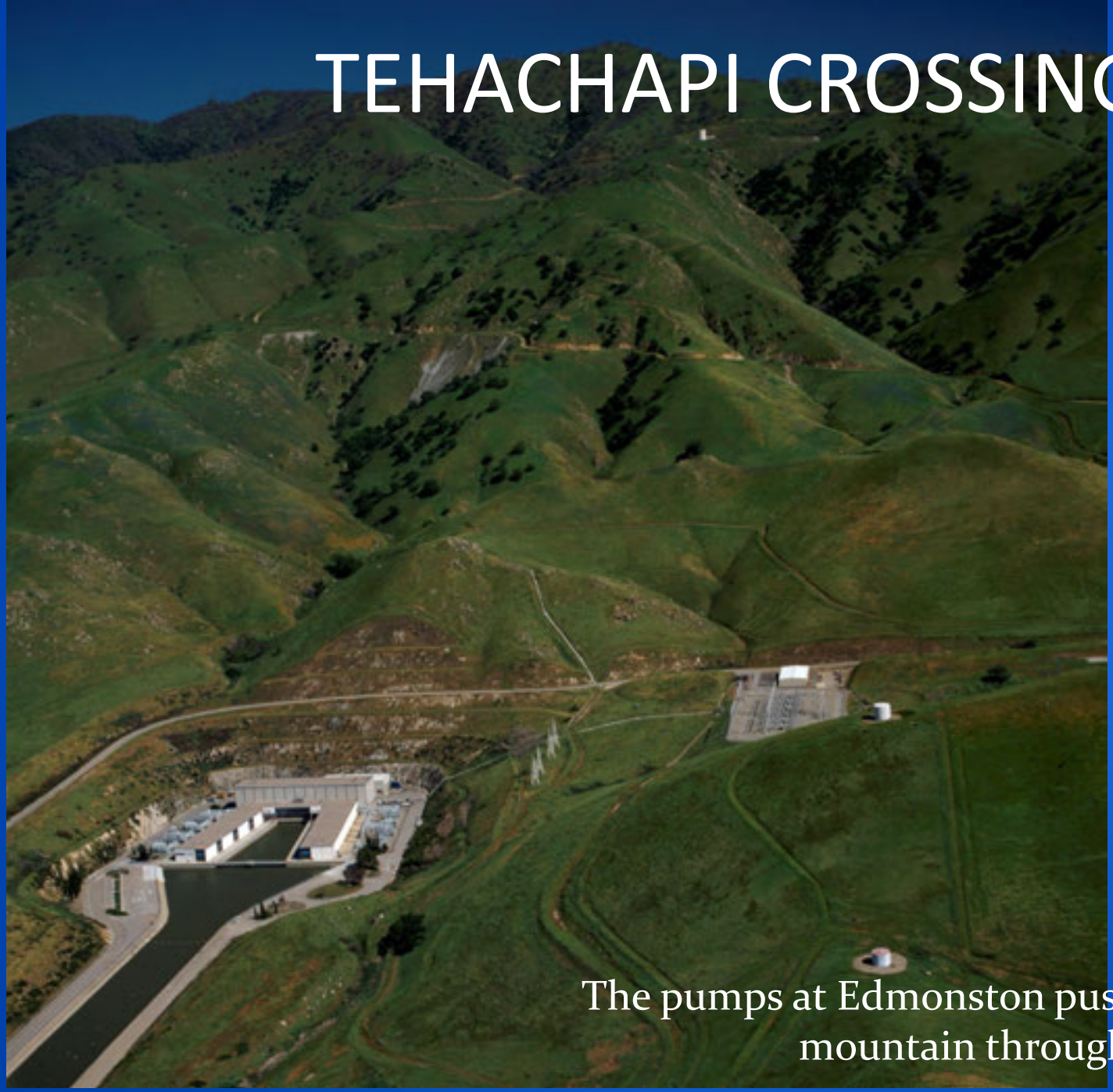


Each motor-pump unit stands over 65 feet high and weighs 420 tons. At full capacity, the pumping plant is capable of moving nearly two million gallons of water per minute.

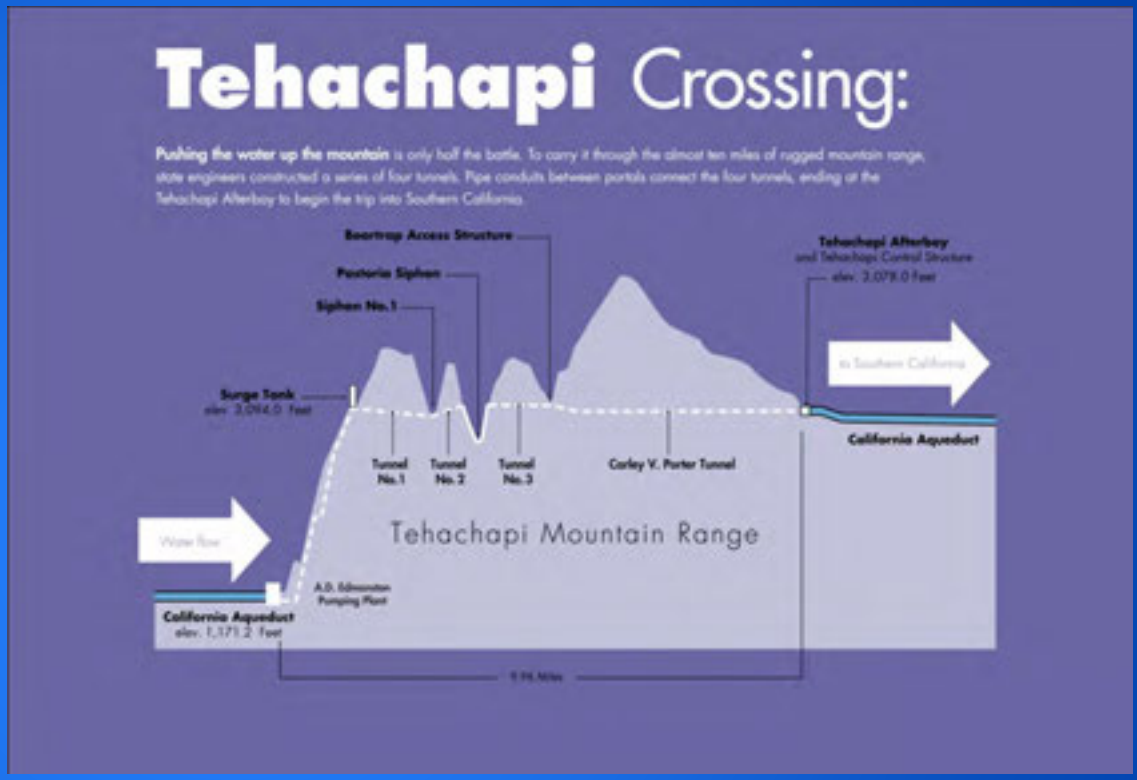
Construction of the massive pumps and tunnels began in 1965 and was completed six years later.

Gov. Ronald Reagan was on hand for the start-up and dedication of the facility in October of 1971.

TEHACHAPI CROSSING



The pumps at Edmonston push the water up the mountain through buried pipelines.



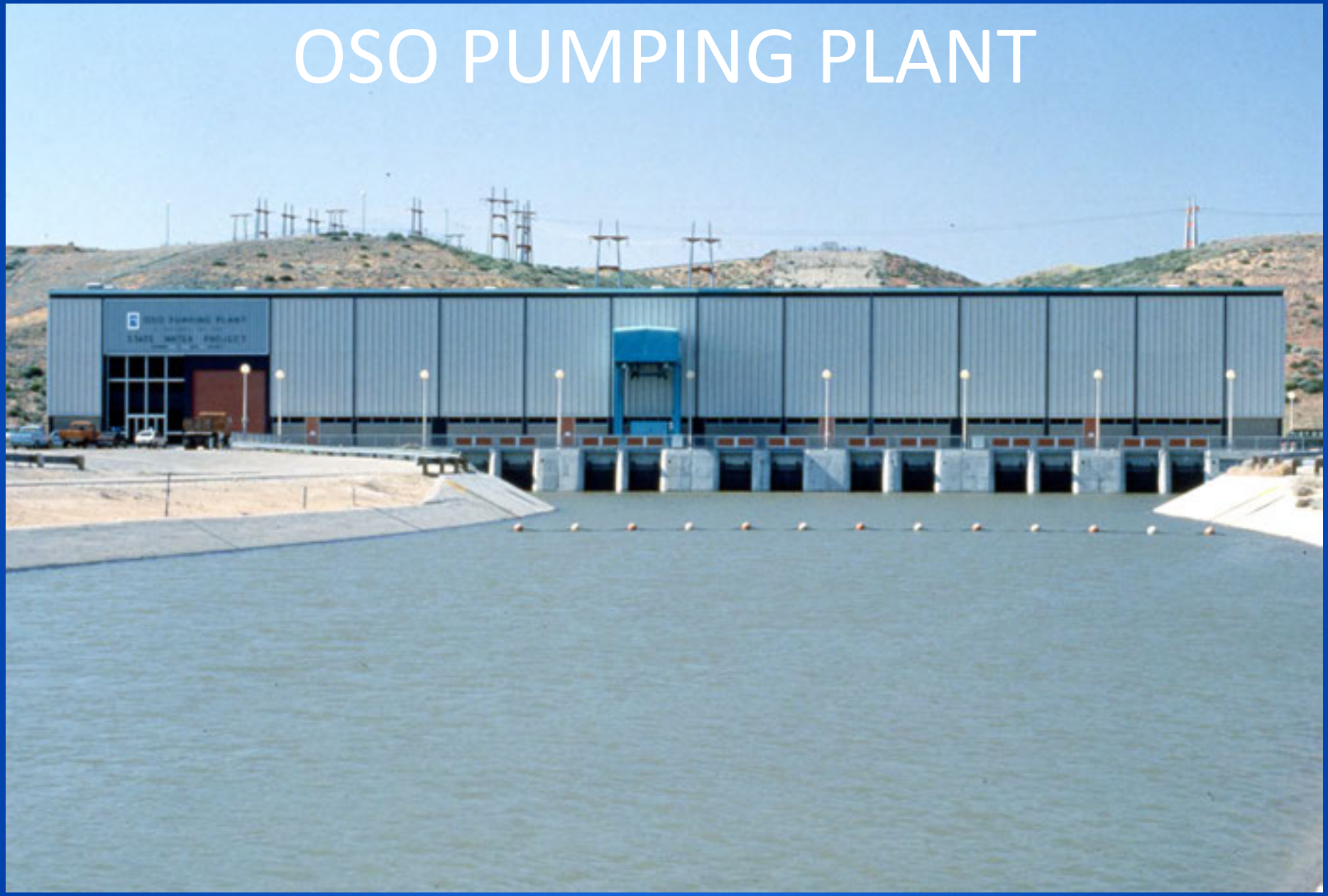
Crossing the Tehachapi Mountains meant the aqueduct must cross or parallel several major earthquake faults. Although a deeper tunnel would have been a simpler and more direct route, the engineers chose to keep the aqueduct closer to the surface by using four tunnels connected by siphons and pipes, thereby facilitating repairs.

Once the water reaches the top of the Tehachapi Mountains, the aqueduct splits into the East Branch and the West Branch.

WEST BRANCH

The West Branch delivers water to northern Los Angeles County.

OSO PUMPING PLANT



The first facility on the West Branch is the Oso Pumping Plant, which lifts the water 231 feet.

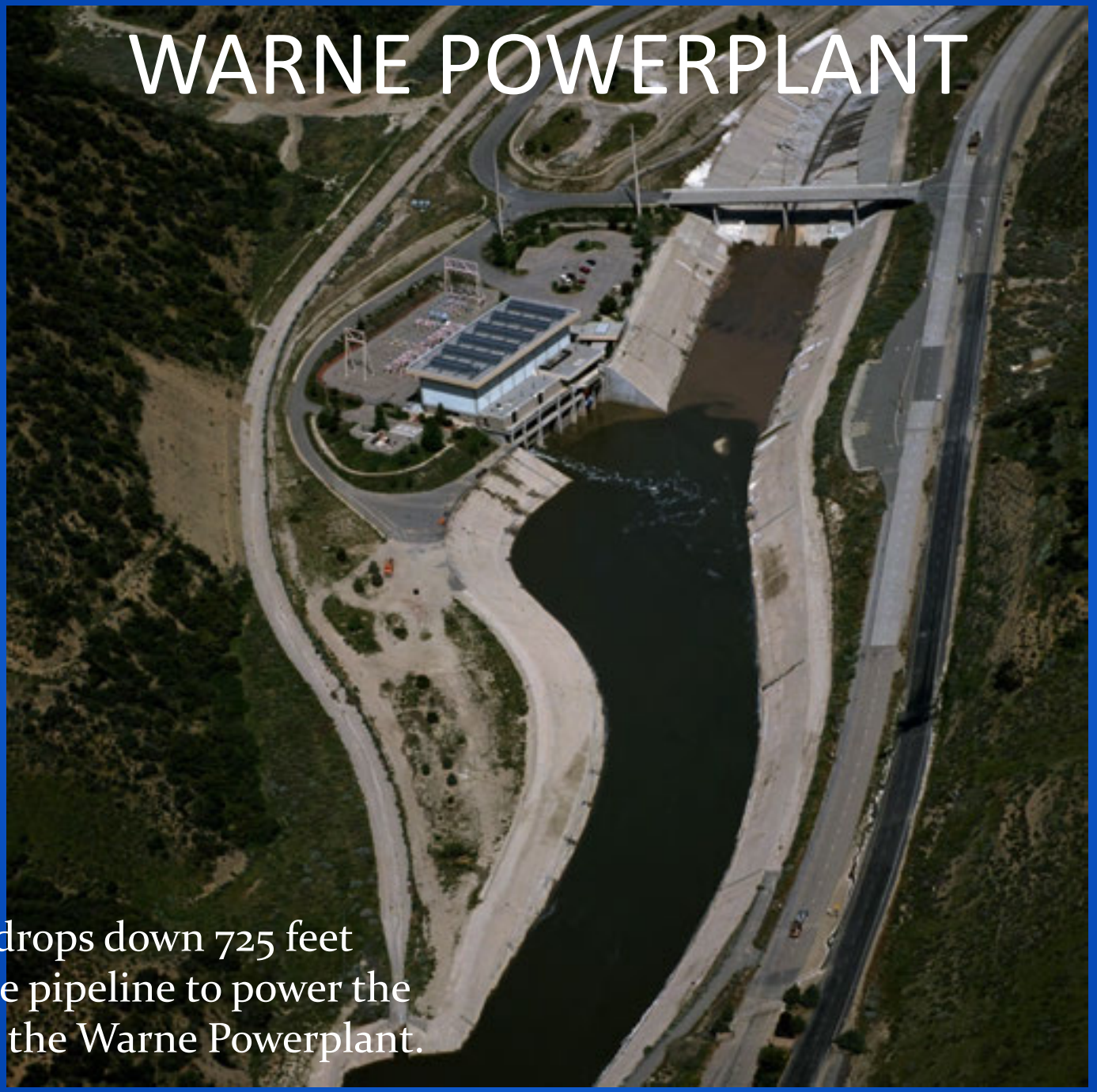
QUAIL LAKE

From the Oso Pumping Plant, the water flows to Quail Lake, a natural lake that was enlarged for SWP operations. Quail Lake provides storage for the Warne Powerplant located downstream.

Quail Lake also provides shoreline fishing, as well as fish and wildlife habitat for the Tejon Ranch area.

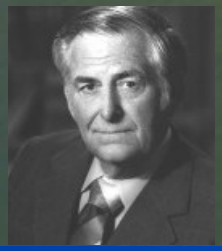

The water leaves Quail Lake and enters the
five-mile long Peace Valley Pipeline.

WARNE POWERPLANT



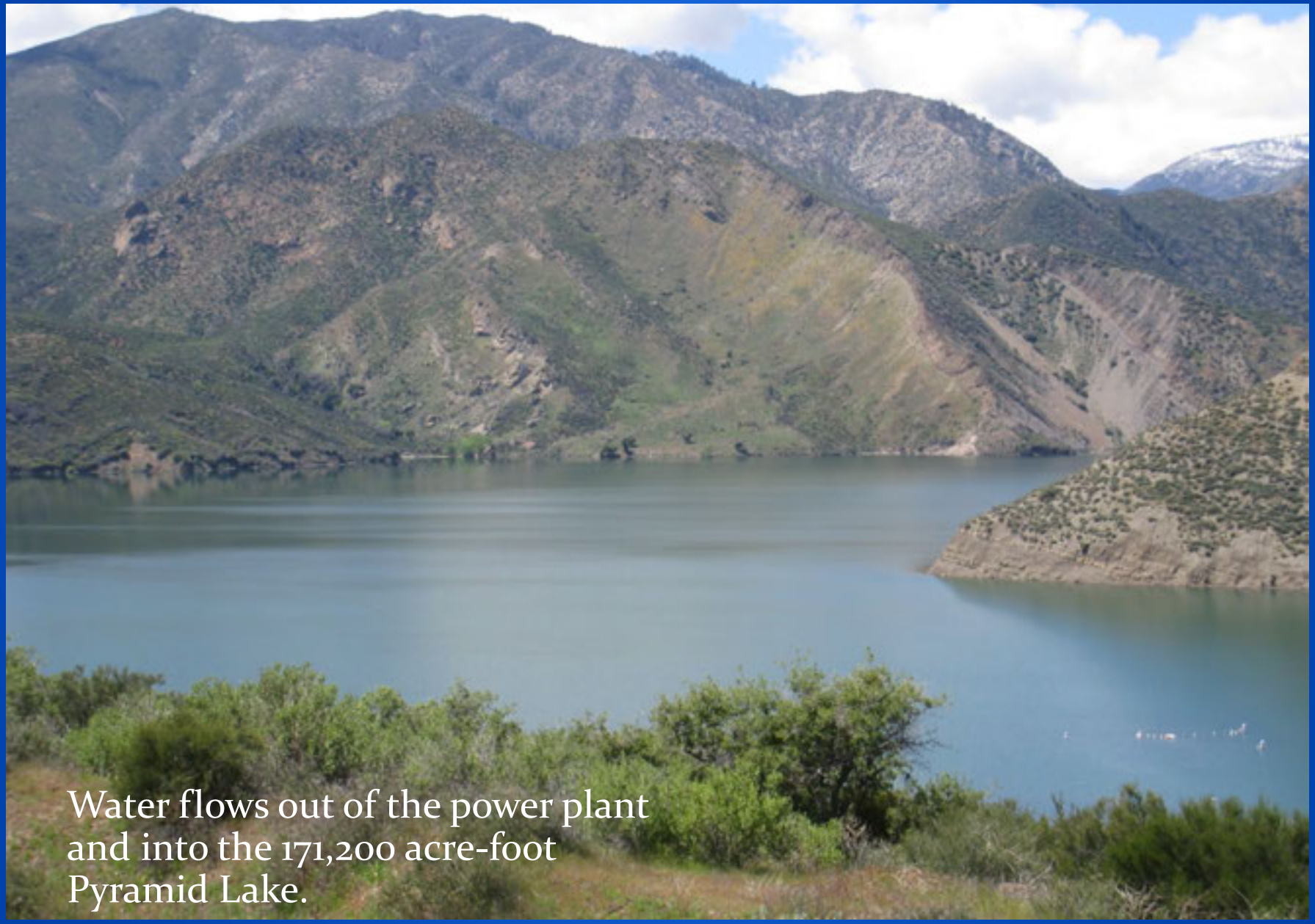
The water drops down 725 feet through the pipeline to power the turbines at the Warne Powerplant.

The Warne Powerplant generates enough power to recover 25% of the energy used by the Edmonston pumps.



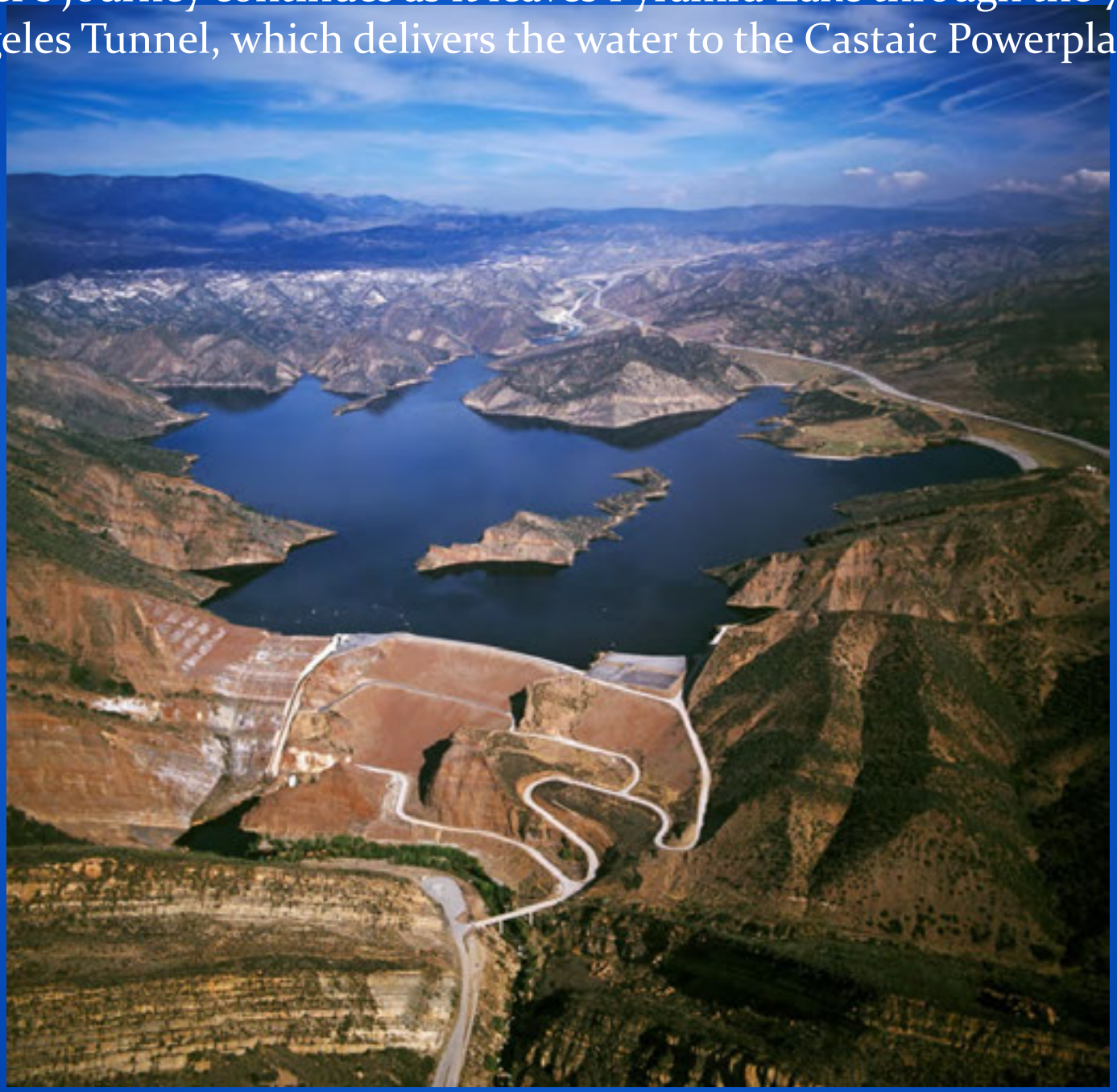
This facility is named after William E. Warne, the Director of the California Dept. of Water Resources from 1961 to 1966.

PYRAMID LAKE



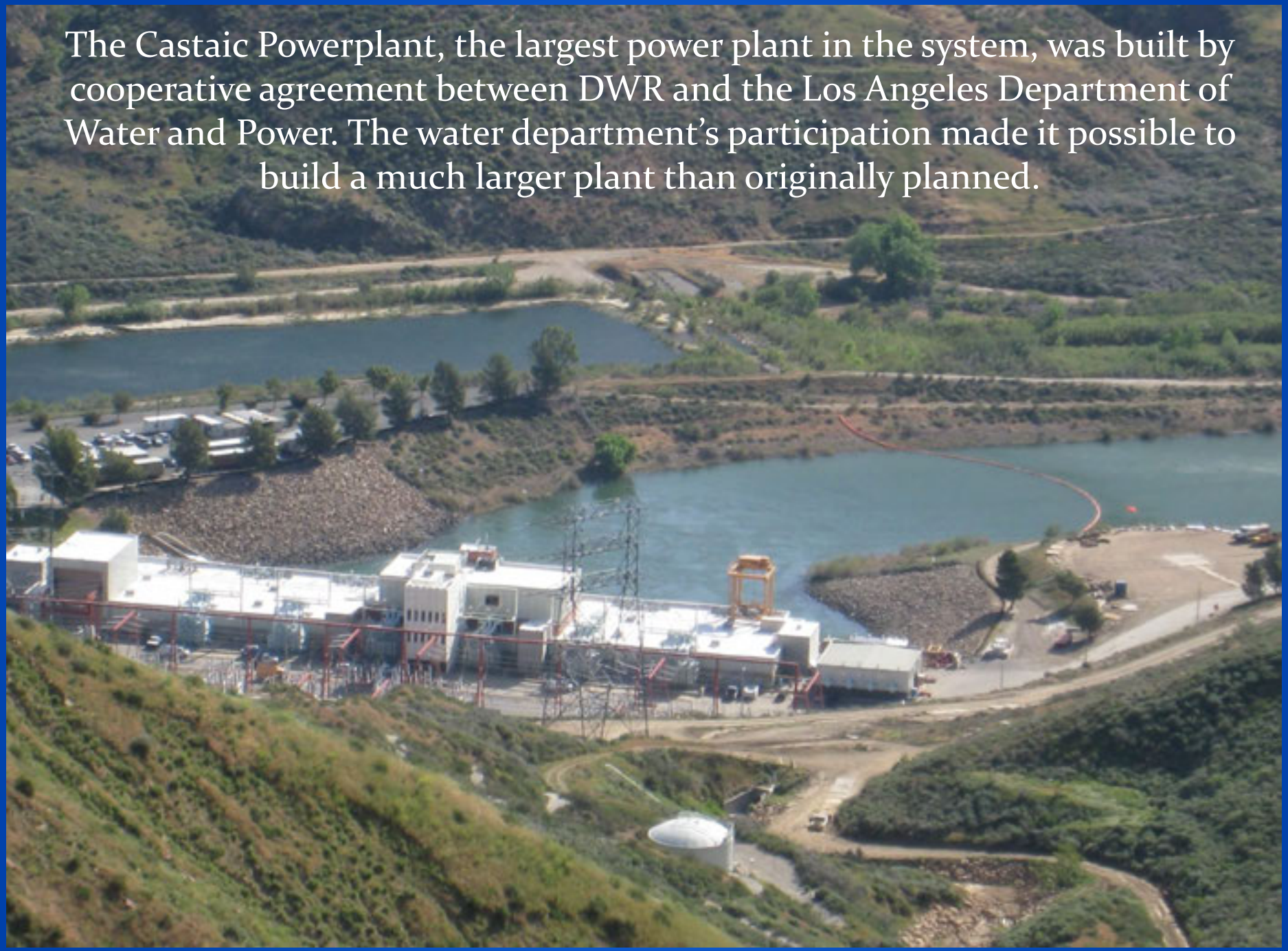
Water flows out of the power plant and into the 171,200 acre-foot Pyramid Lake.

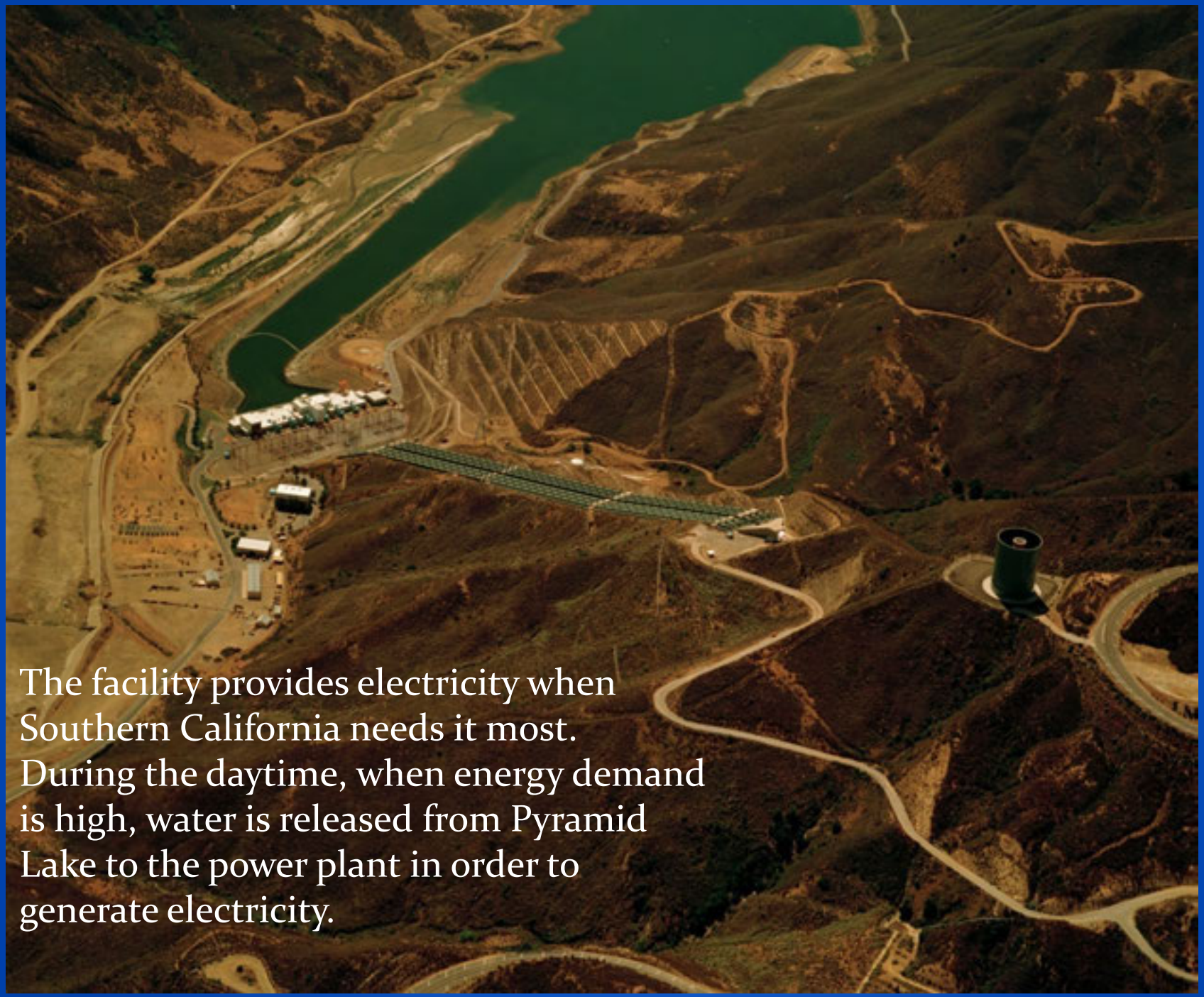
The water's journey continues as it leaves Pyramid Lake through the 7.2-mile Angeles Tunnel, which delivers the water to the Castaic Powerplant.



CASTAIC LAKE AND POWER PLANT

Castaic Lake, located in north Los Angeles County, is a 323,700 acre-foot storage reservoir. The Castaic Powerplant is located at the northwest corner of the lake.


The Castaic Powerplant, the largest power plant in the system, was built by cooperative agreement between DWR and the Los Angeles Department of Water and Power. The water department's participation made it possible to build a much larger plant than originally planned.


The facility provides electricity when Southern California needs it most. During the daytime, when energy demand is high, water is released from Pyramid Lake to the power plant in order to generate electricity.

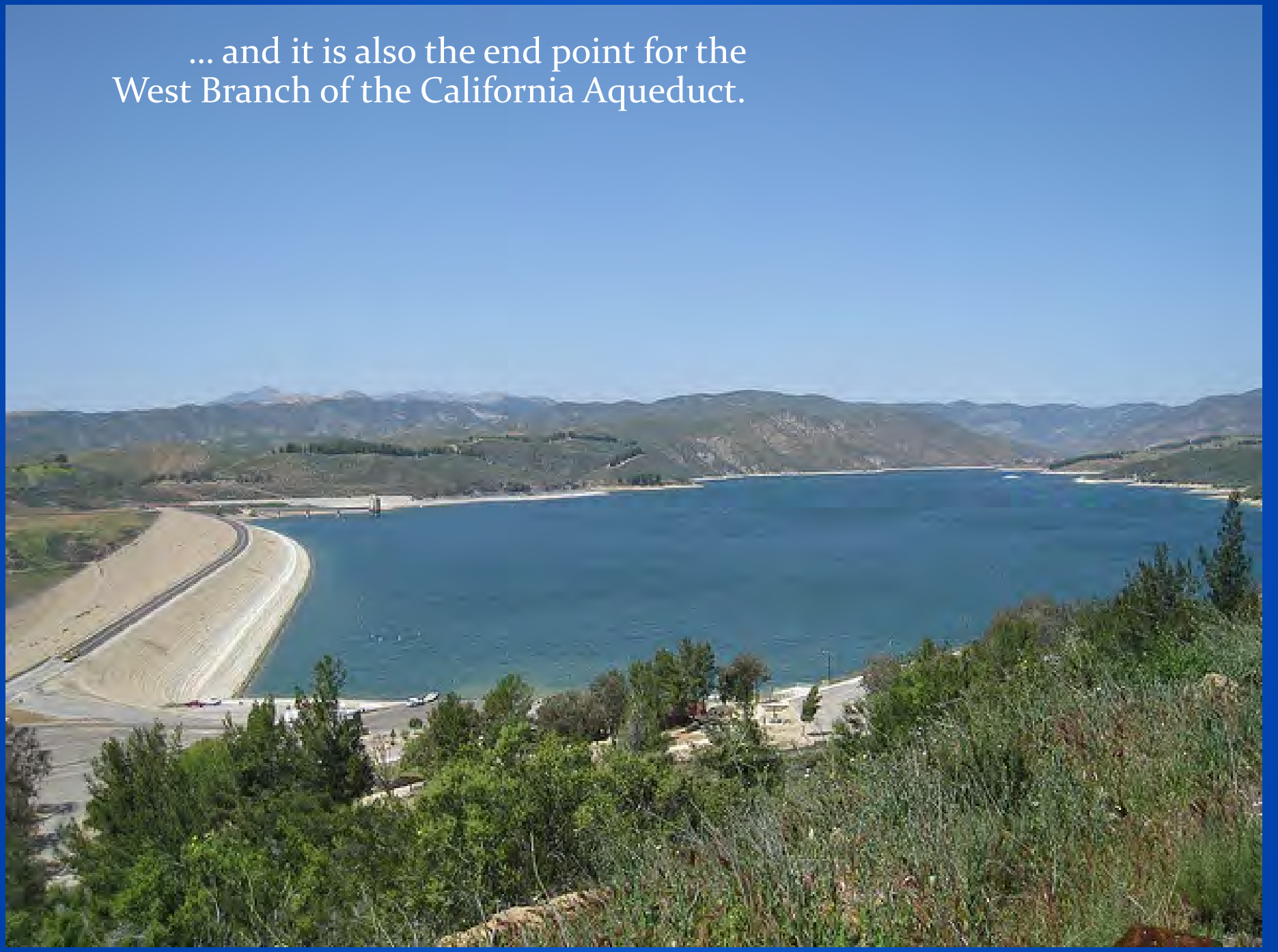
At night, when energy costs are lower, the water is pumped back up through the Angeles Tunnel to Pyramid Lake to be stored for the next day's operations.

This type of hydropower is called "pumped storage".
Learn more about pumped storage hydropower by clicking here.


To reduce fluctuations in the levels at Castaic Lake, the water is released into Elderberry Forebay, located at the northwest corner of Castaic Lake.

Castaic Lake is a popular recreation spot for Southern California …

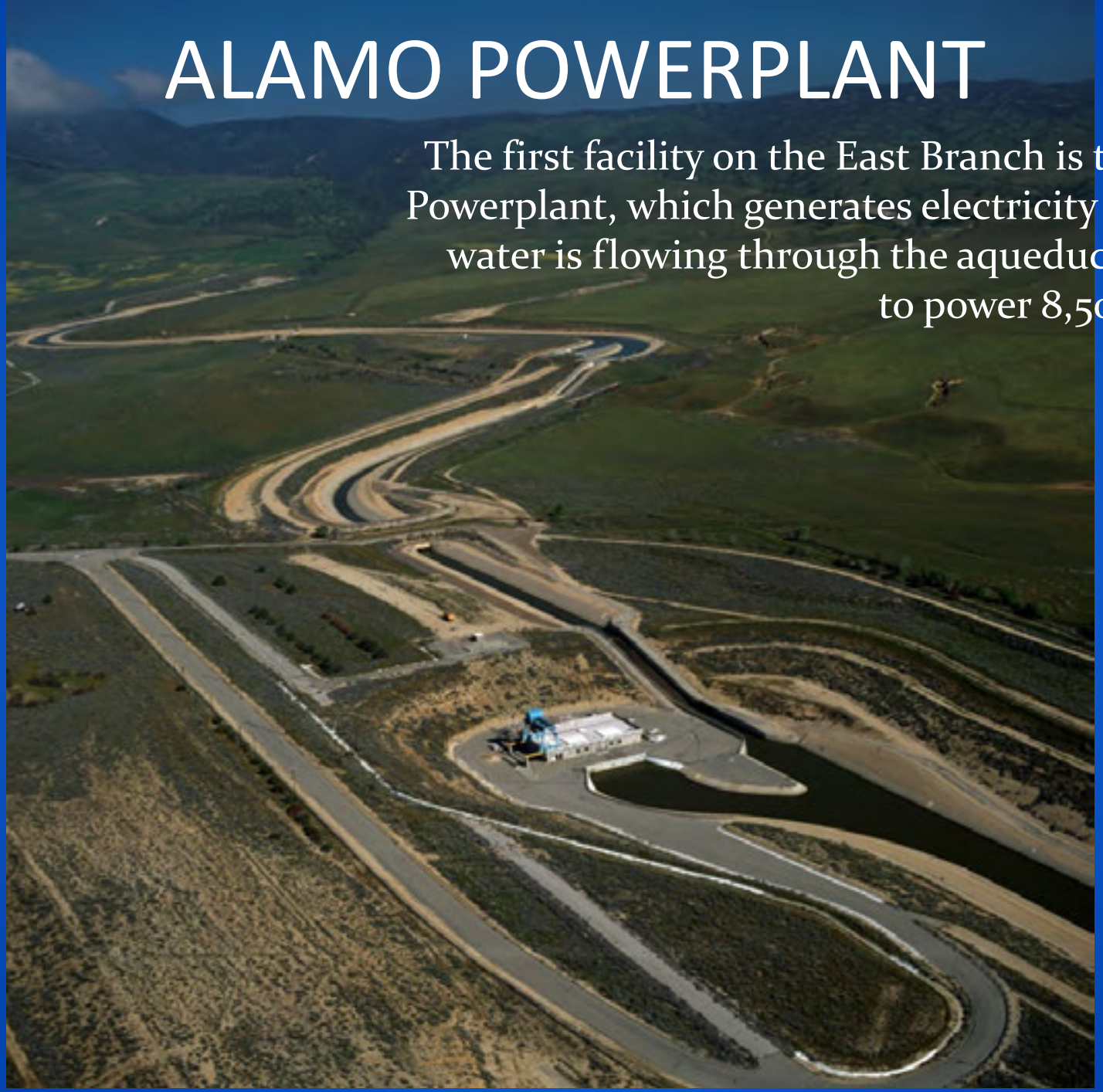
… and it is also the end point for the West Branch of the California Aqueduct.



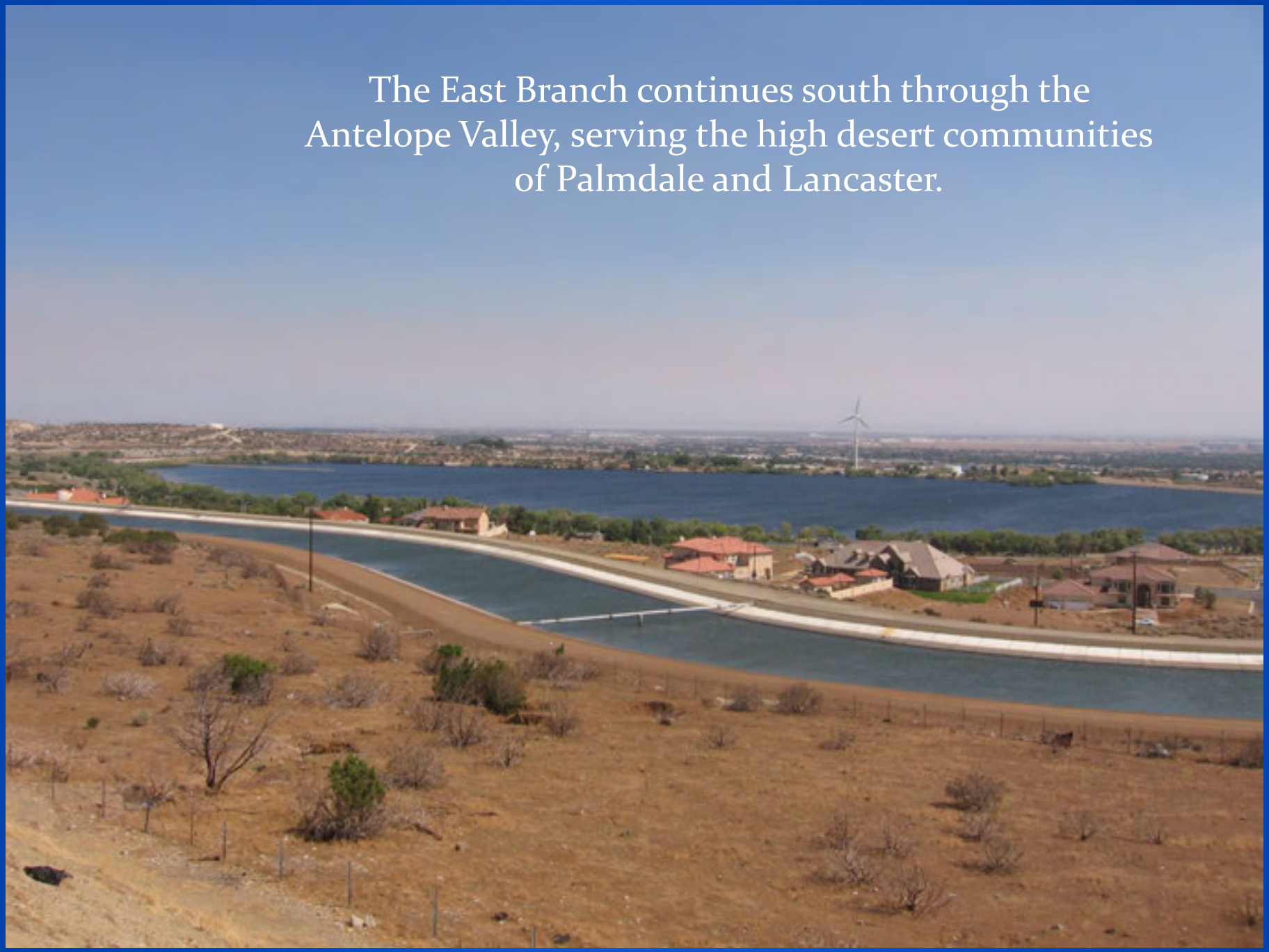
EAST BRANCH

Back at the split at the top of the Tehachapi Mountains, water begins its journey through the East Branch of the California Aqueduct to deliver water to Palmdale, the Inland Empire, and ultimately to San Diego.

ALAMO POWERPLANT



The first facility on the East Branch is the Alamo Powerplant, which generates electricity whenever water is flowing through the aqueduct, enough to power 8,500 homes.


The East Branch continues south through the
Antelope Valley, serving the high desert communities
of Palmdale and Lancaster.

Antelope Valley residents have found the aqueduct to be a favorite fishing hole. “Striper Bill” has caught stripers, catfish and carp in the aqueduct, and runs a website on where and how to best fish the California Aqueduct.

Click here to visit Striper Bill’s Aqueduct Fishing website.

PEARBLOSSOM PUMPING PLANT

The Pearblossom Pumping Plant is the last pumping plant on the aqueduct. It lifts the water 540 feet to an elevation of 3,479 feet above sea level, the highest point along the aqueduct.

The water continues its journey south through the hot desert interior, serving the communities of Victorville, Apple Valley and the Mojave Desert.

After the aqueduct crosses under Interstate 15, it goes underground, flowing through a buried siphon across the Las Flores Valley floor to the Mojave Siphon Power Plant.

MOJAVE SIPHON POWER PLANT

The Mojave Siphon Power Plant generates power when water flows into Silverwood Lake. It is the only power plant in the project that is installed in a siphon.

SILVERWOOD LAKE

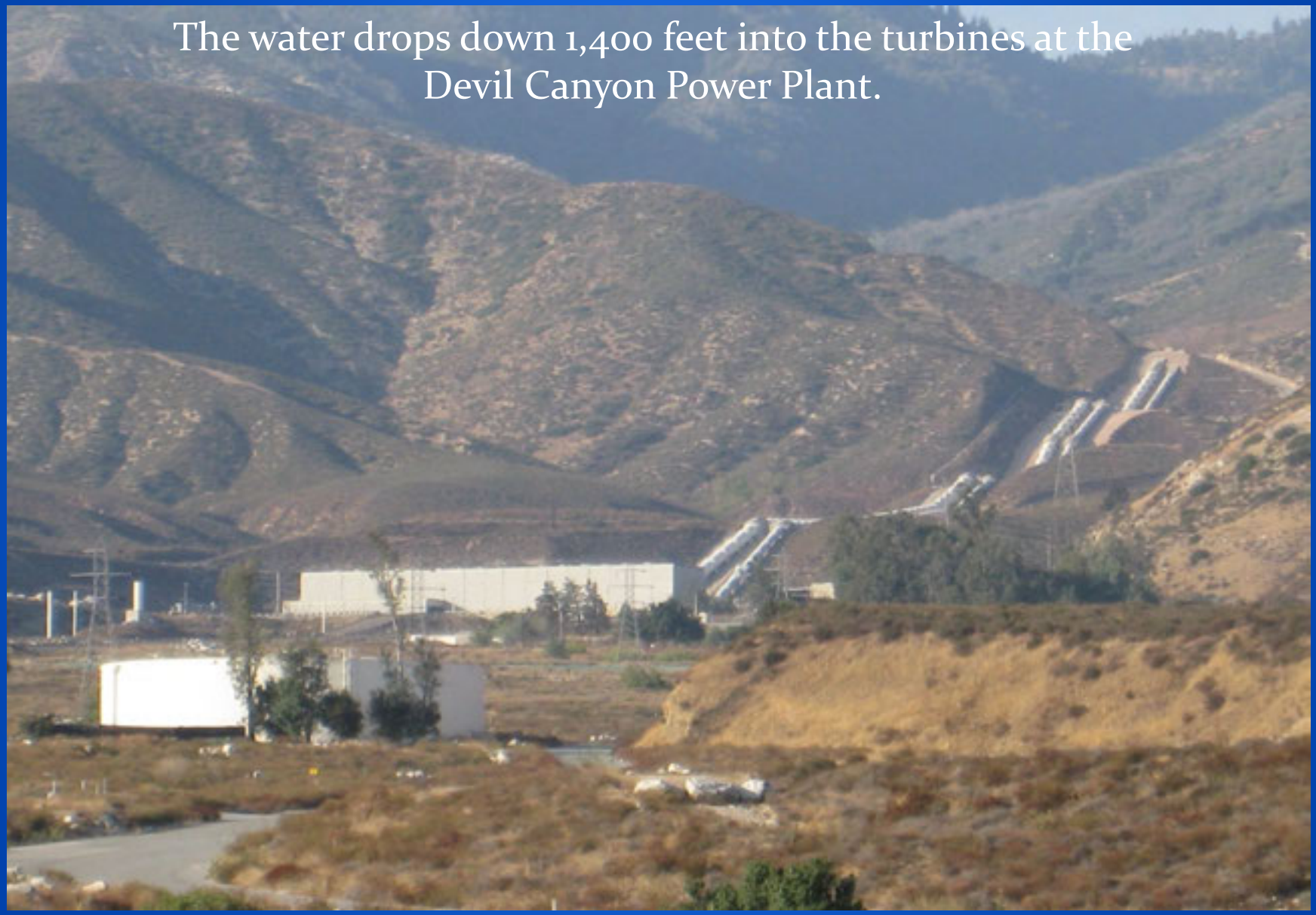
The reservoir is named for W. E. "Ted" Silverwood, a resident of Riverside County who worked tirelessly to promote the State Water Project.

Silverwood Lake provides regulatory and emergency storage for users along the East Branch.

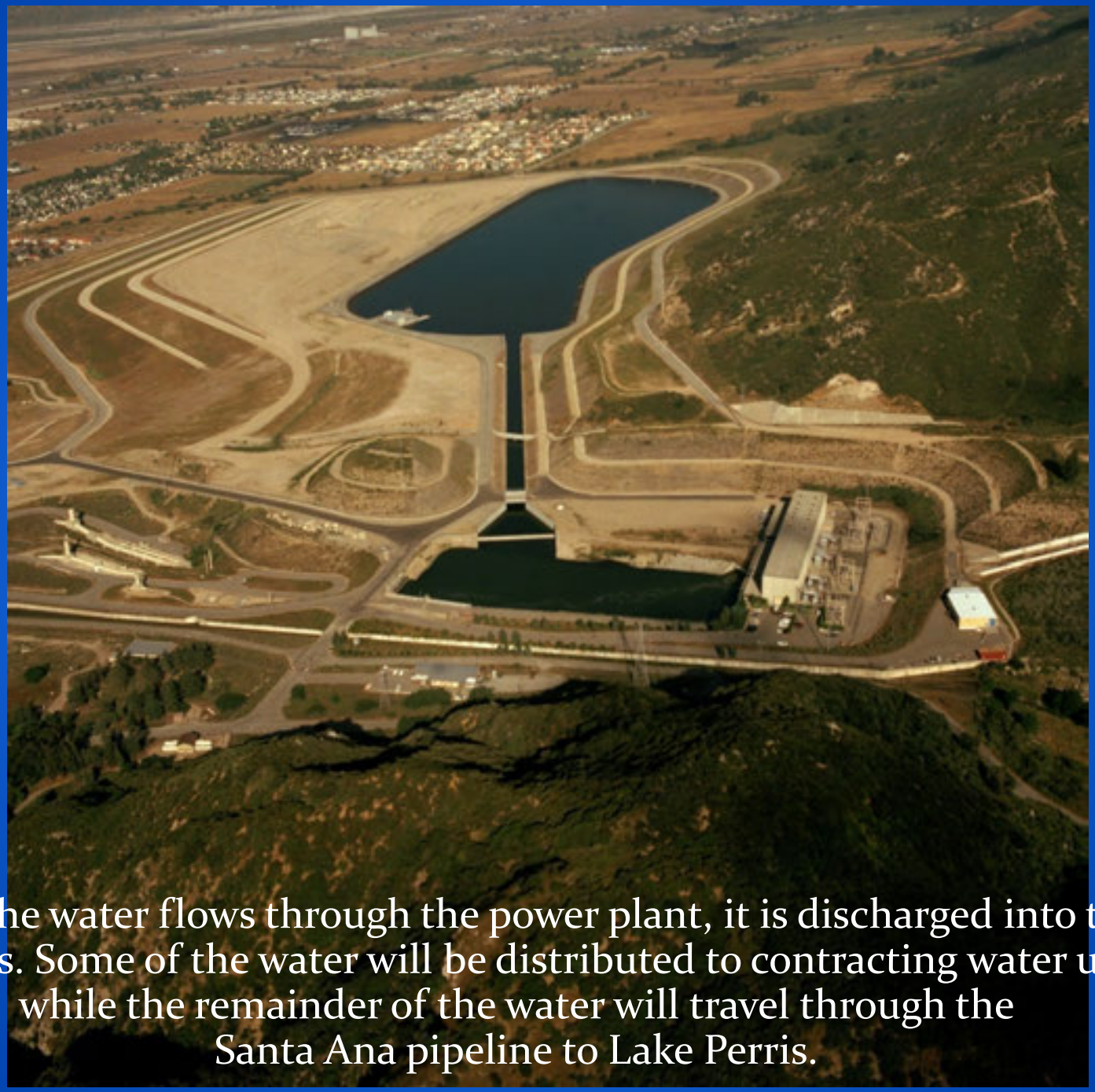
It is also a popular recreation spot.

The water leaves Silverwood Lake and enters the four-mile long San Bernardino Tunnel.

DEVIL CANYON POWER PLANT



The water drops down 1,400 feet into the turbines at the Devil Canyon Power Plant.

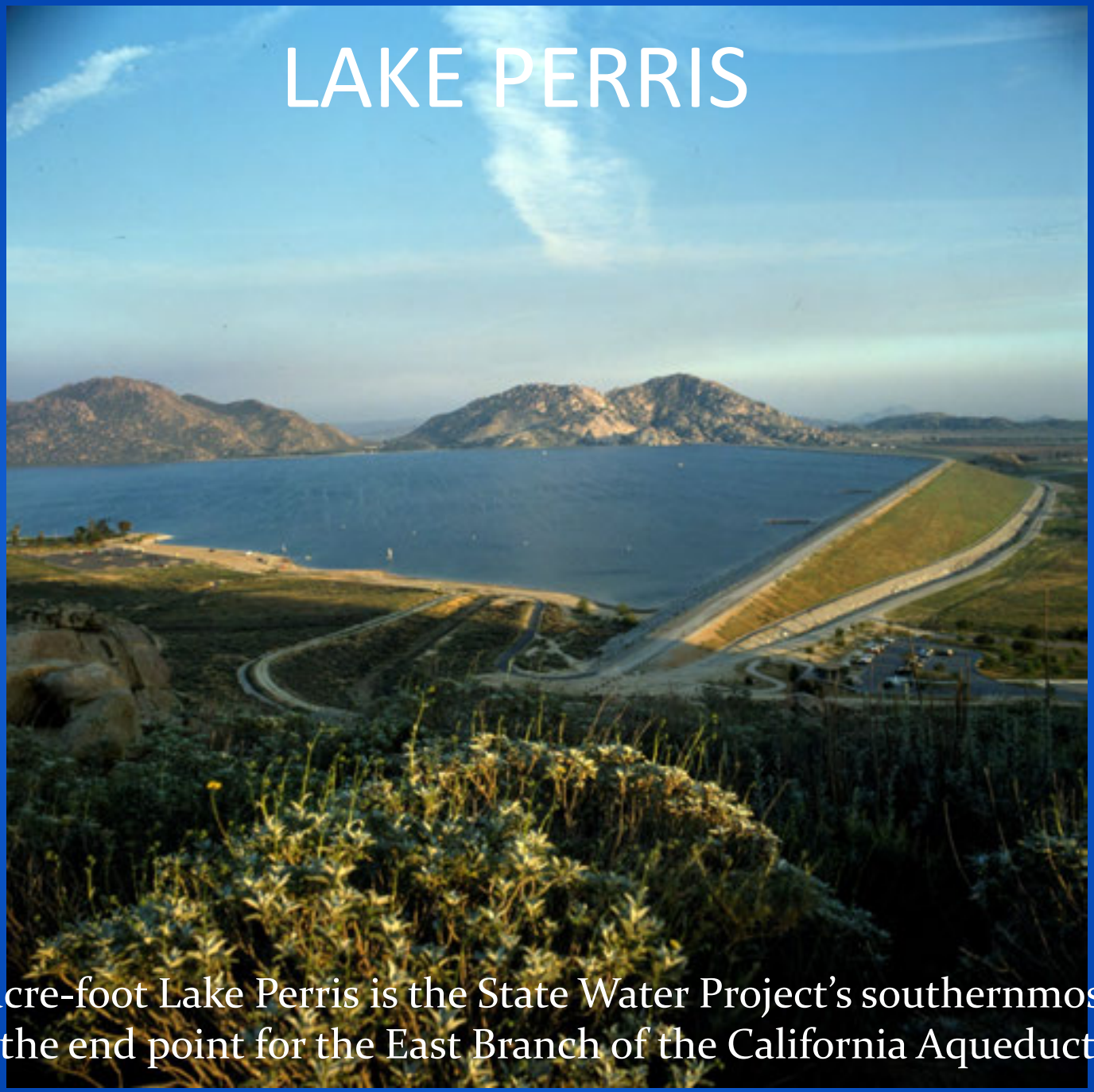


After the water flows through the power plant, it is discharged into two afterbays. Some of the water will be distributed to contracting water users, while the remainder of the water will travel through the Santa Ana pipeline to Lake Perris.

EAST BRANCH EXTENSION

The first phase of the East Branch Extension was completed in 2003, delivering water from the afterbay at Devil Canyon to desert communities in San Bernardino and Riverside counties. Phase II is scheduled for completion in 2015.

LAKE PERRIS



The 131,450 acre-foot Lake Perris is the State Water Project's southernmost facility. It is the end point for the East Branch of the California Aqueduct.

Lake Perris is also one of the most heavily used recreation areas in the State Park System.

Water from Lake Perris connects to Metropolitan Water District's distribution system.

METROPOLITAN WATER DISTRICT

The Metropolitan Water District of Southern California is the State Water Project's largest contractor, holding contracts for nearly half of the project's water.

Metropolitan's facilities receive water from both the East and West Branch of the aqueduct for distribution to its 26 member agencies.

Metropolitan supplies water to approximately 19 million people living within its nearly 5,200 square-mile Southern California service area.

Future plans for the State Water Project include the Delta-Mendota Canal/California Aqueduct Intertie project, expected to be completed in the fall of 2012. The project will connect the California Aqueduct with the Central Valley Project's Delta-Mendota Canal through a pumping station and underground pipeline. The connection will increase the operational flexibility of both the state and federal water projects.

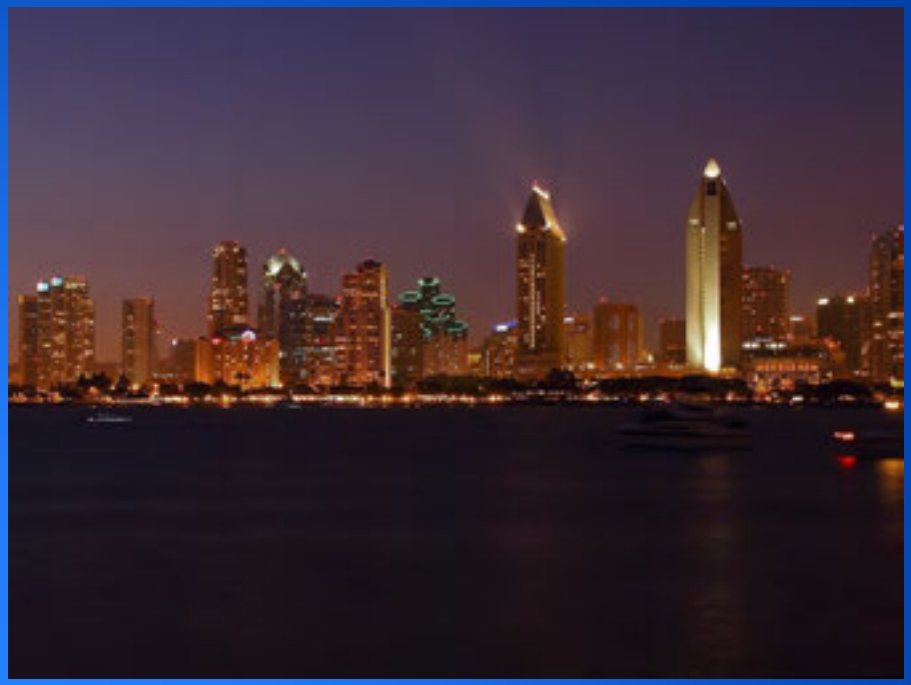
The State Water Project has received numerous awards, including:

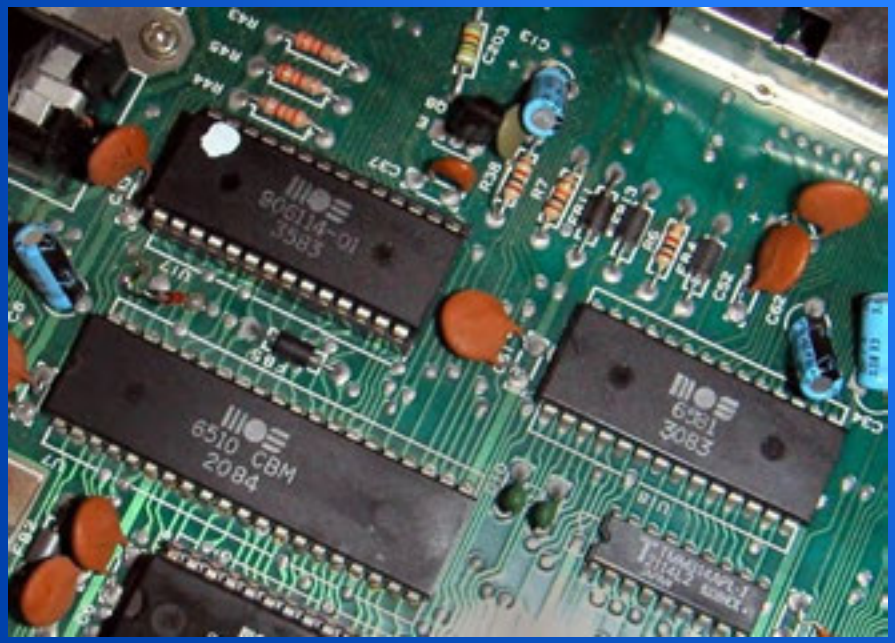
- 1969 – Oroville Dam & Hyatt Power Plant named as "Outstanding Civil Engineering Achievement of 1969"
- 1971 – National Society of Professional Engineers named the SWP as one of the nation's top 10 engineering achievements for the year
- 1972 – American Society of Civil Engineers awards the SWP "The ASCE Outstanding Civil Engineering Award for 1972"

In 2001, the State Water Project was named as a Civil Engineering Monument of the Millennium by the American Society of Civil Engineers (ASCE).

"*It is fitting that the largest State-built water development project in the United States would be chosen by ASCE for this special honor. The State Water Project is an outstanding example of engineering ingenuity and dedication to ensuring the public's well-being.*" - Robert W. Bein, ASCE President

The State Water Project has helped California to grow into the economic powerhouse it is today …





… by making additional water supplies available for growth in the Silicon Valley and Southern California …


… as well as providing water for Sacramento Valley and Central Valley farmland.

It provides important flood control for Northern California, and has been credited with minimizing flood damage in the Feather River watershed.

More than four million people visit recreational areas provided by State Water Project facilities every year.

50 years after California voters approved the development of the of State Water Project, water issues remain controversial in California.

That was as true in Gov. Pat Brown's time as it is today, but he still considered the building of the State Water Project one of his proudest achievements:

"It is better to have water with problems than problems without water," he said.

In December of 1982, the artificial river Gov. Pat Brown worked so hard to see built was named the "Gov. Edmund G. Pat Brown California Aqueduct" in his honor.

Lake Oroville Visitors Center

You can learn more about the State Water Project at the visitors' centers located at Lake Oroville, San Luis Reservoir, and Pyramid Lake.

The centers feature videos and exhibits about the State Water Project. Admission is free.

Romero Visitors Center at San Luis Reservoir, Los Banos

Vista del Lago Visitors Center at Pyramid Lake

FOR MORE INFORMATION ON THE STATE WATER PROJECT:

Visit the Department of Water Resources online at
http://www.water.ca.gov/

For more information on the State Water Project's history and facilities:
http://www.water.ca.gov/swp/

For current reservoir and snowpack conditions:
http://www.water.ca.gov/drought/conditions/

This has been an exclusive Aquafornia presentation

Visit Aquafornia online and get all the latest news and information on California water:

http://aquafornia.com

Visit the Water Education Foundation website for books, posters, tours and more resources on California water:

http://www.watereducation.org

To get the comprehensive *Layperson's Guide to the State Water Project*, produced by the Water Education Foundation:

http://www.watereducation.org/store/itemdetail.asp?id=285

Thank you for looking!