



Q&A

Solutions for San Diego and the Southwest

Thinking big about San Diego's water future

As chair of the San Diego County Water Authority's Board of Directors, Jim Madaffer wants to ensure that the agency builds on its hard-won achievements to secure drought-resilient water supplies for the region.

The former San Diego City Council member is passionate about Water Authority plans to store water from wet years like 2019 in Lake Mead for use during dry years, and a potential 500-megawatt pumped energy storage project at the San Vicente Reservoir being evaluated in partnership with the City of San Diego.

He's also seeking to resolve the long-running litigation between the Water Authority and the Metropolitan Water District of Southern California over costs for transporting water through MWD's Colorado River Aqueduct.

And he supports studying whether it makes sense to build San Diego's own pipeline to the Imperial Valley to transport Colorado River

SEE SOLUTIONS | PAGE 2



The Claude "Bud" Lewis Carlsbad Desalination Plant produces 50 million gallons a day of desalinated seawater. Completed in 2015, the plant provides the region with a highly reliable, drought-proof water supply that meets about 10 percent of regional demand.

Just Add Water  
San Diego County Water Authority marks 75 years of service that shaped the region

No roadside marker notes its historic significance, but a rural hilltop just off state Route 76 near Fallbrook is where the story of modern San Diego County begins.

A few feet underground is a gravity-flow pipeline delivering water from the Colorado River through Lake Skinner in Riverside County, then to San Vicente Reservoir near Lakeside.

South of the hilltop connection is where the San Diego County Water Authority takes ownership of the region's historic Pipeline 1, along with four other major concrete and steel veins that send water coursing to cities and water agencies throughout the San Diego region.

When water began flowing through the 48-inch-diameter Pipeline 1 in November 1947, San Diego had less than a month's supply of water left. Newspapers of the day celebrated the delivery of water just in time to avoid serious shortages.

That pipeline and the Water Authority – which formed 75 years ago, in June 1944, to administer imported water for San Diego County –

changed the semi-arid region forever. In the beginning, the Water Authority had nine member agencies. The list now includes 24 retail water providers, including cities, special districts and Marine Corps Base Camp Pendleton.

When water began flowing through the 48-inch-diameter Pipeline 1 in November 1947, San Diego had less than a month's supply of water left.

Together, they created the foundation for one of the nation's largest regional economies, with some \$231 billion a year in economic activity, and a quality of life for 3.3 million residents that is envied around the world.

In the past few decades, the Water Authority and its member agencies have raised the height of San Vicente Dam, built a dam and reservoir at Olivenhain, erected

a major water treatment plant north of San Marcos, installed a power plant at Lake Hodges, co-developed the nation's largest seawater desalination plant in Carlsbad, and established water conservation and efficiency measures that have helped decrease the region's per-capita water use by more than 40 percent.

Today, the water wholesale agency is moving into a new era with a focus on regional partnerships and integrated planning to provide the region with affordable, reliable and sustainable water supplies for generations to come.

"Without safe and reliable water supplies delivered by the Water Authority and its 24 member agencies, the region would be unable to support the San Diego County that we know and love," said Jim Madaffer, chair of the Water Authority's 36-member Board of Directors. "What we have done here with the board's vision is extraordinary – but we are not done."

The never-ending search for water

Nature was kind to San Diego in many ways – bestow-



The Water Authority's Pipeline 1, shown here in 1947, crosses rugged North County terrain to deliver water to San Vicente Reservoir.

ing soft-sand beaches, a perfect climate and a stunning back-country. But without a massive aquifer or a link to a major river, the region was terribly dependent on local rainfall, which averages just 10 inches a year at the official Lindbergh Field weather station. In fact, since the era of the friars and missions, the story of San Diego has revolved around the search for water.

That quest became critical during World War II, when the population swelled with military personnel and a booming defense industry. President Franklin D. Roosevelt, unsure how long the war would last, ordered the First Pipeline built to ensure

water supplies for the military. For the two previous decades, San Diego officials had been split between joining the Los Angeles-based Metropolitan Water District of Southern California to get a share of water from its aqueduct, and building an independent San Diego aqueduct to reach the Colorado River. The presidential directive made joining MWD the only option.

Beginning in the early 1950s, the Water Authority built four more pipelines roughly parallel to Interstate 15, which separates Pipelines 1 and 2 on the east side from Pipelines 3, 4 and 5 on the west. SEE WATER | PAGE 4

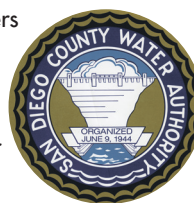
San Diego County Water Authority

AT A GLANCE

- Established: June 9, 1944
- First water delivered: Nov. 24, 1947
- Area served: 946,000 acres
- Number of primary pipelines: 5
- Miles of large-diameter pipeline: 310
- Population served: 3.3 million
- Economy served: \$231 billion
- Member agencies: 24

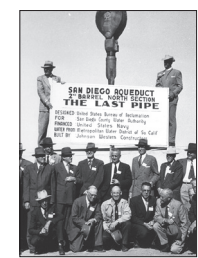
PIONEERING  
VISIONARY  
AGILE and  
DRIVEN  
FOR 75 YEARS ...  
AND COUNTING

June 9, 1944  
The San Diego County Water Authority forms with nine charter members to administer the region's Colorado River rights, import water and take over operations of the regional aqueduct.



December 17, 1946

The Water Authority annexes into the Metropolitan Water District of Southern California. As a condition of annexation, MWD requires the City of San Diego to assign its 112,000 acre-foot Colorado River water right to MWD.



1950

The Water Authority serves about 80 percent of county residents, delivering 59,000 acre-feet of water to 435,000 people.

1954

Pipeline 2, a 48-inch-diameter pipeline built adjacent to Pipeline 1, begins delivering imported water.

1944

November 29, 1944  
President Roosevelt orders the U.S. Navy to construct Pipeline 1, connecting the Colorado River Aqueduct in Riverside County to the City of San Diego's San Vicente Reservoir in Lakeside.

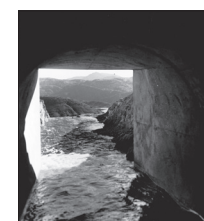


1950-1951

Drought causes concerns in San Diego County, and the Water Authority pursues plans for a second major pipeline.

November 24, 1947

The first Colorado River water flows into San Diego County just in time to help avoid what could have been a significant water shortage in the region.





# WaterSmart lifestyles take root in San Diego

The region has grown, but water use has dropped thanks to conservation upgrades

**S**an Diego County's population has grown by nearly 1 million people since 1990 and the size of its economy has nearly doubled, but the region's water use has decreased significantly.

How is that possible? In a word, efficiency.

Over the past three decades, per capita potable water use has decreased from 235 gallons per day to 134 gallons per day. That kind of reduction is impressive – and only attainable with widespread commitment from residents and businesses across the region. Through the years, more than 80 percent of residents surveyed in countywide polls agree that using water efficiently is a civic duty.

The Water Authority helped move the needle by sponsoring landmark state legislation in 1991 that required toilets to use no more than 1.6 gallons per flush and urinals to use no more than 1 gallon. That standard was adopted nationally in the Energy Policy Act of 1992, making an impact on the entire country.

Over the years, the Water Authority has backed several other conservation bills, and it's also deployed numerous on-the-ground tools for residents and businesses. Among the most significant efforts has been transforming the landscaping marketplace by promoting the use of WaterSmart plants and irrigation methods that are now the norm.

## Rebates and incentives

A range of local and regional incentive programs helps to accelerate the implementation of water-efficient technologies and practices. For instance, the Water Authority and its partners offer rebates on high-efficiency clothes washers, rotating sprinkler nozzles and soil moisture sensors. These programs have helped hundreds of thousands of residential, commercial and agricultural water users improve their water efficiency and lower water bills.

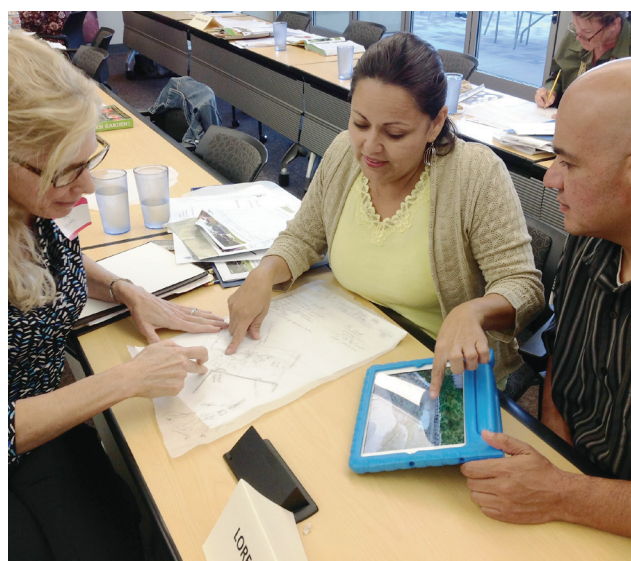
## Water-use assessments

Programs offering residential, commercial and agricultural customers free, on-site water-use evaluations that identify specific measures to save water are a great resource. Participants can choose how to follow up on the recommendations.

## "How-to" tools and classes

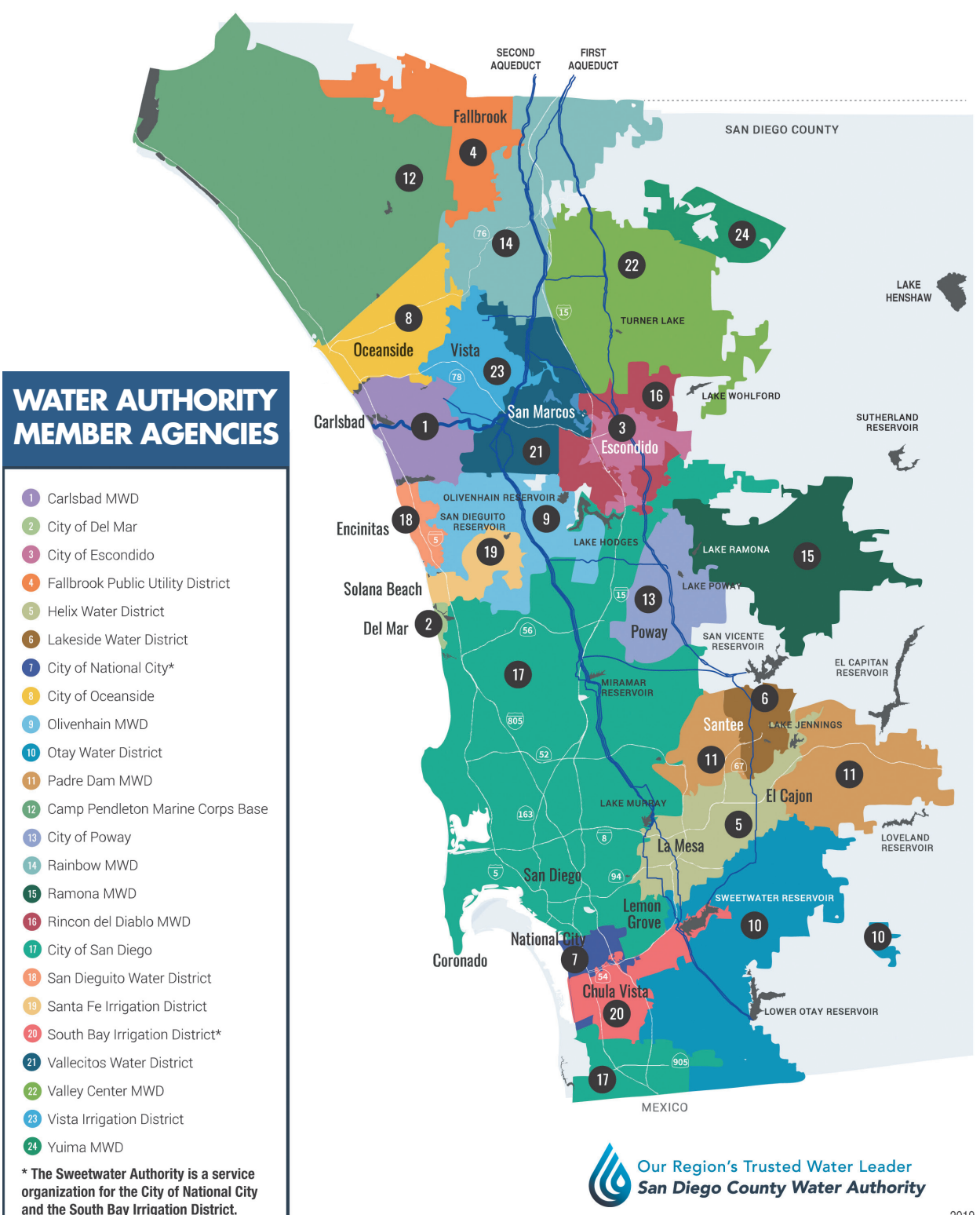
A major focus of the Water Authority's water conservation efforts is empowering and inspiring more residents to adopt WaterSmart lifestyles with the help of websites, partnerships, publications, workshops, and other resources designed to maximize the reliability and effectiveness of water-saving measures. Free WaterSmart landscaping classes are available throughout the year at various locations countywide.

For more information about rebates, water-use evaluations, classes and other resources, go to [WaterSmartSD.org](http://WaterSmartSD.org).



The Water Authority offers a variety of classes to learn about WaterSmart landscaping.

## SAN DIEGO COUNTY WATER AUTHORITY SERVICE AREA



Our Region's Trusted Water Leader  
San Diego County Water Authority

2019

## SOLUTIONS

FROM PAGE 1

water, maybe through a private-public partnership like the one that built the Carlsbad seawater desalination plant.

**Q:** What is the importance of water to San Diego County?

**A:** There are three pillars of any society: transportation, energy and water – and you've got to have all three working to have a vibrant economy and quality of life.

**Q:** As a native San Diegan, what motivates you to be involved in water issues?

**A:** I remember the recession of the early 1990s. I remember the drought, I remember getting the cutback on water supplies. I remember thinking: This can't stand. Why should we be subjected to this? Our motto became "Never Again!"

**A:** What do you want to achieve as chairman?



The Carlsbad seawater desalination plant sits next to Agua Hedionda Lagoon.

**Q:** For years, we have been setting our sights on 2035 – but that's not very far away anymore. So I'm working with the board to set a vision for 30 years beyond 2035. Our board has wisely always had a long-term perspective: What is our supply status? What are resources going to be like? You don't just build water projects in 10 minutes. These things can take decades.

That's why I want to continue to think big – for instance, by considering whether to build our own pipeline to deliver Colorado River water – and potentially solve some other member agency and regional issues in the process. It would be a huge project, but one that could provide more local control over our water supplies, more flexibility for transporting water from the Colorado

River, better management of existing and new water supplies, and the potential for more strategic partnerships. For instance, we could create benefits in the Imperial Valley – from helping restore the Salton Sea to improving agricultural water delivery to energy generation and more. Plus, we could avoid paying decades of unregulated "rent" to

SEE SOLUTIONS | PAGE 3

One acre-foot is about 325,900 gallons, enough to supply 2.5 single-family homes of four for a year.

1960

The Water Authority provides 157,000 acre-feet of water to 956,000 people – almost 95 percent of county residents.

1964

In *Arizona v. California*, the U.S. Supreme Court rules that California is limited to 4.4 million acre-feet of Colorado River water annually in the absence of a surplus or unused apportionment from Arizona and Nevada.



1976

Pipeline 4, 96 inches in diameter and capable of carrying nearly as much water as first three pipes combined, is completed in the Second Aqueduct.

1976-1977

San Diego County and the rest of California suffer from severe drought conditions.

1980

The Water Authority serves nearly 99 percent of the county's 1.8 million residents, delivering 310,000 acre-feet of water.

1989

A \$530 million Capital Improvement Program is adopted by the Water Authority, encompassing 10 major water infrastructure projects.



1960

1961

Pipeline 3, a 72-inch-diameter pipeline capable of delivering nearly three times the water as Pipeline 1, is completed in the Second San Diego Aqueduct that terminates at Otay Reservoir.



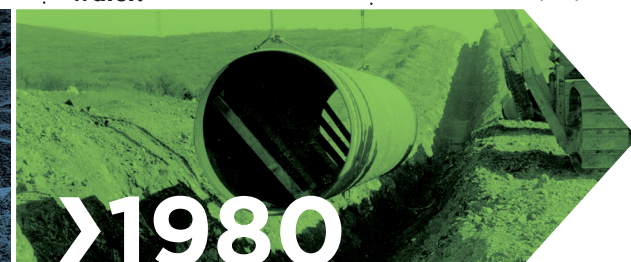
1970

1970

The Water Authority serves more than 1.2 million people, delivering 246,000 acre-feet of water.

1978

The first water from Northern California is delivered to the San Diego region via the State Water Project's California Aqueduct and the Metropolitan Water District of Southern California.



1980

1987

A major six-year drought begins in California.

1989

The Water Authority authorizes an Optimal Storage Study to analyze the agency's water storage needs.

1982

Pipeline 5, a 96-inch-diameter pipeline, is added to the Second Aqueduct, increasing regional delivery capacity to about 1 million acre-feet per year.





# Transforming the region's water supplies

Water Authority, member agencies expand resource portfolio

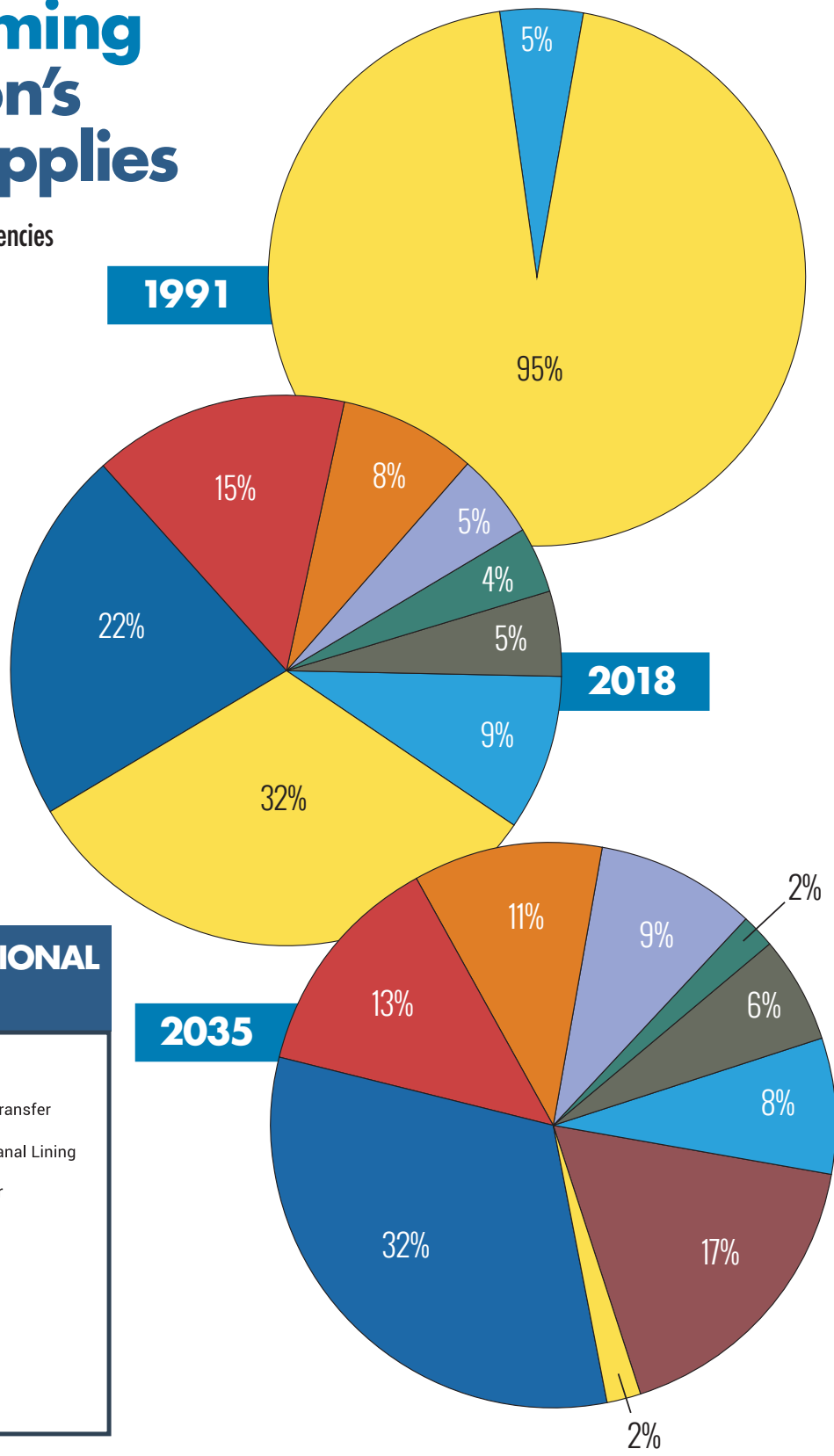
Since the early 1990s, the San Diego County Water Authority and its member agencies have deployed one of the most aggressive water supply diversification strategies in the nation.

What once was near-total reliance on a single supplier today is a portfolio of water resources that includes seawater desalination, water conserved by lining earthen canals, and water resources developed by local cities and water districts.

In coming years, member agency projects to generate local water supplies will play an increasingly important role in continuing to ensure water supply reliability for the San Diego region.

## SAN DIEGO REGIONAL WATER SOURCES

- Metropolitan Water District
- Imperial Irrigation District Transfer
- All-American & Coachella Canal Lining
- San Luis Rey Water Transfer
- Recycled Water
- Seawater Desalination
- Groundwater
- Local Surface Water
- Potable Reuse



## The father of San Diego water

Water Authority's first chairman set the agency's course

For the first three decades of its history, one man dominated the San Diego County Water Authority like no other: Fred Heilbron, the son of German immigrants who was also a plumber, lawyer, politician, golfer, businessman, trombone player, sergeant in the National Guard, skillful communicator, and an "inveterate joiner and organizer" who belonged to the Rotary, Masons, Shriners, Elks, Chamber of Commerce and YMCA.

But mostly, Heilbron was a passionate believer that San Diego County, cursed with limited natural water sources, could never fulfill its civic potential without greatly expanding that supply. As America was fighting World War I, Heilbron ran for city council on the platform that finding water was the region's major challenge. He labored at the same oar until shortly before his death in 1973 at age 95.

As chairman of the Water Authority's governing board beginning with the agency's creation in June 1944, Heilbron ruled "with a combination of an iron hand, wit and benevolence," local historian Robert Melbourne wrote in the San Diego Historical Society Quarterly. Shortly after World War

II, when the Navy balked at paying to build a pipeline to bring water to San Diego, Heilbron was dispatched to Washington D.C. At a shade under 6-foot-6 and with a command of facts and figures – and a sugary personality at his disposal – Heilbron cut an impressive figure as he lobbied members of Congress and the Navy's brass hats.

Edwin Cooper, in his book "Aqueduct Empire," described Heilbron on that trip as "tall and gaunt as a beanpole and carrying a twinkle in his eye – sort of a beardless Abe Lincoln."

Throughout his career, Heilbron was faced with the same issues that confront his successors today: negotiating with the Metropolitan Water District of Southern California; reaching agreement with state and federal politicians and regulators; collaborating with Water Authority member agencies; and convincing the public that finding, storing and delivering water is a top priority even though it can be politically turbulent and financially costly.

For years, Heilbron served as the Water Authority's representative on the MWD board, eventually rising to chairman.

"He used folksy charm when he needed to," said former Water Authority lawyer and unofficial historian Jim Taylor, "and he knew how to be a nasty guy when he needed to."

## SOLUTIONS

FROM PAGE 2

MWD for transporting our water.

**Q:** What's your thinking in terms of developing water storage at Lake Mead?

**A:** While we have improved our local water storage in recent decades, there are also many benefits to storing water in Lake Mead – not only for San Diego but for California and the entire Southwest.

One is that Lake Mead is at the very top end of the water supply system so it provides maximum flexibility to move water where we need it, when we need it. Another benefit would be new strategic partnerships with other cities, counties and agencies.

Also, there's no federal fees for storing water there, so it's extremely cost-effective to secure something everyone believes is highly valuable – more water storage capacity. We are working through the politics to develop this regional and commonsense approach

that would help better manage our water and make us even more drought-resilient.

**Q:** These big projects all cost money. What about the price of water reliability?

**A:** We have invested \$3.5 billion in recent decades to expand local reservoir capacity, increase flexibility to move water around the region, develop new water supplies such as desalination to make ourselves drought-resilient, and maintain the regional water supply system so that it's running 24/7/365.

We must now look to invest for the next 30 years and beyond. The Water Authority will embark on new projects that support our bedrock objectives to provide its member agencies and water ratepayers with affordable, reliable and sustainable water supplies. Affordable water supplies will assure that our member agencies can meet their ratepayers' water needs at a reasonable cost. Reliable water



The Water Authority's Asset Management Program develops and uses innovative tools to maintain the region's 310 miles of large-diameter pipelines. The agency also aggressively relines and rehabilitates aging structures to ensure supply reliability.



supplies provide a firm foundation for the local economy. Sustainable water supplies provide security for long-term planning and investments.

**Q:** What is the role of the board members?

**A:** We have a wonderful, diverse board of 36 members representing 24 agencies who want to ensure that our economy and quality of life is sustained – from the 5,500 family

farms in our region and the defense industry to our world-class tourism destinations, biotech, craft brewing and countless other industries. It's all "Brought to You by Water."

**Q:** How well have residents and businesses done with water conservation?

**A:** We've done a beautiful job and San Diegans are to be commended. Compared to 1990,

we have 900,000 more people and the size of our economy has almost doubled – but we are actually using less water. That's amazing! There are many reasons, including a widespread commitment by residents to make WaterSmart choices in their yards, with their appliances and in their daily habits. We've been a leader in conservation for years, and I'm confident that we will be in the future as well.

**Q:** What is your assessment of San Diego's water supply?

**A:** San Diego has a very safe, reliable water supply because of investments we have made over the past 75 years that will pay off for generations. When I look at the next 75 years, I want to make sure we've got a foundation in place that will continue to ensure that San Diego will "Never Again" face crippling water supply shortages.

1990

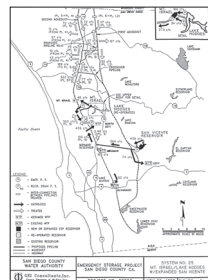
The Water Authority serves 2.4 million residents who use 642,000 acre-feet of water. Per capita potable water use is 235 gallons per day.

1991

The Water Authority sponsors state Senate Bill 1224, requiring that toilets sold or installed in 1994 or later use no more than 1.6 gallons per flush – a standard adopted nationally in the Energy Policy Act of 1992 and a cornerstone of future water-efficiency efforts nationwide.

1992

The Water Authority begins planning and environmental studies for the Emergency Storage Project, a system of reservoirs, pipelines and pump stations designed to serve water throughout the county if a major catastrophe such as an earthquake interrupts imported water supplies.



1998

In April, the Water Authority and the Imperial Irrigation District execute an agreement for the largest agricultural-to-urban water transfer in U.S. history. In November, the Water Authority and MWD sign an Exchange Agreement to move the IID transfer water to San Diego County.

2000

The State of California amends the County Water Authority Act, expanding the Water Authority's ability to build, own and operate electric and natural gas facilities.



1990

The Water Authority initiates its Aqueduct Protection Program, an industry-leading maintenance and repair program for large-diameter pipelines.

1991

After five years of drought, Metropolitan Water District deliveries to San Diego are cut by 31 percent for 13 months. The Water Authority purchases additional water from California Drought Water Bank and implements a major water conservation campaign. Economic development in the region suffers a major blow.



1995

The Water Authority and Imperial Irrigation District announce a Memorandum of Understanding to pursue a major water conservation-and-transfer agreement for boosting regional water supply reliability.

1997

The Water Authority starts developing a master plan for securing diversified water supply sources and implementing the associated capital improvement projects through 2030.

2000

The Water Authority serves 2.8 million people who use 695,000 acre-feet of water. Per capita potable water use drops to 216 gallons per day.

One acre-foot is about 325,900 gallons, enough to supply 2.5 single-family homes of four for a year.



**WATER**  
FROM PAGE 1

How significant has the Water Authority been to the region's growth and prosperity?

"Enormously important," said Pete Wilson, former San Diego mayor, U.S. senator and California governor. He gives much of the credit to Maureen Stapleton, who retired in early 2019 after shaping the agency's modern era for 23 years as general manager.

"Maureen Stapleton has been nothing less than heroic," Wilson said. "She and her team have shown vision and great tenacity."

When drought gripped the state in the early 1990s, some cities "were afraid to do anything," Wilson said. "But (Stapleton) took action ... She had what it takes: guts and a great staff."

**When the bottom fell out**

While the first era of Water Authority history was marked by massive pipeline construction projects and increasing reliance on MWD – to the point where that agency supplied 95 percent of San Diego County's water in 1991 – the second era was all about dramatically reducing reliance on MWD and exerting local control over water supplies. Think of it as the age of supply diversification, sparked by a historic statewide drought that started in 1987 and lasted into the next decade.

As the drought tightened its grip, MWD cut water supplies to San Diego by 31 percent, with a 50 percent cut looming. Only the Miracle March rainfall of 1991 – in which 7 inches fell in 29 days – lessened the community outcry and impact. But the fear of future droughts remained. "We had all our eggs in one basket, and the bottom fell out," said Mike Madigan, former board chair of the Water Authority.

That prompted San Diego's civic and business leaders to warn that the region's prosperity was imperiled by continued reliance on MWD. At a nine-hour meeting of the Water Authority's governing board, speaker after speaker

demanded – some angrily – that the Water Authority do something to avoid draconian cuts in the future.

Stephen Cushman, then-chairman of the San Diego Chamber of Commerce, and then-Councilwoman Barbara Warden formed the Alliance for Water Reliability. At a news conference on the eve of July 4, 1996, they presented "A Declaration of Water Independence and Reliability by the Citizens of San Diego..."

The document, signed by two dozen local leaders, says, "We hold these truths to be self-evident...." Fourteen points are listed, including: "Water shortages in San Diego are certain to become far worse."

Signing for the City of San Diego was then-Councilwoman Christine Kehoe, who later served in the California Assembly and Senate.

"If San Diego would not have diversified its water supply, our economy would have been badly harmed," said Kehoe. "The biotech industry, then just developing, might have been harmed irreparably."

A biotech leader paid a visit to San Diego City Hall, dumping several plastic water bottles on the desk of Stapleton, then assistant city manager. The water bottles were from other cities and had labels urging San Diego startups to relocate, promising a reliable flow of water.

For Stapleton, it was a wakeup call about the importance of water. Later, impressed by the need for a reliable supply of water, she joined the Water Authority as general manager.

**Not afraid to fight for San Diego**

Nothing involving water comes easily, and that has proved true in San Diego County.

The Water Authority's priorities changed in the early 1990s to focus on water supply diversification, local control and security. Strategies included a massive farm-to-city water transfer from the Imperial Valley, construction of the



Completed in 2003, Olivenhain Dam is a major component of the Water Authority's Emergency & Carryover Storage Project, which protects the region in case imported water deliveries are interrupted, for instance, by an earthquake. Lake Hodges is in the background.



The San Vicente Dam Raise, completed in 2014, more than doubled the reservoir's capacity.



After lining canals in the Imperial and Coachella valleys, the Water Authority transferred conserved water to the San Diego region.



A WaterSmart landscape at the Water Authority's headquarters in Kearny Mesa showcases water-efficient plants and practices for the public.

nation's tallest dam raise to increase local water storage as a hedge against dry times and emergencies, increasing conservation – and eventually, seawater desalination. Goals took decades to accom-

plish and were marked by political controversy, challenging negotiations and even litigation.

Tom Levy, former general manager of the Coachella Valley Water District, said the Water Authority's success comes from its farsighted approach.

"You need to continue to develop more water because places that you never thought would grow are growing," Levy said. "It never gets easy. You have to be looking years ahead."

Once completed, the water transfer deal and a new seawater desalination plant in Carlsbad were hailed as the largest in the nation – a testament to the visionary thinking by the Water Authority's board, along with the region's civic and business leaders.

Madigan, the former Water Authority board chair, said agency leaders were "not afraid to go into harm's way" to secure independent water supplies and to wean the county away from over-reliance on MWD.

Chris Frahm, a former board chair and lawyer who advises the Water Authority, said the board's formula is simple: advo-

cate, negotiate, legislate and – when necessary – litigate. "You just do whatever you need to do," she said.

Since 2010, the Water Authority has been in state court challenging MWD's rates. The Water Authority achieved significant benefits from the litigation, including a ruling that is expected to save county ratepayers more than \$1 billion in overcharges. The Water Authority was also awarded valuable water rights that a court ruled MWD had improperly calculated. With these and other important outcomes in hand, the Water Authority is working diligently to reach a settlement with MWD on the remaining issues.

Thanks to three decades of investments by San Diego water agencies, MWD is projected to provide just 11 percent of the region's water in 2020. By 2035, that number is expected to drop to about 2 percent – meaning that the region is firmly in control of its own water destiny.

The goal has gone by different names: water independence, water reliability, and water supply diversification. Whatever the name, the investments help protect San Diego County's economy and quality of life.

**An aquatic attraction**

Although the Water Authority's first concrete endeavor, Pipeline 1, is in a rugged and remote area, that's not the case for its latest bold move to improve reliability of water supply.

Directly adjacent to Interstate 5 is the Claude "Bud" Lewis Carlsbad Desalination Plant. It started commercial operations in 2015 and

provides 50 million gallons of water per day, enough to meet about 10 percent of the county's demands.

The plant and associated upgrades, co-developed with Boston-based Poseidon Water, cost \$1 billion – an investment in high-quality, drought-resilient supplies.

The process of turning seawater into drinking water requires a plethora of pipes and pumps and 16,000 membranes that remove salt, algae and other impurities. The membranes do such a good job that the water must be conditioned before it is pumped out for public use. Otherwise, it would be so pure that it would damage the delivery pipeline by leaching minerals.

Just as notable is the fact that the plant has become a tourist attraction. It doesn't rival nearby Legoland, but more than three years after commercial operations began, it has weekly tours booked months in advance.

On a recent day, two dozen visitors took the walking tour as guide Gina Molise, a former Water Authority employee now working part-time for Poseidon, explained the process.

"This is a real live actual reverse-osmosis membrane," she told the small crowd.

The visitors leaned forward as Molise explained that, after 30 years, the Water Authority will be able to buy the plant – the most technologically advanced in the nation – for \$1.

For civic leader Stephen Cushman, the investments have been worth every dollar. "Many of us have toiled on this for 50 years," he said. "People forget we live in a desert. We're not the beautiful green city we want unless we make it happen."

**Thank You to Our Sponsors**

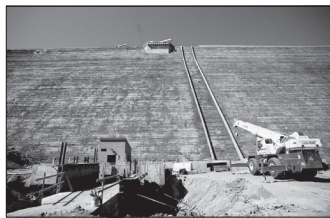


The Water Authority thanks the following firms whose expertise has been critical to the region's water supply successes and who have helped to defray the cost of this special section.

- Jacobs Engineering | Black & Veatch
- Kiewit Infrastructure West Co. | J.P. Morgan
- Brownstein Hyatt Farber Schreck LLP
- J.F. Shea Construction | Poseidon Water
- Southwest Strategies

**2003**

The Water Authority dedicates Olivenhain Dam, completing Phase One of the agency's \$1.5 billion Emergency & Carryover Storage Project. It is the region's first new dam in 50 years.



**2010**

The Water Authority serves 3.2 million residents, who use a total of 566,000 acre-feet of water as per capita potable water use shrinks to 152 gallons per day.

**2011**

The 11-mile, 8.5-foot diameter San Vicente Pipeline Tunnel, a key component of the Water Authority's Emergency & Carryover Storage Project, is finished.

**2012**

The Water Authority's Lake Hodges Pump Storage Project begins operations, providing up to 40 megawatts of clean, on-demand electricity for the region with two 28,000-horsepower pump turbines.



**2015**

Commercial water production begins at the Claude "Bud" Lewis Carlsbad Desalination Plant, which generates approximately 50 million gallons of high-quality drinking water each day as the nation's largest seawater desalination plant.



**2003**

The U.S. Secretary of the Interior, the Water Authority, and other parties sign the historic Colorado River Quantification Settlement Agreement. The Water Authority and Imperial Irrigation District commence their water transfer agreement, and QSA water begins flowing to the San Diego region.



**2010**

Projects to replace nearly 60 miles of the earthen All-American and Coachella canals with modern, concrete-lined canals are completed. The projects provide San Diego with approximately 80,000 acre-feet of high-priority, low-cost water each year for 110 years as part of the QSA.



**2018**

The Water Authority serves 3.3 million residents who use 518,000 acre-feet of water. Per capita use of potable water drops to 134 gallons per day.

**2017**

The Water Authority's Emergency & Carryover Storage Project wins the engineering industry's most prestigious global award from the American Society of Civil Engineers.

**2014**

The San Vicente Dam Raise, the largest water storage increase in county history, is completed, giving the region a critical hedge against water shortages. The project adds 1.57,000 acre-feet of water storage capacity to the reservoir, which is owned and operated by the City of San Diego.