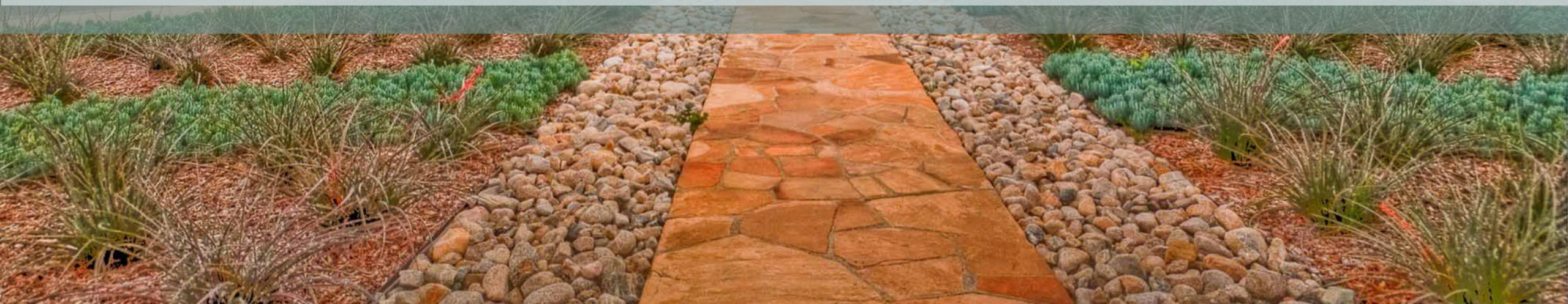


Presented By:



# CALIFORNA WATER SYSTEMS INSPECTION TRIPS PROGRAM







# PLANNING DEVELOPMENT STEWARDSHIP

Each year, local, county, and state elected officials, community and business Leaders, educators, and industry professionals are invited to participate on inspection trips, or tours, to key water facilities throughout California.

These trips are engineered to educate members of our Southern California communities about the planning and procurement of our water supply, and the significant issues involved in the delivery and management of this vital resource.



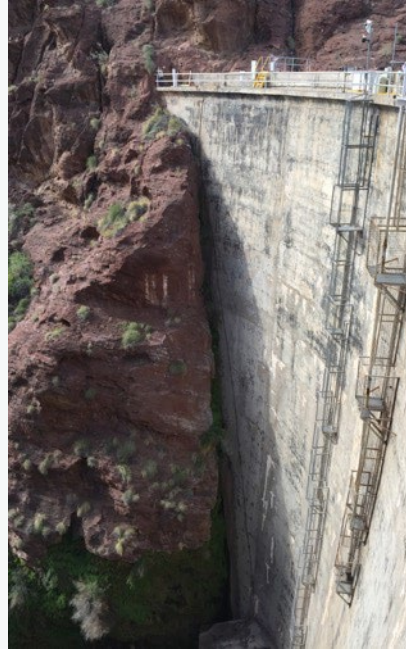
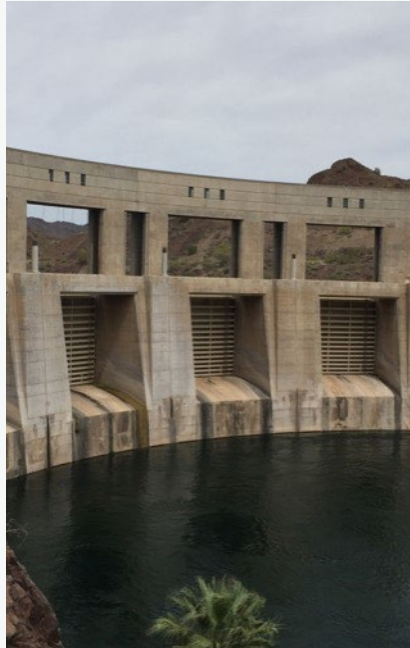
# PROCUREMENT DELIVERY MANAGEMENT

## WHAT IS IT?

Inspection trips offer our guests a unique opportunity to experience first-hand the complex system that makes the procurement, management, and delivery of high-quality drinking water to southern California possible.

A variety of knowledgeable experts in the field of water address issues such as water supply, management, quality, environmental restoration, agricultural challenges, political agendas, and water conservation efforts.

# CONSTRUCTION CHALLENGES INFRASTRUCTURE



## WHAT TO EXPECT

Inspection trips provide a unique history lesson about California's extensive water supply system development and the challenges that early visionaries faced while designing and constructing the infrastructure that today supplies water to over 37 million people.

During the inspection trip, guests will tour key water facilities, including water treatment plants, pumping stations, reservoirs, aqueducts, and water reclamation plants.





## WHAT ARE THE GOALS?

Our goals are to educate Orange County stakeholders about the value of water, and to encourage critical dialogue about the future of our water resources.

Guests will return from an inspection trip with a solid foundation of water knowledge, and will be able to engage others in their communities and social networks in an important discussion about their own local resources.

**EDUCATE**  
**DIALOGUE**  
**VALUE**

# COLORADO RIVER AQUEDUCT (CRA)

*TRIP LENGTH: 2 TO 3 DAYS*

**ENGINEERING**  
**CONVEYANCE**  
**JOBS**



An American engineering marvel and essential water delivery system for all of Southern California, this 242-mile conveyance system delivers water from Lake Havasu on the California/Arizona border to Lake Mathews in the foothills of the Santa Ana Mountains in Riverside County.

The CRA was the largest public works project in southern California during the Great Depression, providing jobs for 30,000 workers before being completed in 1939. The American Society of Civil Engineers recognizes it as one of the “seven wonders” of the engineering world.



# COLORADO RIVER AQUEDUCT (CRA)

*TRIP LENGTH: 2 TO 3 DAYS*

STORAGE  
PUMPING  
DAMS



## LAKE HAVASU

Lake Havasu was formed by Parker Dam. It is 45 miles long, covers 39 square miles, and has usable storage of 60,000 acre-feet. It functions as a forebay and desilting basin for Metropolitan's aqueduct intake.



## WHITSETT PUMPING PLANT

Whitsett Pumping Plant is located on the California shores of Lake Havasu and is the beginning of the Colorado River Aqueduct. Whitsett is the first of five pumping plants on this system, lifting water 291 feet to Gene Wash Reservoir.



## PARKER DAM

Parker Dam is one of the world's deepest dams and serves as the primary water release to the Colorado River. The plant began generating power in 1942, and about half of its output goes to Metropolitan for pumping aqueduct water.





# COLORADO RIVER AQUEDUCT (CRA)

*TRIP LENGTH: 2 TO 3 DAYS*

**OPERATIONS**  
**FLOW CONTROL**  
**LIFT**



## GENE PUMPING PLANT

Gene Pumping Plant lifts water 303 feet, which flows into the Copper Basin via gravity. Gene Camp is the field headquarters and desert base operations for about 80 Metropolitan employees, many of whom live with their families in Gene Village housing.

*Lift: 303 feet / Elevation: from 734 feet to 1,037 feet*



## COPPER BASIN DAM & RESERVOIR

Copper Basin is the primary flow control point on the CRA. The reservoir's capacity is 24,200 acre-feet. In addition to regulating the water flow into the aqueduct, this reservoir can also remove any silt that may result from local flood flows into Lake Havasu.



## IRON MOUNTAIN PUMPING PLANT

Iron Mountain Pumping Plant is located 69 miles west of Whitsett Intake. No natural storage reservoir was available, so a 108 acre-foot capacity reservoir was constructed here. Due to the lower lift, the pumps only require 4,300 horsepower motors.

*Lift: 144 feet / Elevation: from 903 feet to 1,047 feet*





# COLORADO RIVER AQUEDUCT (CRA)

*TRIP LENGTH: 2 TO 3 DAYS*

## RESERVOIRS GRAVITY FLOW HISTORY



### EAGLE MOUNTAIN PUMPING PLANT

Eagle Mountain Pumping Plant is 110 miles west of Whitsett Intake. A 118-acre-foot-capacity reservoir was constructed here.

*Lift: 438 feet / Elevation: from 966 feet to 1,404 feet*



### JULIAN HINDS PUMPING PLANT

Hinds Pumping Plant is the fifth pumping plant on the CRA and the highest lift on the system. From this point, no further power is required to move the water into the Metropolitan's service area, as the water now moves solely by gravity.

*Lift: 438 feet / Elevation: from 966 feet to 1,404 feet*



### GENERAL GEORGE S. PATTON MUSEUM & THE BIG MAP

This memorial museum is dedicated to General Patton's life and the history of armed warfare. Metropolitan's five-ton Big Map, developed in the 1920s, depicts the 50,000 sq. miles surrounding the Colorado River Aqueduct's route. It was carried to Washington, D.C., during congressional hearings to garner support for the project.





# COLORADO RIVER AQUEDUCT (CRA)

*TRIP LENGTH: 2 TO 3 DAYS*

RESERVES  
MITIGATION  
POWER



## DIAMOND VALLEY LAKE (DVL)

DVL is Southern California's largest drinking water reservoir. Water from the State Water Project is delivered to Lake Silverwood, where it travels by gravity 45 miles via the Inland Feeder to DVL. DVL was developed to secure six months of reliable water supply for Southern California in the event of an emergency.



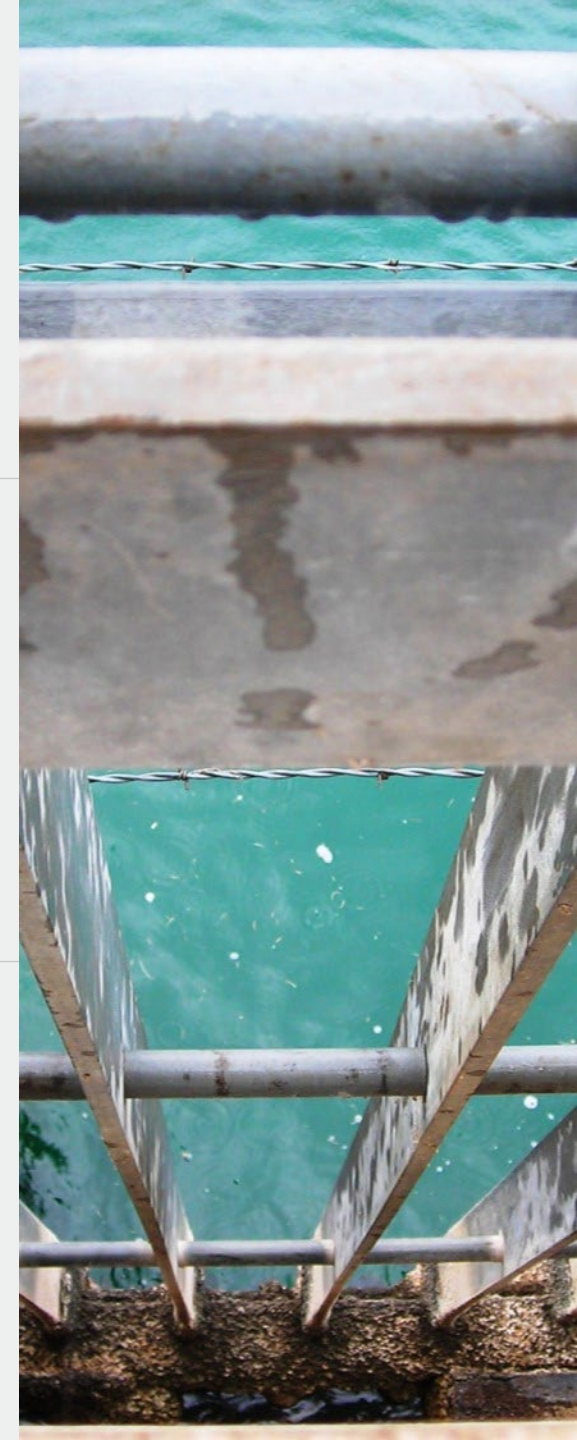
## THE WATER + LIFE CAMPUS

The first LEED Platinum campus in the world is located directly below the East Dam at Diamond Valley Lake (DVL). The 15-acre campus is the home to two museums, The Center for Water Education and the Western Center for Archeology and Paleontology, where mastodon, mammoth, camel, sloth, and nearly one million other specimens were discovered while excavating at DVL.



## HIRAM W. WADSWORTH PUMPING PLANT

Metropolitan Water District of Southern California's only dual pumping and hydro-generating facility that pumps water and generates power. Water from the San Diego Canal is transferred to the Diamond Valley Lake forebay, which serves as a regulating pond for the pumping plant.





# COLORADO RIVER AQUEDUCT (CRA)

*TRIP LENGTH: 2 TO 3 DAYS*

FILTRATION  
TERMINUS  
WATER SUPPLY



## ROBERT A. SKINNER TREATMENT PLANT

Skinner is Metropolitan's second largest treatment plant, with a capacity of 630 million gallons a day—enough to fill the Rose Bowl every three hours.



## LAKE MATHEWS

Lake Mathews is a large reservoir built in the late 1930s and is the western terminus for the Colorado River Aqueduct. With one big dam and two dikes (smaller dams), the lake holds up to 182,000 acre-feet of water. The reservoir is fenced and closed to public access.



## ROBERT B. DIEMER TREATMENT PLANT

The Diemer Treatment Plant is located in Yorba Linda and can deliver up to 520 million gallons of treated water per day. It is the only treatment plant in the Metropolitan system with an on-site hydroelectric power generator. The Diemer Plant provides Orange County with nearly half of its total water supply.





# COLORADO RIVER AQUEDUCT (CRA)

*TRIP LENGTH: 2 TO 3 DAYS*

WATER QUALITY  
MAINTENANCE  
FABRICATION



## F.E. WEYMOUTH TREATMENT PLANT

Located in the City of La Verne, this plant is on a 150-acre site that also contains Metropolitan's Water Quality Laboratory and maintenance shops (machine shop, fabrication shop, coatings shop, etc.). One of the largest filtration plants in the U.S., Weymouth delivers up to 520 million gallons of water per day.



# STATE WATER PROJECT (SWP)

*TRIP LENGTH: 2 TO 3 DAYS*

URBAN  
INDUSTRY  
FARMLAND



The SWP is a massive water delivery system that provides water to more than 25 million Californians and 700,000 acres of farmland in the San Francisco Bay, Central Valley, and Southern California.

The Sacramento-San Joaquin Bay Delta, where the Sacramento and San Joaquin Rivers meet, is the focal point

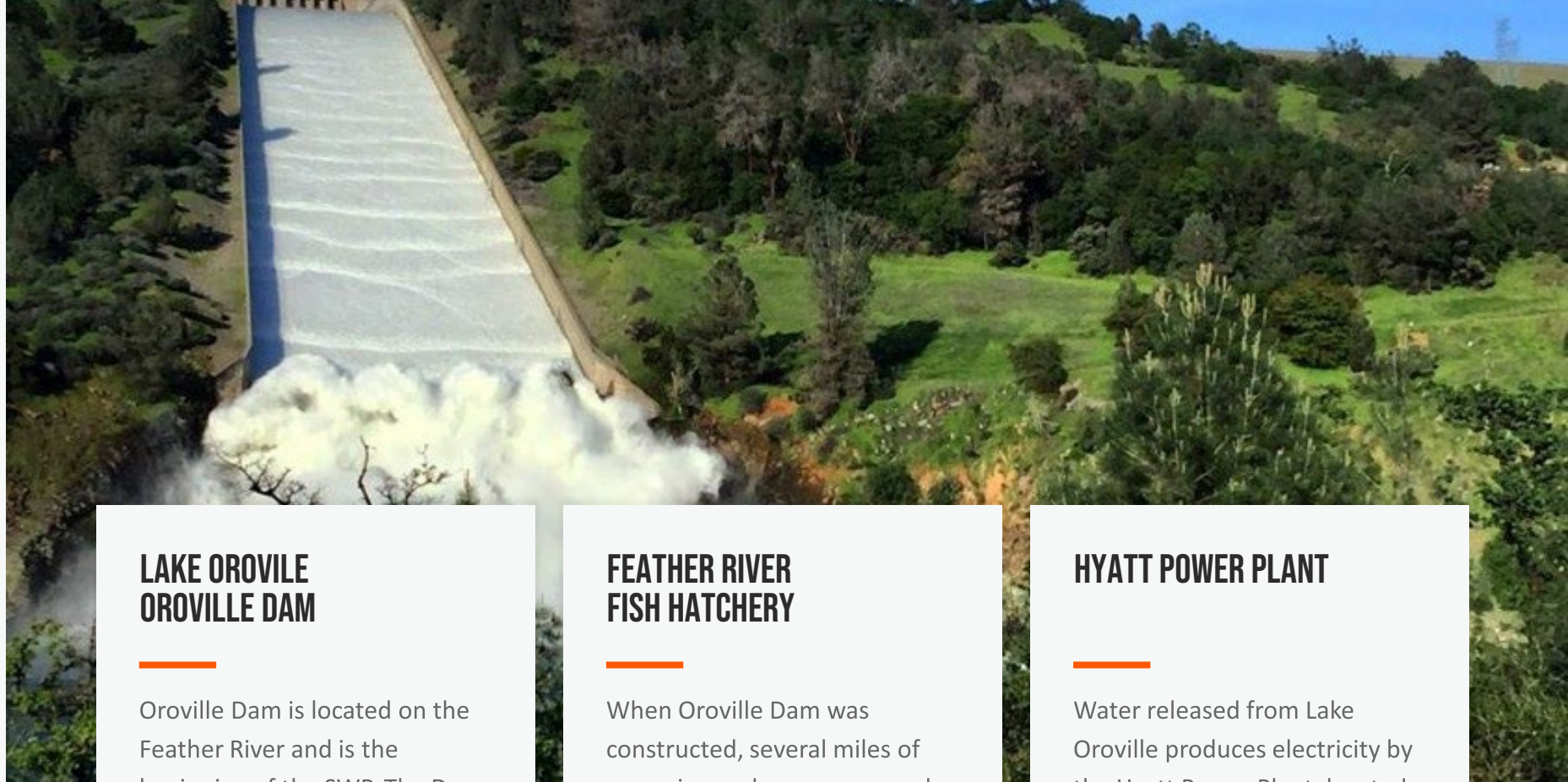
for water distribution throughout the state and serves as the hub through which water passes from north to south.

The SWP fuels economic growth and provides estimated annual benefits of 400 billion dollars to California's economy.

# STATE WATER PROJECT (SWP)

*TRIP LENGTH: 2 TO 3 DAYS*

**FLOOD CONTROL**  
**RESTORATION**  
**ELECTRICITY**



## LAKE OROVILLE OROVILLE DAM

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Oroville Dam is located on the Feather River and is the beginning of the SWP. The Dam creates Lake Oroville, generates electricity, and provides drinking and irrigation water for Central and Southern California. The lake can store more than 3.5 million acre-feet of water, stores winter and spring runoff, and provides flood control.

## FEATHER RIVER FISH HATCHERY

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When Oroville Dam was constructed, several miles of spawning and nursery grounds were no longer available for fish returning to deposit their eggs. To replace lost spawning areas, the Feather River Fish Hatchery was built. Young fish are raised at the Hatchery until they are large enough to be released back into the Sacramento River or Bay-Delta.

## HYATT POWER PLANT

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Water released from Lake Oroville produces electricity by the Hyatt Power Plant, located in the bedrock beneath Oroville Dam. Water can enter the Feather River or be diverted by the Thermalito Diversion Dam. Water diverted is used to generate power by the one-unit Thermalito Diversion Dam Powerplant.



# STATE WATER PROJECT (SWP)

*TRIP LENGTH: 2 TO 3 DAYS*

GOVERNMENT  
LEGISLATURE  
LAW PROCESS



## CALIFORNIA STATE CAPITOL SACRAMENTO

The State Capitol houses the past, present, and future of California's government and legislature. The building serves as both a museum and the state's working seat of government. Visitors can experience California's rich history and witness the making of history through the modern law-making process.



# STATE WATER PROJECT (SWP)

*TRIP LENGTH: 2 TO 3 DAYS*

## ECOSYSTEM LEVEES RESTRICTIONS



## SACRAMENTO SAN-JOAQUIN BAY DELTA

California's biggest water challenge lies where the rivers of the Sierra Nevada merge into the vast Sacramento-San Joaquin Delta, the "hub" of the state's water system. Supplies that travel through the Delta provide drinking water for more than two-thirds of the state's population. Over the years, the Delta's ecosystem has deteriorated,

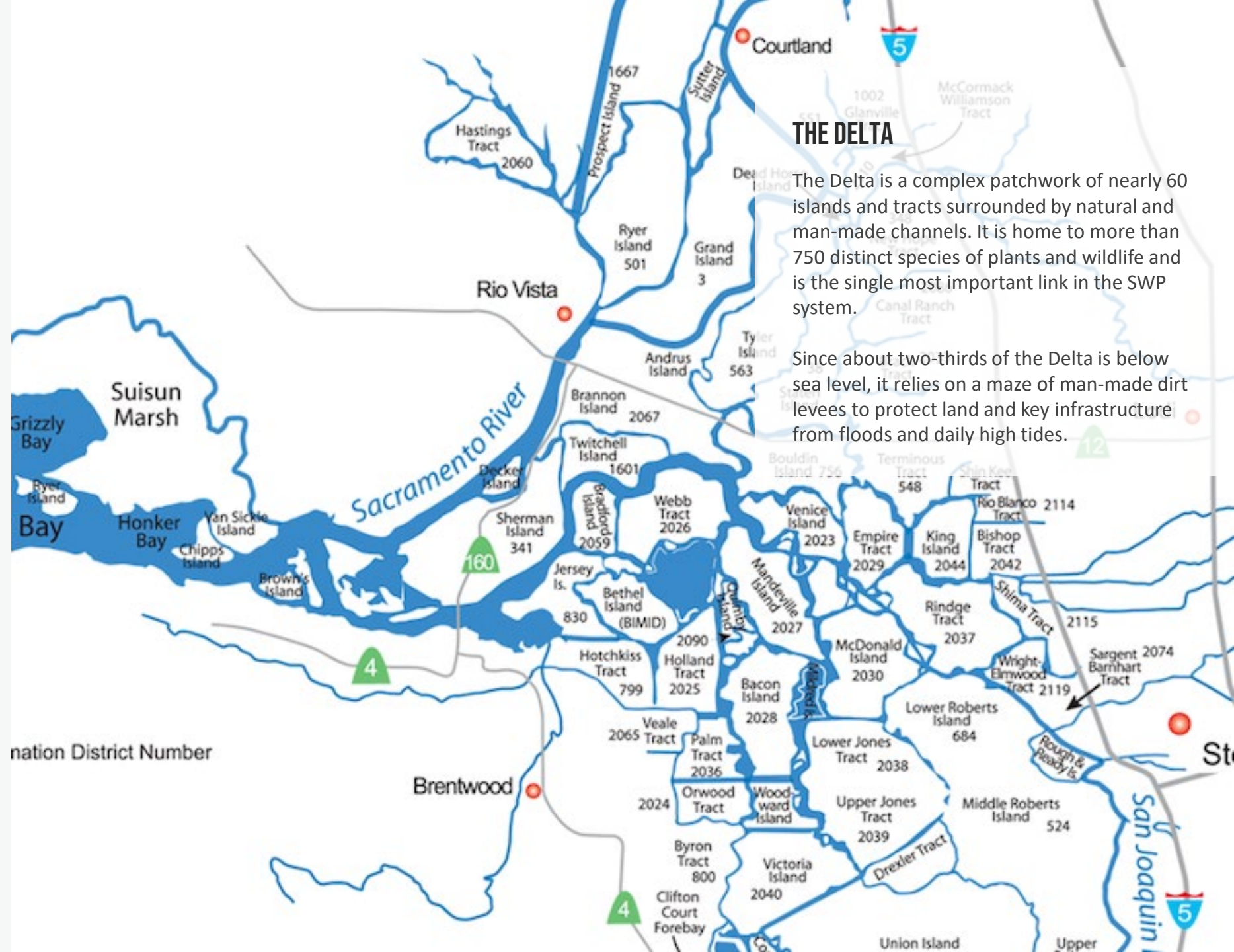
and its 1,100-mile levee system of 150-year-old levees has become increasingly vulnerable to failure caused by earthquakes, floods, and other forces of nature. This deterioration has led to historic restrictions in water supply deliveries.



# STATE WATER PROJECT (SWP)

**TRIP LENGTH: 2 TO 3 DAYS**

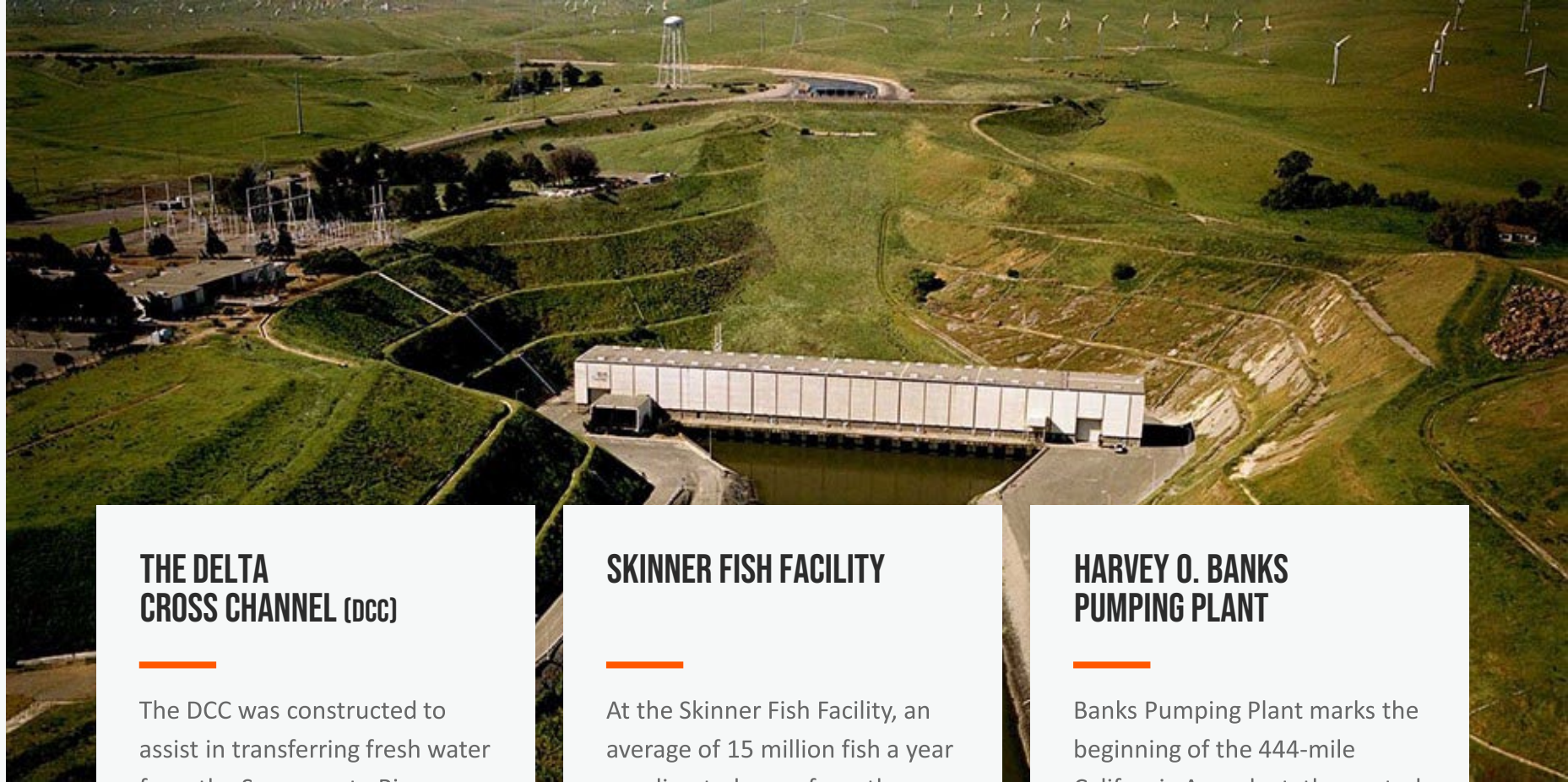
# ISLANDS TRACTS LEVEES



# STATE WATER PROJECT (SWP)

*TRIP LENGTH: 2 TO 3 DAYS*

**TRANSFERS**  
**DIVERSION**  
**DISTRIBUTION**



## THE DELTA CROSS CHANNEL (DCC)

The DCC was constructed to assist in transferring fresh water from the Sacramento River across the Delta. Flow from the Sacramento River into the DCC is controlled by two radial arm gates located at the end of the Sacramento River. These gates can be opened and closed depending on water quality, flood conditions, and fish protection requirements.

## SKINNER FISH FACILITY

At the Skinner Fish Facility, an average of 15 million fish a year are diverted away from the pumps at Banks Pumping Plant and returned safely to the Delta. Rescued fish are trucked to sites many miles away from the pumps and released.

## HARVEY O. BANKS PUMPING PLANT

Banks Pumping Plant marks the beginning of the 444-mile California Aqueduct, the central artery of the SWP. Here, Delta water begins its journey through the most extensive aqueduct system in the world, finally ending up in Southern California.