

Quest for Reliability: San Diego's Water Story

Water Education Foundation
May 19, 2016

Mark Weston, Chair, Board of Directors
Maureen Stapleton, General Manager



Early 20th Century Struggles for Water Supply Reliability: Pluviculture

- ▶ Dec. 1915: San Diego in multi-year drought
- ▶ City Council hires Rainmaker Charles Hatfield, aka “moisture accelerator”
 - \$10,000 “no rain, no pay” contract to “fill Morena Reservoir”
 - Devised potion and put in “rainmaking tower”
- ▶ Inspired 1956 film *The Rainmaker*



Charles Hatfield, ‘Rainmaker’



History of Water Authority

- ▶ Nov. 29, 1944: President Franklin D. Roosevelt issues directive:
 - U.S. Navy to build pipeline connecting MWD's Colorado River Aqueduct to City of San Diego's just-completed San Vicente Reservoir in Lakeside
 - Annexation to MWD

THE WHITE HOUSE

WASHINGTON

November 29, 1944

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Roosevelt

Mr. Phil D. Swing,
604 San Diego Trust and
Savings Bank,
San Diego, California

Enclosure

History of Water Authority

- ▶ Nov. 26, 1947: first Colorado River water flows into San Diego County at the San Vicente Reservoir
 - San Diego had less than three weeks of water supply left

Colorado River Water Pouring Into Reservoir

71-Mile Aqueduct Supplies Stream of Much Needed Fluid

Water channeled over 300 miles of desert and mountains from the Colorado River began pouring into near-empty San Vicente Reservoir at 4 a. m. yesterday, to mark completion of the 71-mile, \$14,000,000 San Diego Aqueduct.

Symbolically breaking a drought that has reduced the area's supply of impounded water to less than a third of reservoir capacity, the stream flowed from the big pipeline at an initial rate of 11,000,000 gallons a day.

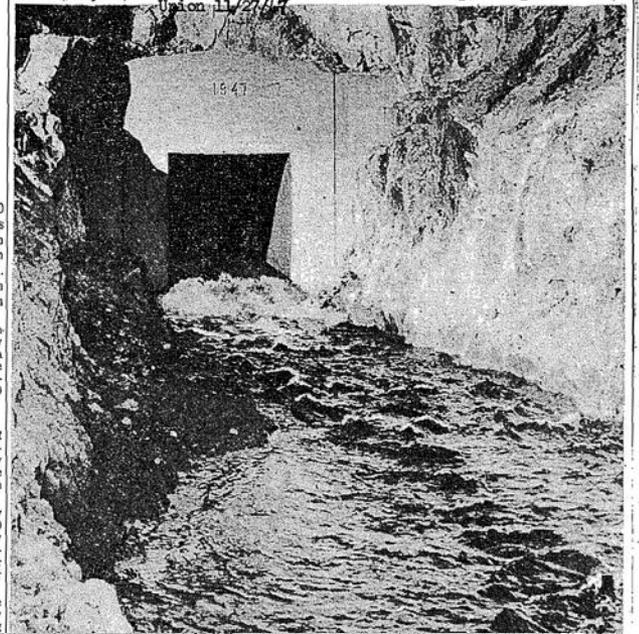
FIRST AQUEDUCT TEST

It was the first overall test of the Aqueduct, which is to be dedicated Dec. 11. The flow gradually will be increased before then to the line's rated capacity of 50 million gallons a day.

That the pipeline's capacity may turn out to be greater than 50 million gallons was a possibility foreseen by J. L. Burkholder, General Manager and Chief Engineer of the San Diego County Water Authority.

This will be determined in the next 10 days, as a large field crew checks operation of the line along

City Has Been Waiting for This for Long, Long Time



Needed River Water Arrives

Colorado River water, 50,000,000 gallons a day of it, began pouring from the San Diego Aqueduct above San Vicente Reservoir yesterday at 11 a. m. in the latest series of tests designed to ascertain the maximum capacity of the line.

This vast volume of water, racing spectacularly down the mountain-side, took the form of a raging torrent that is fast gouging an ever-widening channel on its way to the reservoir, about a half mile distant. Much of the earth and rock in its path is refuse from construction of San Vicente tunnel, and the speeding stream in its tumbling descent presents a series of cascades made by the turbulent water.

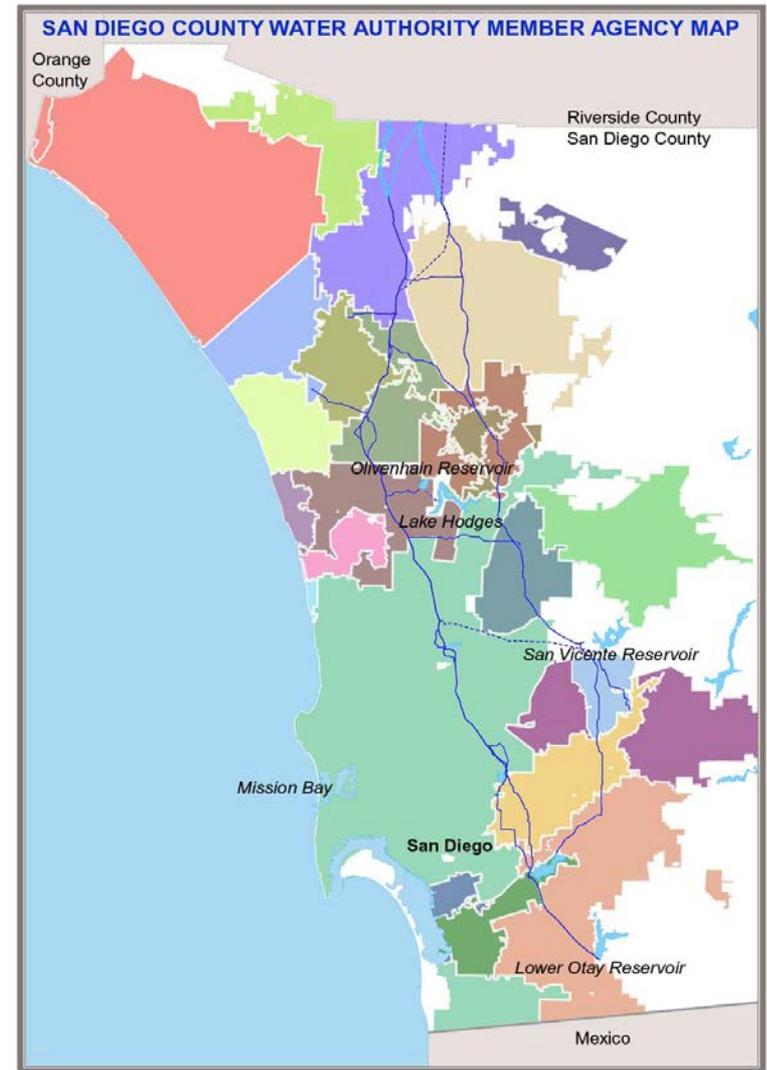
San Diego's 'Little Colorado'



Aqueduct a day, Dec. 11.

San Diego County Water Authority

- ▶ Wholesale water agency created by State Legislature in 1944
 - 24 member agencies
 - 36-member board of directors
 - Serves 3.2 million people and region's \$218 billion economy
- ▶ Service area
 - 950,000 acres
 - 97% of county's population
- ▶ Largest member agency of Metropolitan Water District of Southern California

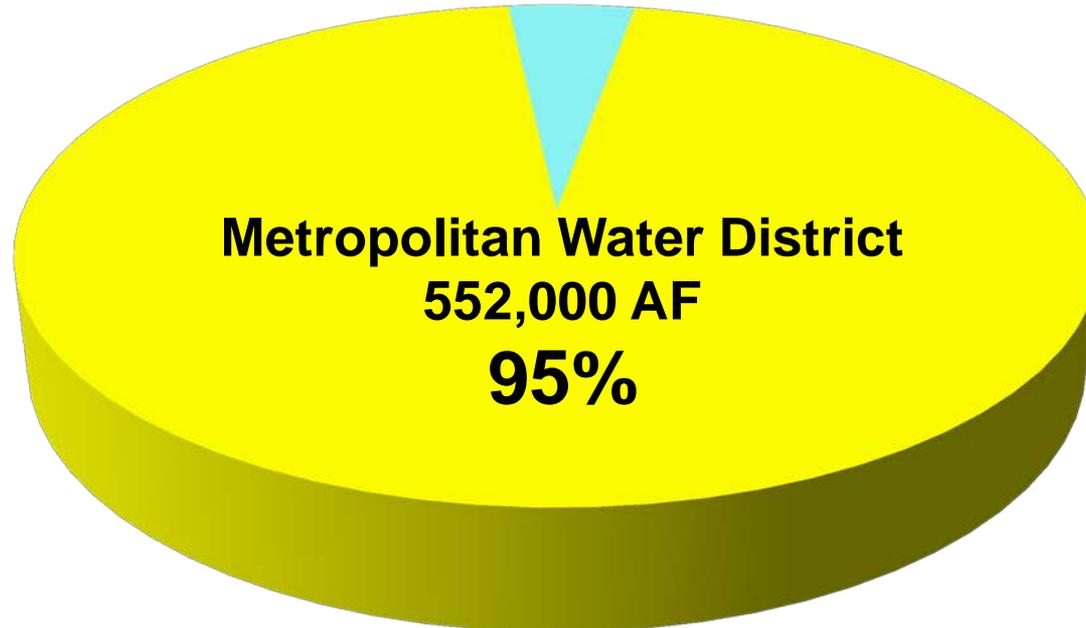


San Diego County Water Supply 1991

Local Supplies

26,000 AF

5%



Total = 578,000 AF



1991-92: San Diego's Drought Crisis

State to Shut Off Water Delivery to Southland

By VIRGINIA ELLIS and TED ROHRLICH
TIMES STAFF WRITERS

SACRAMENTO — Gov. Pete Wilson on Monday announced new and unprecedented cuts of state water deliveries so drastic that Southern California will be cut off from traditional source of water mid-March.

Wilson said that height drought conditions had forced state to notify cities and ind

Limits on tap water use urged by staff

By Steve LaRue
Staff Writer

The staff of the San Diego County Water Authority (CWA)...

S.D. Faces 31% Cut in Imported Water Supply

By JENIFER WARREN
TIMES STAFF WRITER

Faced with record-low rainfall and no prospects for relief, the Metropolitan Water District declared a water emergency on

50% Water-Delivery Cut Will Be Blow to San Diego

■ Drought: Metropolitan Water District directors also vote a 90% cut in allocation for agricultural users.

Water Dependence Bodes a Dry San Diego Future

San Diego Civic Leaders

“Never Again!”

“No More Water Shortages!”

State Water Project cuts off water to farms; urban slash expected

L.A. Ready to Battle San Diego Over Water

■ Conservation: DWP officials weigh legal action as southern neighbor refuses to impose rationing.

Water: Authority to Vote Today on Mandatory Restrictions

Companies cringe at 50 percent cut in water

Firms offer conservation plans to mayor; some say cutbacks could cripple growth

Grim water outlook is getting even worse

By Steve LaRue
Staff Writer

SACRAMENTO — Southern Californians are likely to be ordered to cut back their water consumption by an unprecedented 30 percent this spring unless more snow falls on the Sierra Nevada, the area's chief water official said yesterday.



Strategy: Improving Water Reliability



Conservation



Canal Linings



Reclaimed Water



Carlsbad Desal Plant



Potable Water Reuse



Infrastructure Improvements



Water Authority's Colorado River Quantification Settlement Agreement Supplies Continue to Grow

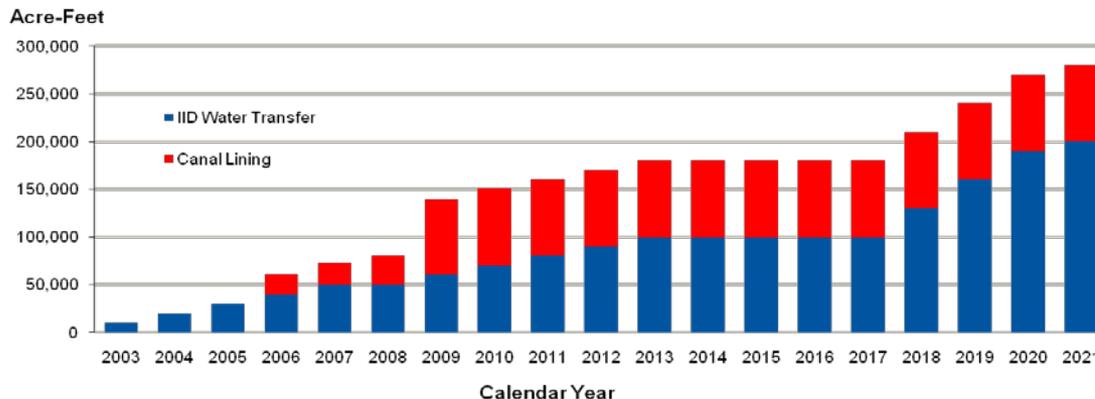
- Imperial Irrigation District transfer
 - Term: 45 to 75 years
 - 100,000 acre-feet in 2015
 - Ramps up to 200,000 AF/year by 2021
- Canal-lining projects
 - 80,000 AF/year for 110 years
- Higher priority than MWD's Colorado River supplies
- 34% of region's supply in 2020



Above: All American Canal under construction.
Below: Completed canal adjacent to old earthen canal.



IID and Canal Lining Deliveries 2003-2021

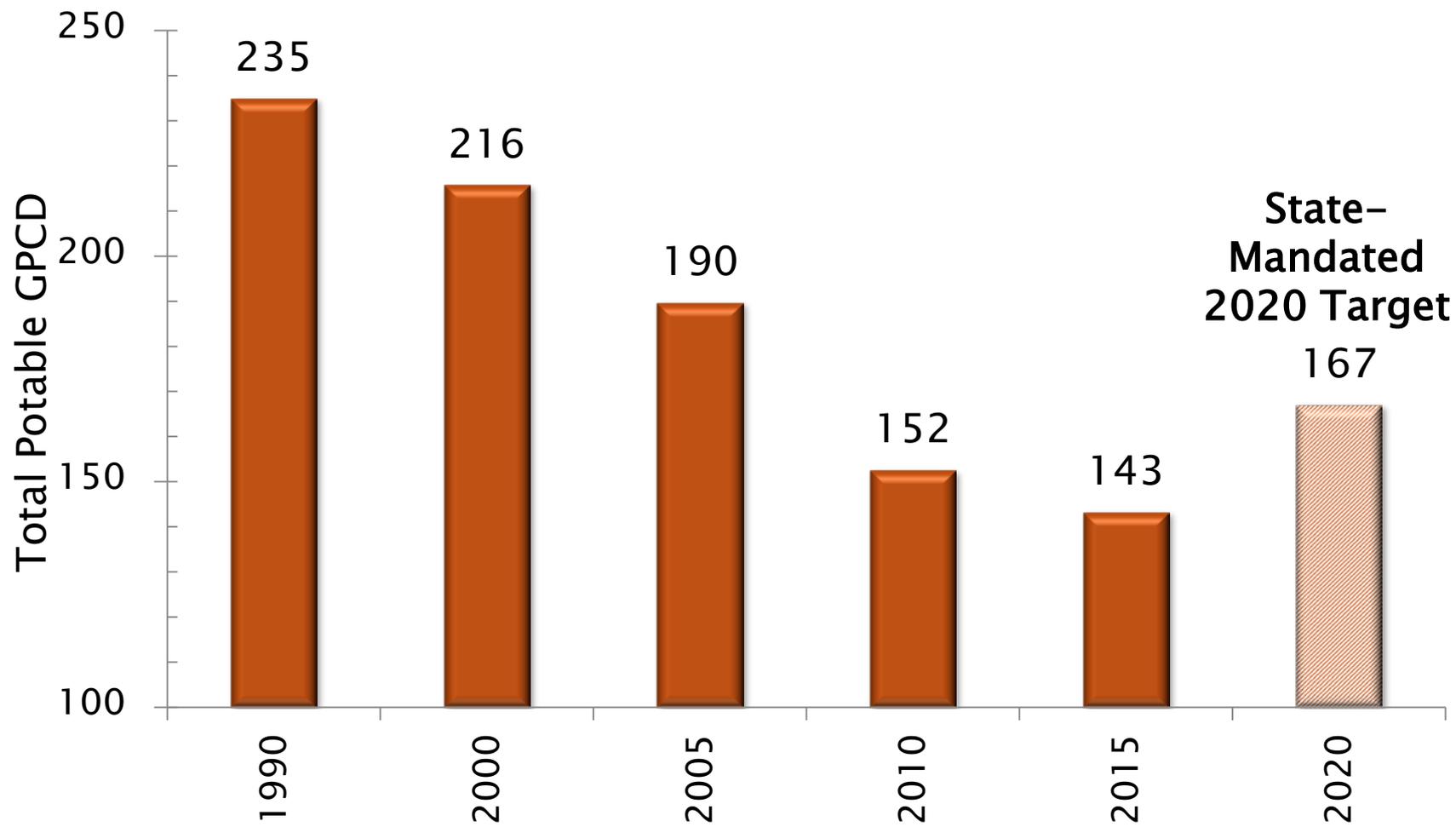


Investments in Local Supplies

- ▶ Carlsbad Seawater Desalination Project
 - \$1 billion investment
 - 56,000 acre-feet/year of drought-proof supplies
 - Largest seawater desalination facility in North America
 - Commercial operation began December 2015



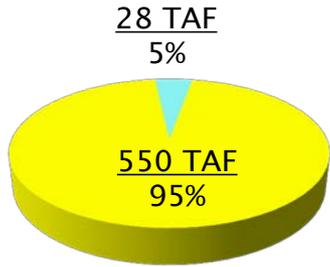
40% Decline in Per Capita Water Use in Water Authority Service Area Since 1990



The reduction in potable per capita water use since 1990 offsets the need for over 300,000 acre-feet per year within the region.

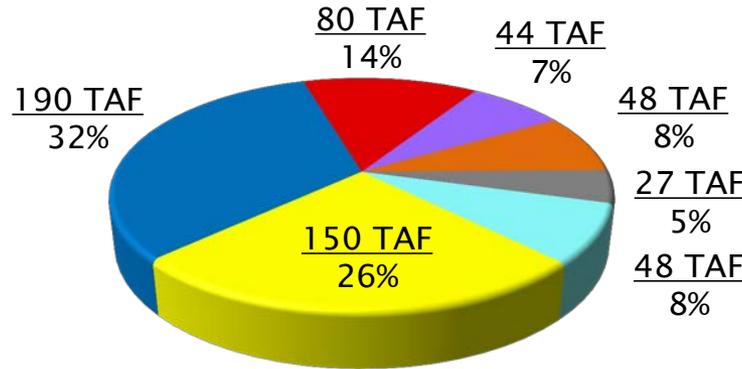
Increasing San Diego County's Water Supply Reliability through Supply Diversification

1991



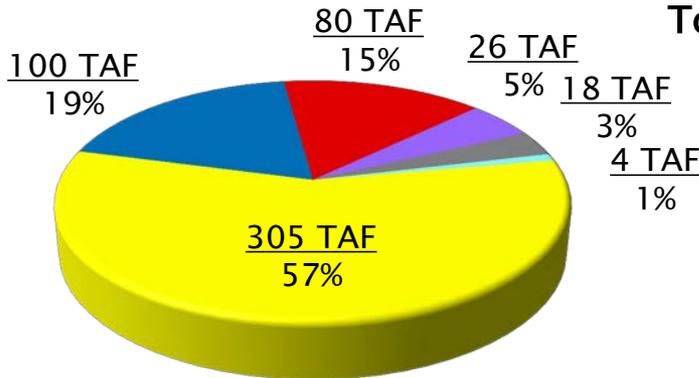
Total = 578 TAF

Estimated 2020



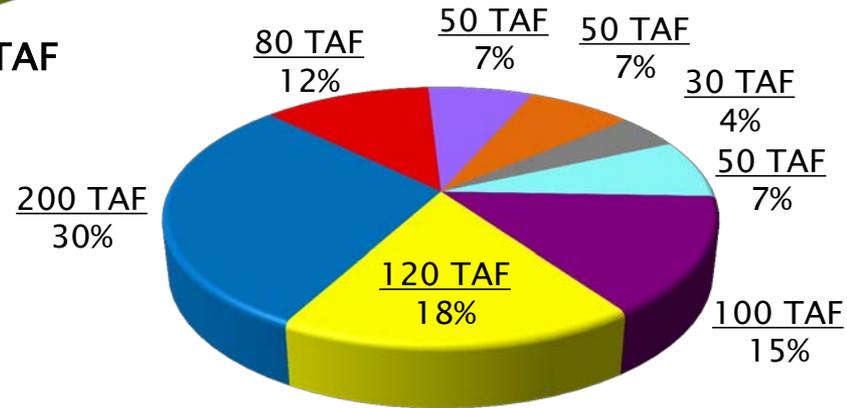
Total = 587 TAF

2015

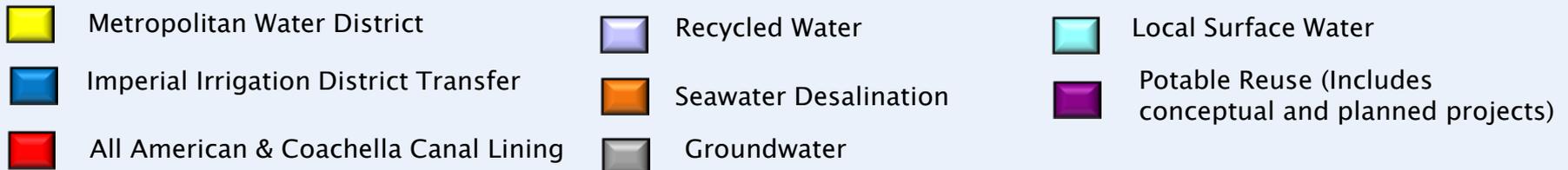


Total = 533 TAF

Projected 2035



Total = 680 TAF



Next Increment of San Diego County's Water Supply: Potable Reuse

- ▶ City of San Diego Pure Water: 96,000 AF/year
- ▶ Padre Dam Advanced Purification Program: up to 3,000AF/year
- ▶ 11 Water Authority agencies pursuing potable reuse, with potential for up to 100,000 AF/year by 2035

Padre Dam Advanced Water Purification Demonstration Facility



City of San Diego Advanced Water Purification Demonstration Facility



Historic Investments in Infrastructure

San Vicente Dam Raise & Related Projects
\$816 million



Twin Oaks Valley Water Treatment Plant
\$179 million



Pipeline Relining
\$493 million



Carlsbad Seawater Desalination Projects
\$1 billion



Plant Site

Lake Hodges Projects
\$208 million



Pump House Detail

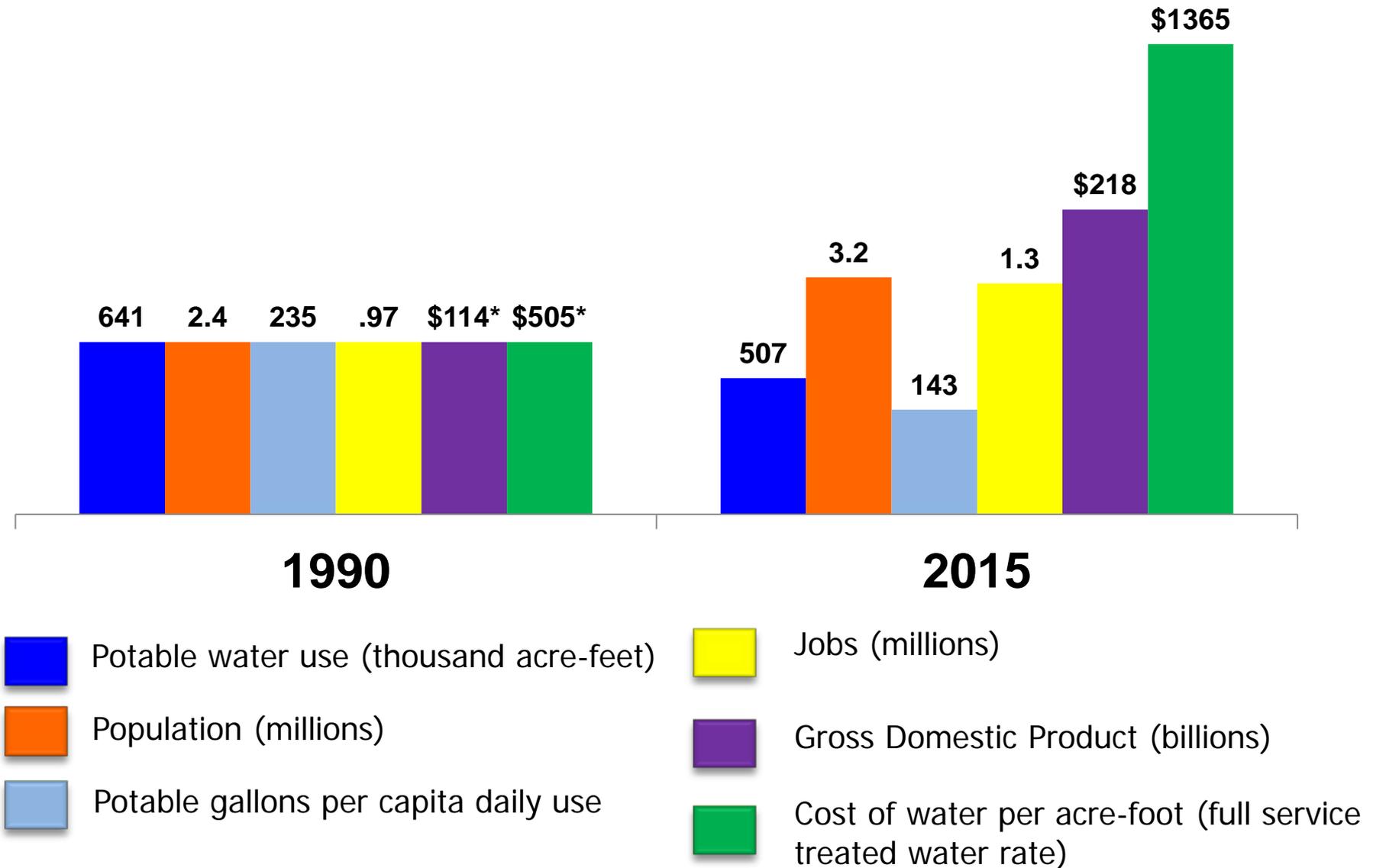
Olivenhain Dam & Reservoir
\$198 million



All-American & Coachella Canal Lining Projects
\$447 million
(\$190 million from Water Authority)



San Diego County: 1990 vs. 2015



* 2015 dollars

Today's Tour Stops





Project: San Vicente Dam Raise
Approved: 1998; CSP added 2003
Complete: 2014
Cost: \$401 million
Benefit: 152,000 acre-feet of new storage

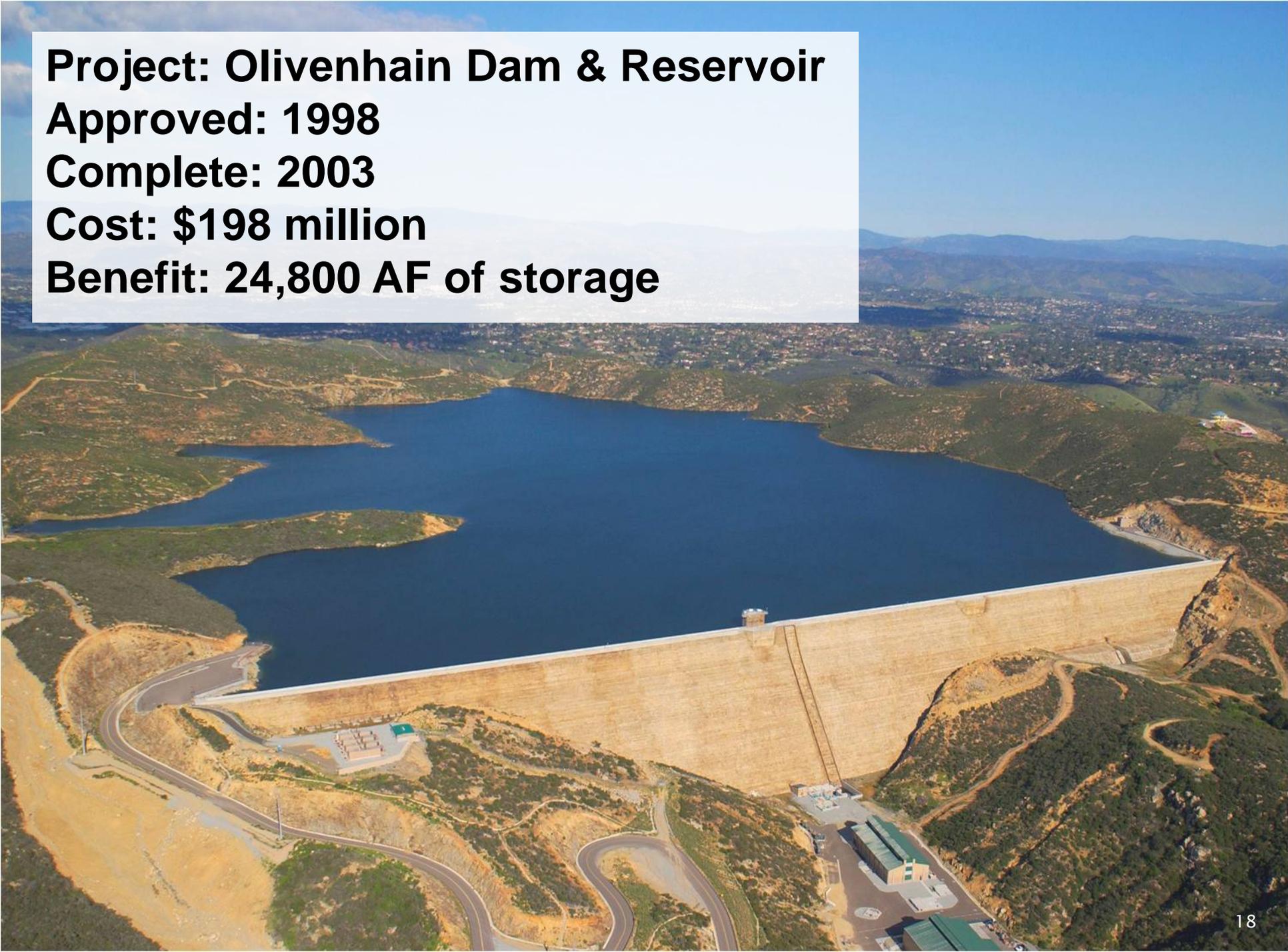
Project: Olivenhain Dam & Reservoir

Approved: 1998

Complete: 2003

Cost: \$198 million

Benefit: 24,800 AF of storage



Stay in Touch with the Water Authority

whenindrought.org

Video & Slide Sharing



youtube.com/SDCWAvideo



slideshare.net/waterauthority

Mobile Apps



sdcwa.org/mobile-news-app

When in Drought
Report Waste



Social Media



[facebook.com/
SanDiegoCountyWaterAuthority](https://facebook.com/SanDiegoCountyWaterAuthority)



[@sdcwa](https://twitter.com/sdcwa)
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