Veles Water Weekly Report

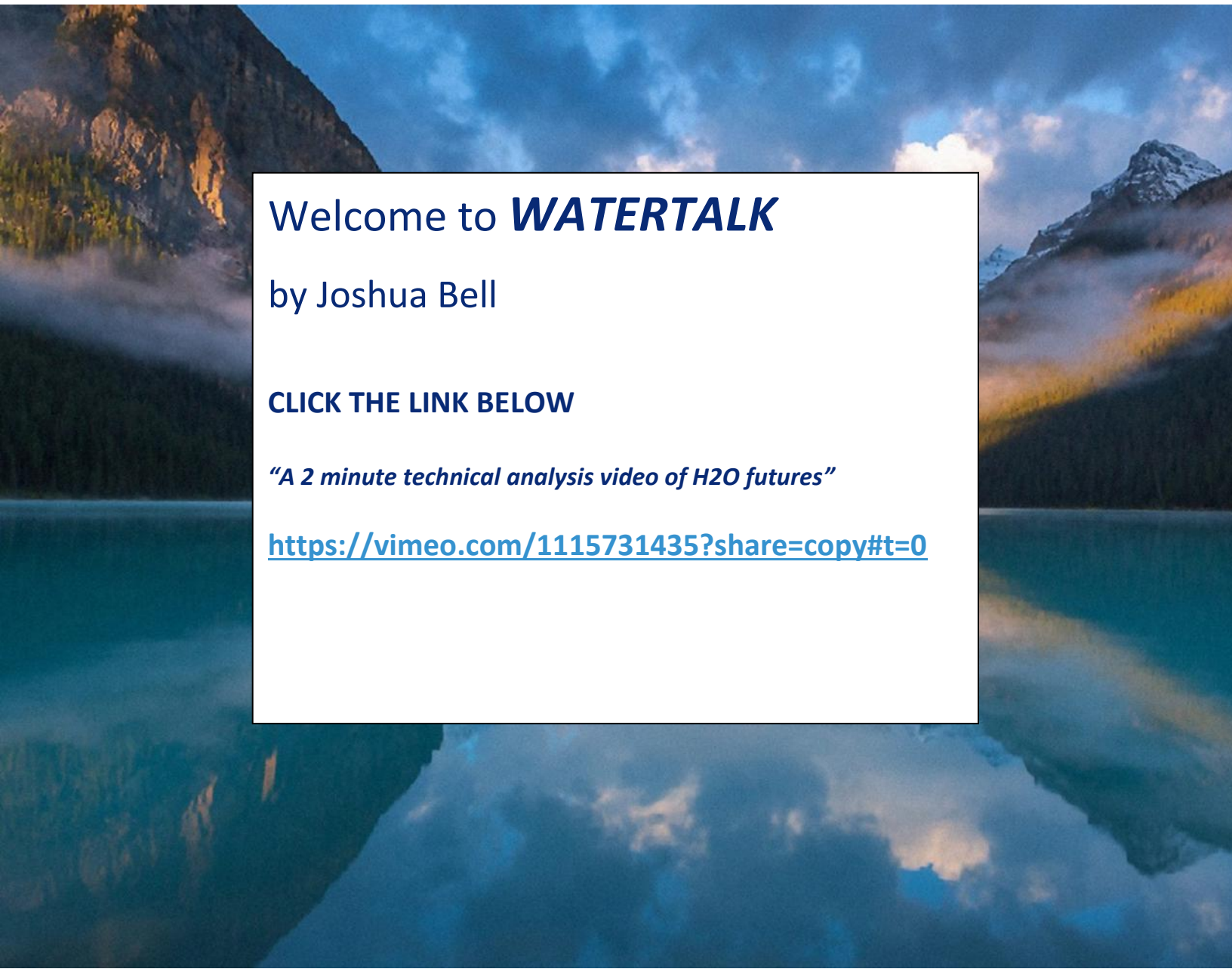
September 4th 2025

Authors:
Lance Coogan - *CEO*
Joshua Bell - *Research Analyst*

research@veleswater.com
+44 20 7754 0342

Veles Water

WATER FUTURES MARKET ANALYSIS



Welcome to ***WATERTALK***

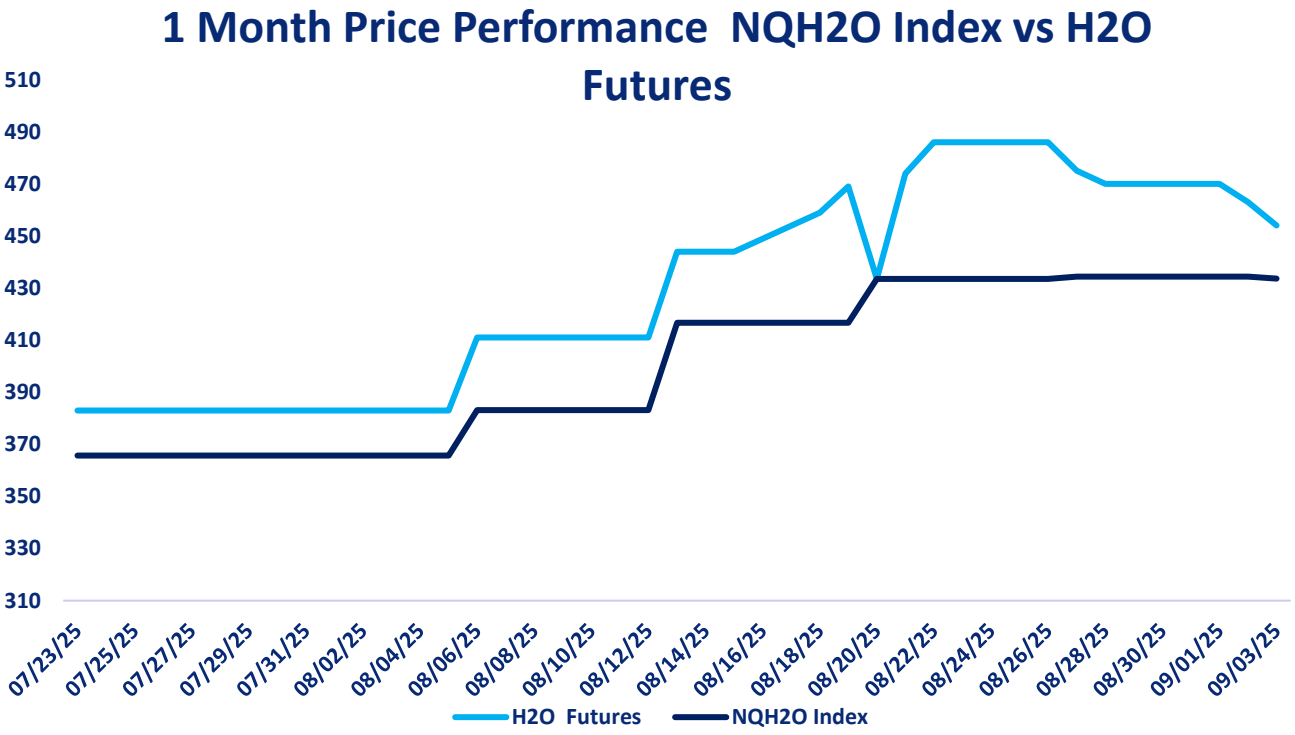
by Joshua Bell

CLICK THE LINK BELOW

"A 2 minute technical analysis video of H2O futures"

https://vimeo.com/1115731435?share=copy#t=0

NQH2O INDEX PRICE vs H2O FUTURES PRICE



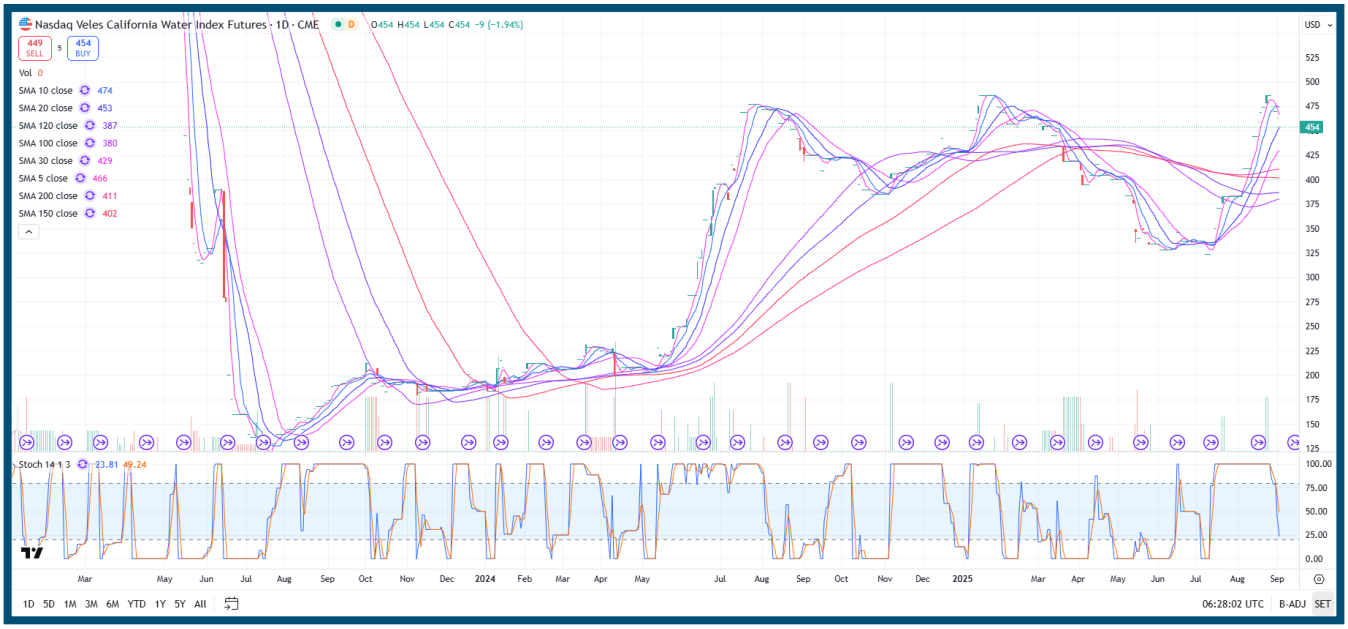
Price Chart Based upon Daily Close

The new NQH2O index level of $433.65 was published on September 3rd, down $0.75 or 0.17% from the previous week. September contract is considered the front month. The futures prices closed at a premium of $20.35 to $35.60 versus the index over the past week.

Below are the bid offer prices on different expiries being quoted in the market.

Sept 25	449@454
Oct 25	461@478
Dec 25	464@494
June 26	520@560

H2O FUTURES TECHNICAL REPORT



Trend Overview

- **Current Price:** 454 (-1.94%)
- **Recent Rally:** The index surged from a base around 320 to a high of 475, marking a **48% gain** before experiencing the current pullback.
- **Momentum:** Momentum has started to cool after a sharp run-up, with recent red candles indicating a potential short-term exhaustion of buying pressure.

Moving Averages

- **Short-Term (SMA 5-30):**
  - All short-term SMAs (5, 10, 20, 30) remain in **bullish alignment** and are sloping upward.
  - The **5-day SMA (466)** is currently above the current price, suggesting a near-term retracement is underway.
  - The **10-day SMA (474)** and **20-day SMA (453)** remain key short-term support zones.
- **Long-Term (SMA 100–200):**
  - **SMA 100 (380)** and **SMA 200 (411)** are **flattening and beginning to curl upward**, a sign of emerging long-term trend reversal.
  - Price is **well above** these levels, confirming bullish trend structure over medium-to-long term.

Stochastic Oscillator (Bottom Panel)

- **%K = 23.81, %D = 49.24**
- The stochastic has pulled back **sharply from overbought levels** and is now in the lower-middle of the range:
  - Indicates a **cool-off period** in momentum.
  - Room exists for **further downside or sideways consolidation** before a new leg higher.

Resistance & Support

• Immediate Resistance:

- **475:** The recent local high.
- **500:** Key **psychological and historical ceiling** remains the major target.

• Support Zones:

- **453–429:** SMA 20 and 30 zone may offer support on a deeper pullback.
- **411:** SMA 200, a **major long-term support**, will be closely watched by bulls.
- **400:** Round number psychological support.

Volume

- Volume remains **muted**, suggesting the recent rally was **price-led**, not volume-confirmed.
- A breakout above 475 would ideally be accompanied by a **volume spike** for confirmation.

Summary

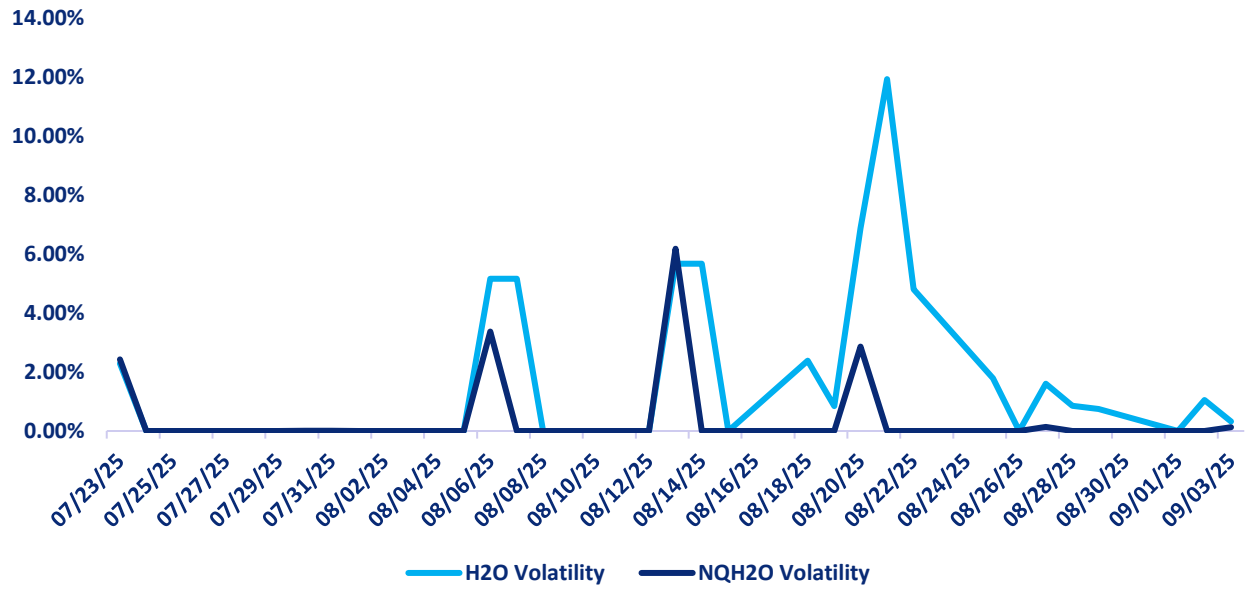
The Nasdaq Veles California Water Index Futures rallied impressively from 320 to 475, breaking above all major moving averages and triggering a confirmed bullish trend reversal. However, momentum is now cooling as seen in the stochastic oscillator and short-term candle structure.

Support lies between **453 and 429**, with deeper backing from **SMA 200 at 411**. As long as price holds above this range, the **long-term uptrend remains intact**, even if short-term consolidation continues.

The key to watch: whether buyers return at the 20-30 day SMA zone or if a deeper test of the 200-day SMA is required before the next leg toward the **500 resistance**.

H2O FUTURES AND NQH2O INDEX VOLATILITY ANALYSIS

Daily H2O Futures Volatility vs Daily NQH2O Index Volatility



DAILY VOLATILITY

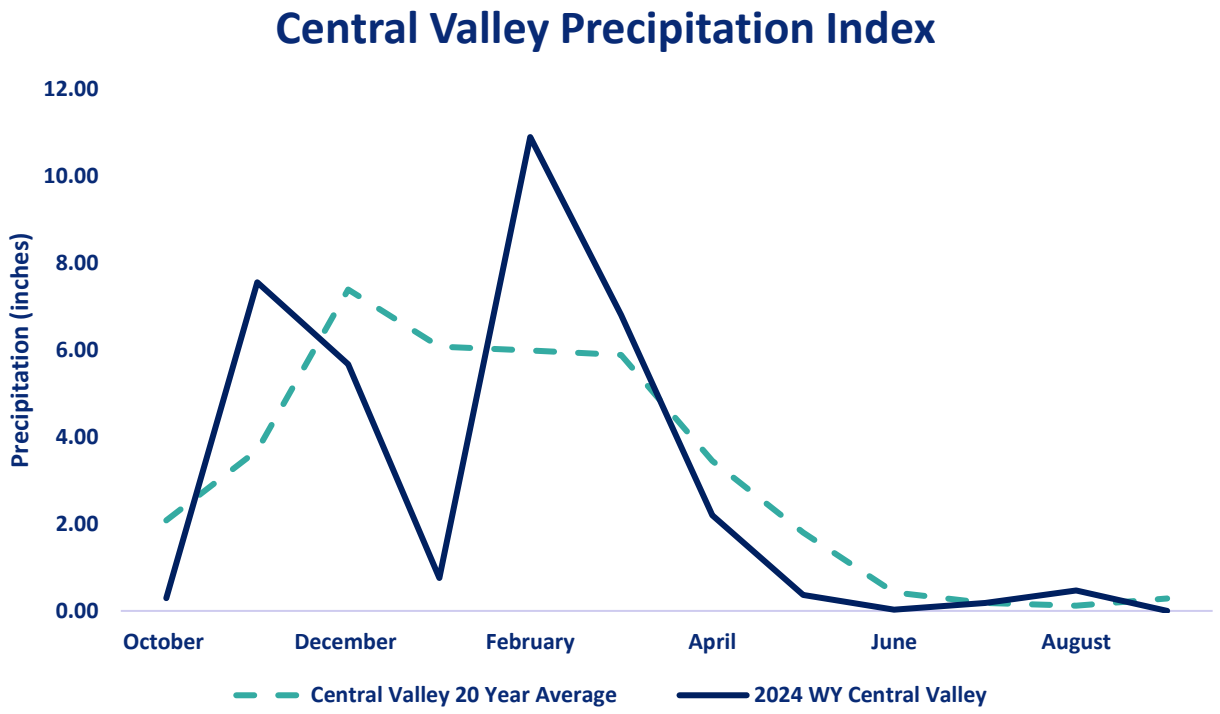
Over the last week the September contract daily future volatility has been 1.05%.

ASSET	1 YEAR (%)	2 MONTH (%)	1 MONTH (%)	1 WEEK (%)
NQH2O INDEX	**19.56%**	**10.66%**	**4.68%**	**0.37%**
H2O FUTURES	N/A	**19.56%**	**10.66%**	**4.68%**

For the week ending on September 3rd, the two-month futures volatility is at a premium of 3.36% to the index, up 0.05% from the previous week. The one-month futures volatility is at a premium of 8.08% to the index, up 3.04%. The one-week futures volatility is at a premium of 1.60% to the index volatility.

*The above prices are all **HISTORIC VOLATILITIES**. All readings refer to closing prices as quoted by CME.*

CENTRAL VALLEY PRECIPITATION REPORT



Central Valley average is calculated using data from 19 weather stations in Central Valley, California.
Data as of 03/09/2025

STATION	MTD (INCHES)	WEEK ON WEEK CHANGE (INCHES)	% OF 20 YEAR AVERAGE MTD	2025 WYTD VS 2024 WYTD %	2025 WY VS 20 YEAR AVERAGE TO DATE %
SAN JOAQUIN 5 STATION (5SI)	0	0	0.00	83	80
TULARE 6 STATION (6SI)	0	0	0.00	80	82
NORTHERN SIERRA 8 STATION (8SI)	0	0	0.00	91	106
CENTRAL VALLEY AVERAGE	0.00	0.00	0.00	85	89

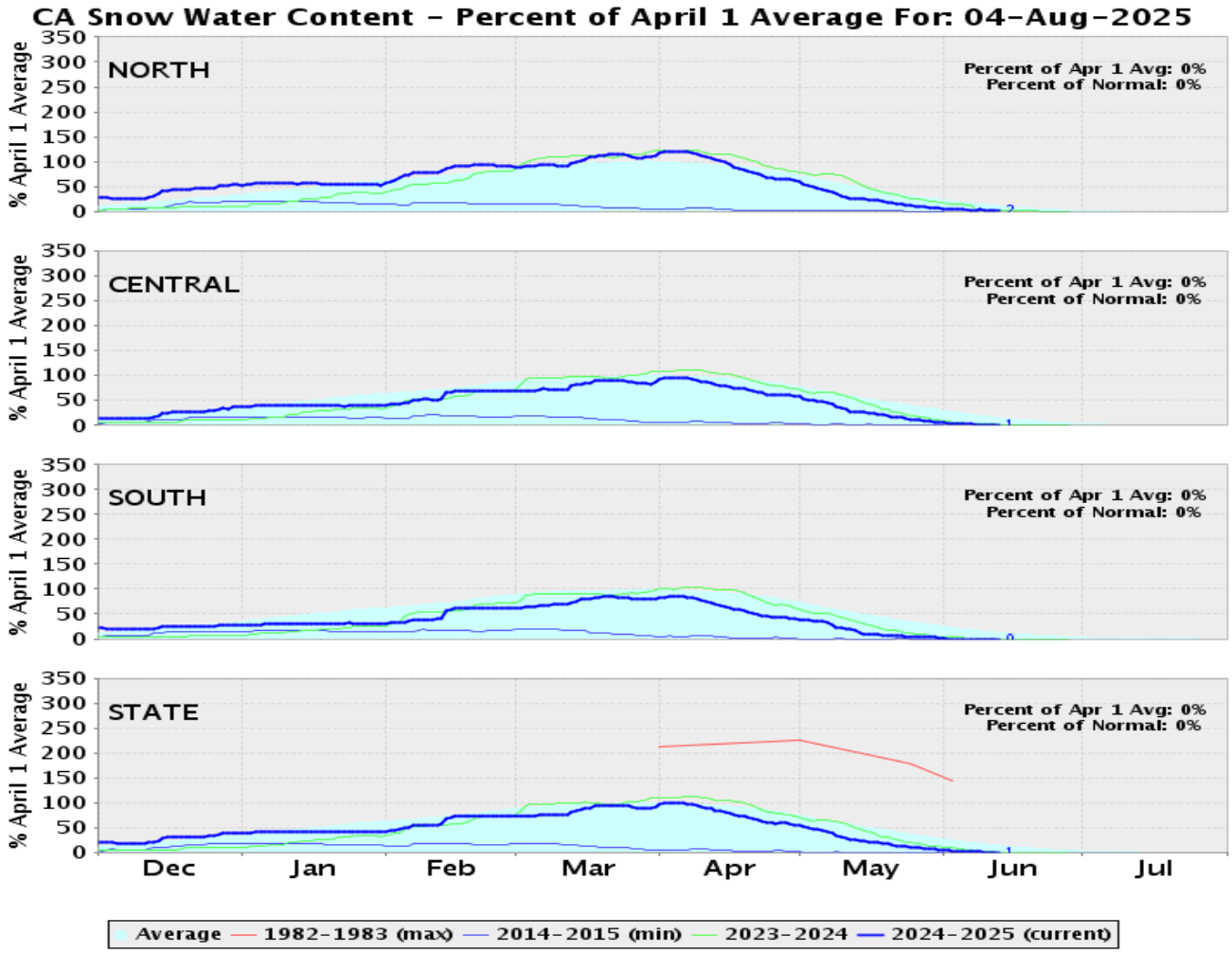
RESERVOIR STORAGE

RESERVOIR	STORAGE (AF)	% CAPACITY	LAST YEAR % CAPACITY	*% HISTORICAL AVERAGE
TRINITY LAKE	1,943,655	79	74	121
SHASTA LAKE	2,845,541	63	66	104
LAKE OROVILLE	2,306,301	67	67	112
SAN LUIS RES	856,997	42	46	109

*% Historical Average is based on a daily average that is interpolated from historical monthly averages. The monthly averages are computed using monthly data from water year 1991 to 2024. The monthly averages are updated every 5 years using a sliding 30 year period.

Reference: California Water Data Exchange

SNOWPACK WATER CONTENT



REGION	*SNOWPACK WATER EQUIVALENT (INCHES)	WEEK ON WEEK CHANGE (INCHES)	% OF AVERAGE LAST YEAR	% OF 20 YEAR HISTORICAL AVERAGE	% OF HISTORICAL **APRIL 1ST BENCHMARK
NORTHERN SIERRA	0	0	0	0	0
CENTRAL SIERRA	0	0	0	0	0
SOUTHERN SIERRA	0	0	0	0	0
STATEWIDE	0	0	0	0	0

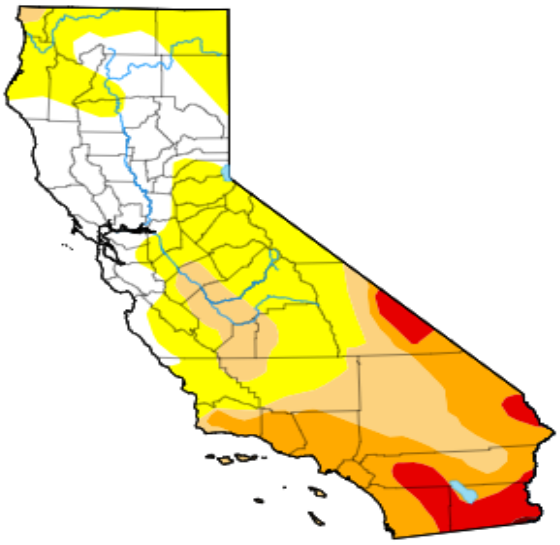
Snow Water Equivalent*, **or SWE**, is a commonly used measurement used by hydrologists and water managers to gauge the amount of liquid water contained within the snowpack. In other words, it is the amount of water that will be released from the snowpack when it melts. SWE has regional variance.**

**** April 1st is used as the benchmark as it when the snowpack in California is generally deepest. It has been used the benchmark date since 1941 by DWR and can be used to predict spring river flow.**

DROUGHT MONITOR

California

Home / California



Map released: Thurs. August 28, 2025

Data valid: August 26, 2025 at 8 a.m. EDT

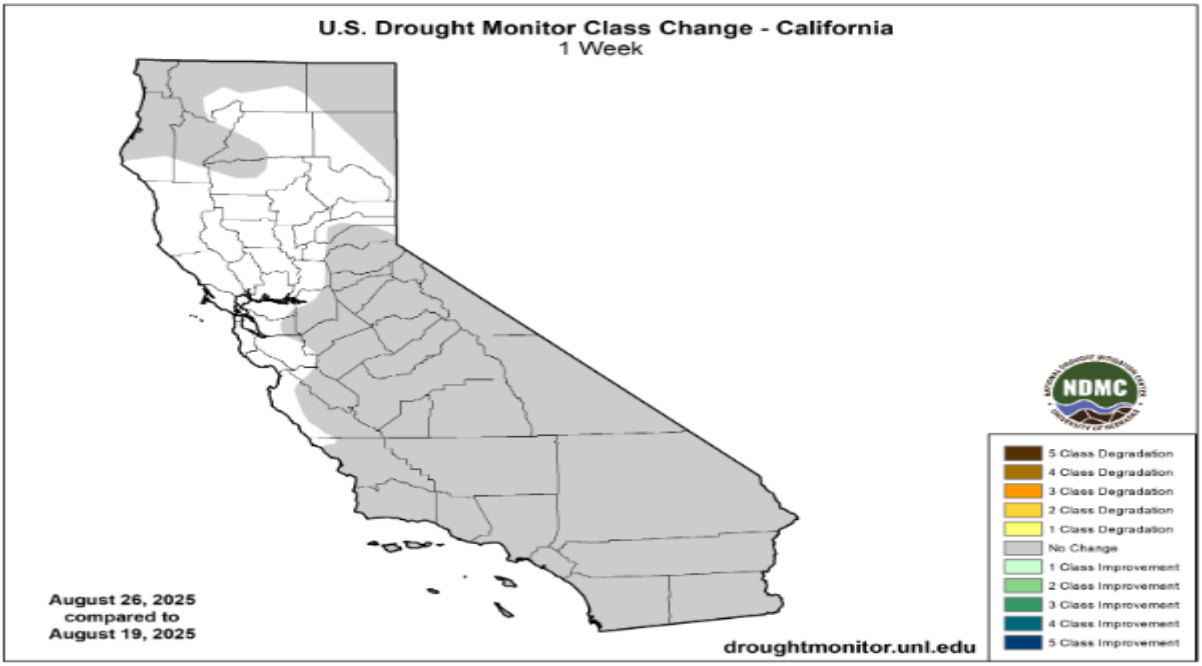
Intensity

- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)
- No Data

Authors

United States and Puerto Rico Author(s):
Brad Rippey, U.S. Department of Agriculture

Pacific Islands and Virgin Islands Author(s):
Tsegaye Tadesse, National Drought Mitigation Center

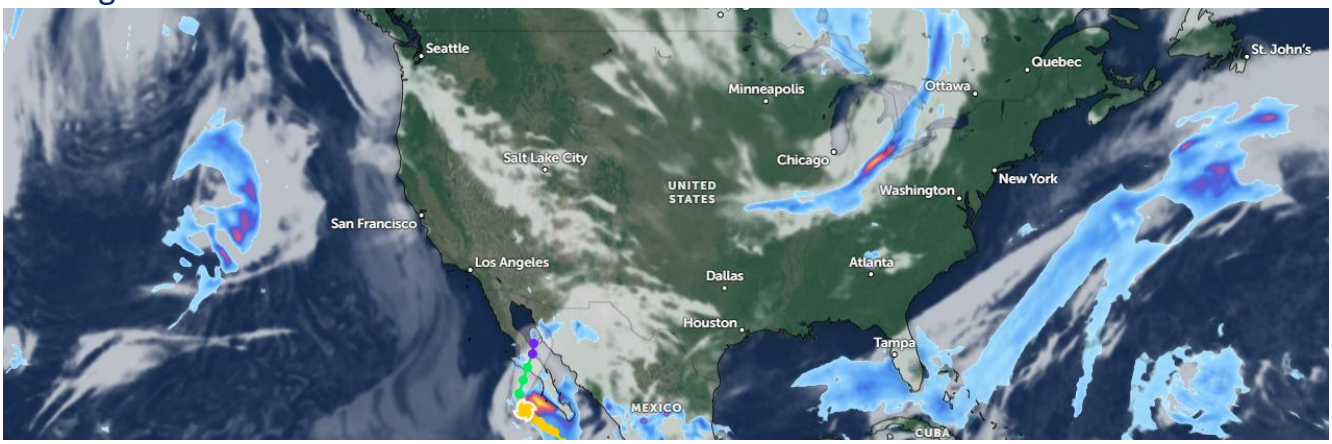


Week	Date	None	D0-D4	D1-D4	D2-D4	D3-D4	D4	DSCI
Current	2025-08-26	23.99	76.01	39.56	23.01	5.90	0.10	145
Last Week to Current	2025-08-19	23.99	76.01	39.56	23.01	5.90	0.10	145
3 Months Ago to Current	2025-05-27	40.22	59.78	39.81	24.73	7.11	0.10	132
Start of Calendar Year to Current	2024-12-31	40.90	59.10	31.52	5.70	1.06	0.00	97
Start of Water Year to Current	2024-10-01	28.40	71.60	10.67	0.08	0.00	0.00	82
One Year Ago to Current	2024-08-27	58.11	41.89	6.91	0.10	0.00	0.00	49

The U.S Drought Monitor is jointly produced by the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration. Map courtesy of NDMC.

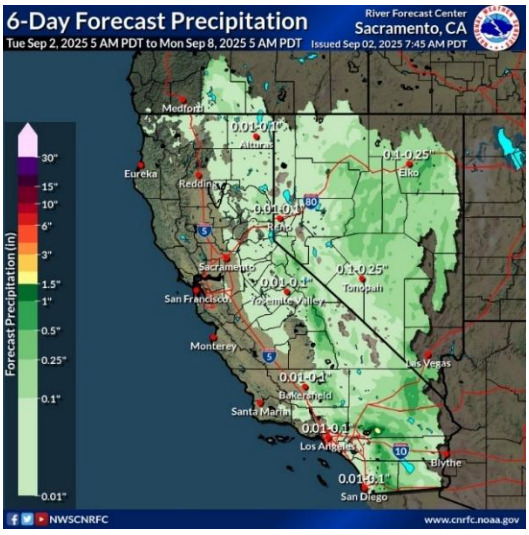
CURRENT SATELLITE IMAGERY

The satellite picture shows 4 different weather systems affecting the US. Firstly in the Pacific there is a Pacific storm heading towards the northwestern US bringing associated precipitation with it. Secondly, further south there is Hurricane Lorena which is just off the Baja Peninsula and may affect Southern California and possibly Arizona. Just off the map is Hurricane Kiko heading towards Hawaii. Thirdly the Midwest has a line of storms stretching from just north of Dallas and curving up towards Ottawa. Lastly the remnants of a storm system stretches from Florida in a northeasterly direction over the Atlantic moving eastwards.



10 Day Outlook

Map Ref: Zoom Earth



In between these lows offshore, high pressure will build and shift towards the coast the rest of the work week as the southwest low hovers near Baja. By Friday afternoon, the ridge will be firmly overhead with 500 mb heights exceeding 590 dm. This will keep dry conditions over the region and bring well above normal (+10 to +20 deg F) afternoon temperatures. Overnight lows will also be well above normal by similar amounts through Saturday. Many locations across CA are already under heat related products (please see local WFO pages for heat risk/alert information). Into Sunday, a trough will move through the PacNW as the ridge shifts further inland. Troughing will dig into nrn CA/NV as well while the low offshore of Baja finally begins to move inland. This will provide some relief across the region with coastal areas back to near/below normal and afternoon temperature anomalies inland down to about +5 to +15 deg F.Next week, models have a trough digging into the PacnW from western Canada and closing off into an upper low before potentially heading into CA/NV into Tuesday.
Reference: National Weather Service / California Nevada RFC / Sacramento CA

WESTERN WEATHER DISCUSSION

A hot weather pattern gradually yielded to increasingly cloudy and showery weather. In most areas, however, showers were insufficient to result in significant drought relief, except in central Colorado and environs. Still, there were several episodes of significant weather, including a thunderstorm-fueled haboob on August 25 in Phoenix, Arizona, where high winds (clocked to 70 mph at Sky Harbor International Airport) and near-zero visibility in blowing dust led to travel and electrical disruptions. By August 26, at the end of the drought-monitoring period, shower activity began to shift farther north and east. In the Northwest, where hot, dry weather prevailed for much of the period, there was some drought expansion, with two previously separate areas of severe drought (D2) merging across eastern Washington. Some of the worst agricultural conditions in the country have been noted in recent weeks across Washington, with the U.S. Department of Agriculture reporting that 47% of the state's rangeland and pastures were rated in very poor to poor condition on August 24. On the same date, Washington led the U.S. with 57% of its barley and 53% of its spring wheat rated very poor to poor.

Reference:

Lindsay Johnson, National Drought Mitigation Center
Richard Tinker, NOAA/NWS/NCEP/CPC

WATER NEWS

CALIFORNIA WATER NEWS

Go deep to make desal work along California's coast

The world is running out of fresh water and now companies are using the high pressure of the ocean depths to push seawater through a membrane leaving salt behind.

This month Scientific American reports a breakthrough in strategy of how to apply reverse osmosis without huge energy costs or negative environmental issues by allowing it to "happen naturally" using technology that harnesses pressure hundreds of meters underwater.

"Reverse osmosis pods are submerged to depths of around 400 to 500 meters (1,600 feet) where immense hydrostatic pressure does the heavy lifting of separating water from salt. Purified water is then pumped back to shore.

"Far-fetched as it may sound, there are multiple prototypes already at work; the companies behind them aim to take cheap, large-scale desalination from pipe dream to reality."

One such company with big but achievable pipe dreams for the California coast is San Francisco-based OceanWell, who announced a pioneer project called Water Farm1 (WF-1) with six Los Angeles-area water agencies this month.

The desalination project would pump 60 million gallons per day to drought-prone Southern California by 2030. That would be about 66,000 acre-feet annually, enough to supply some 15 cities the size of San Luis Obispo. The desal pods would be anchored 4.5 miles off the coast of Malibu in Santa Monica Bay.

"California, like much of the world, urgently needs a new source of water to replace dwindling supplies," said Robert Bergstrom, CEO of OceanWell. "Water Farm 1 shows how we can responsibly and economically harvest fresh water from the ocean by building infrastructure to withstand rapidly melting snowpack, increasing drought, more extreme atmospheric rivers, sea water intrusion, and overdrawn groundwater. Water Farm 1 is a critical milestone toward OceanWell's goal of adding one million acre-feet of new potable water to the global supply within a decade."

This spring OceanWell demonstrated the pods in Las Virgenes Reservoir near Calabasas to high acclaim of the water agency leaders gathered there. Las Virgenes manages water for 70,000 SoCal residents.

Looking past the Malibu water farm, OceanWell is close to testing the technology in six north-to-south locations offshore from Cayucos in San Luis Obispo County to around Pt. Arguello and down to Pt. Hueneme and south to Dana Point and then off Carlsbad under a permit being issued by the EPA.

OceanWell has said it is aiming at 15 water farms in California and elsewhere.

So far, Oceanwell is supported by a working group of 25 thirsty California water agencies.

The complaints against current and past desalination projects include high energy consumption, environmental impacts like brine discharge as well as marine life disruption and high costs.

Importantly, the Coastal Commission has opposed on-land desal projects. Lack of scale and low volume also haunt existing projects.

For example, problems with the Santa Barbara 1990s desal operation include limited capacity of just 3,125 acre-feet per year (20x smaller than the WF-1) requiring 13.8 million kilowatt hours of electricity per year, or 4,416 kilowatt hours per acre foot. This is 42 percent more electricity than it takes to import water from the State Water Project (3,100 kWh/AF).

Land infrastructure can't deliver

The State Water Project ships water over 700 miles from northern California along the Central Coast to San Luis Obispo County and Morro Bay, Santa Maria, Santa Barbara and south to Los Angeles and beyond — all told 29 public agencies and local water districts from Plumas County in the north to San Diego County in the south.

But that supply is in jeopardy due to climate change, suggest a number of studies. California is expected to lose 10% of its water supply by 2040 due to climate change, and the State Water Project could lose up to 46% of its delivery capability as land subsidence threatens canal infrastructure.

Now a new study this week says if no action is taken, it could fall up to 87% by 2043, affecting 21 million Californians, says DWR.

If there is trouble to the north, Los Angeles also has big time problems importing water from the East.

Los Angeles is dependent on imported water from the Colorado River — the source of about one-third of Southern California's water supply.

Again, climate change is impacting rainfall in the Southwest as well as California, with Lake Mead predicted to reach the lowest level ever in the next two years.

Published research has found that "the Colorado River Basin's current 'megadrought' is the worst dry spell the region has experienced in at least 1,200 years.

Original Article: Santa Maria Times by John Lindt

Major Water Supply Infrastructure Project Moves Forward with Funding Increase

A major water storage project for California moved ahead this month with the approval of additional funding to offset added costs.

The Sites Reservoir project received a funding increase of nearly $219 million from the California Water Commission to balance expected cost increases due to inflation and resulting higher construction costs.

Sites Reservoir is a proposed off-stream water storage facility in the Sacramento Valley. It has a planned storage capacity of about 1.5 million acre-feet — enough to supply more than 4.5 million homes for a year. Sites is one of the largest new water storage projects in California in decades.

The reservoir would use a mix of new and existing infrastructure to divert water from the Sacramento River during high-flow periods — after all other water rights and regulatory requirements are met — into a large basin for storage.

Funding Commitments

The Governor's office reports that the additional funding approved by the water commission makes Sites eligible for $1.094 billion in Proposition 1 funding. The total project cost is estimated to be up to $6.8 billion, with about $780 million being financed through the federal government.

A significant portion of the project funding comes from conditional commitments by 30 local water agencies from across the state, representing millions of Californians and thousands of acres of food-producing farmland.

The region of the state where Sites Reservoir would be located receives the majority of California's rainfall. So locating a new reservoir here means that Sites can collect excess winter storm flows from uncontrolled streams below the existing reservoirs in the Sacramento Valley and store that water for use during dry periods.

By operating in conjunction with other California reservoirs, Sites Reservoir will substantially increase water supply flexibility, reliability and resiliency in drier years. In addition, a portion of this water supply will be dedicated to support native fish, migratory birds and their habitats.

As an off-stream reservoir, Sites would avoid many of the negative environmental impacts associated with on-stream dams. Capturing only excess flows during extreme storm events leaves water in the Sacramento River to support fish and wildlife. Sites will also contribute to the increased freshwater flow into the Delta during drier periods to assist with salinity management.

Construction on Sites Reservoir is scheduled to begin in 2026 and the reservoir is expected to begin full operations in 2032.

CalChamber Position

The California Chamber of Commerce will continue to support construction of Sites Reservoir and legislation that seeks to streamline the permitting process for water supply and flood risk reduction projects. Addressing unnecessary delays in the permitting process for critical infrastructure projects will reduce costs borne by

ratepayers and better ensure California builds at the pace and scale needed to address climate change.
Original Article: Cal Chamber Alert by Kristopher Anderson

Emergency declared in Napa as contaminated water dumped into California's Napa County

As flames from the Pickett Fire continue to sweep through the rugged landscape of Northern California's Napa County, local officials have declared a health emergency, citing fears that hazardous debris could infiltrate the area's drinking water systems.
The blaze, which ignited August 21 near Aetna Springs, has scorched more than 6,800 acres and is just 17 percent contained, according to Cal Fire. More than 2,700 firefighters are on the ground as of Tuesday, working to prevent the fire's advance toward critical infrastructure and populated areas.
The local health emergency, announced Monday, gives Napa County immediate access to additional state and federal support – a move public health authorities say is necessary to respond swiftly to contamination risks emerging from the fire's footprint.
"The health of Napa County residents is my highest priority, and the declaration of a local health emergency is a proactive and necessary step to protect our community from the unseen dangers left behind by this fire," said Dr. Christine Wu, the county's public health officer.
"This proclamation ensures that we have legal authority and resources to swiftly manage the cleanup process and mitigate potential for exposure to hazardous materials."
According to a statement from the county, ash, building debris, and fire-retardant residue may pose "imminent environmental threats to safe water supplies." The threat underscores growing awareness among reinsurers and catastrophe modelers of how secondary perils – particularly those stemming from wildfire contamination — can compound property losses and trigger liability exposure for municipalities and utilities.
The incident is drawing comparisons to the 2020 Glass Fire, which devastated more than 67,000 acres across Sonoma and Napa counties and left behind widespread environmental damage, including reported impacts on vineyards and aquifers.
Meteorological relief has offered some help in recent days. Incident meteorologist Matt Mehle said a transition from record-setting heat to cooler, foggier conditions could slow the fire's expansion.
"Last week, we had record-breaking heat that lasted through last weekend," Mehle said during a press briefing. "We are currently in a pattern change… that's actually bringing some relief to the fire."
Nonetheless, smoke continues to affect air quality across Napa, Solano and Sonoma counties, though Bay Area officials say San Francisco has thus far remained outside the smoke plume.

Implications for Insurers

For carriers and brokers active in California's wildfire-prone regions, the event is another stark reminder of how rapidly fire events are evolving into complex, multi-line claims scenarios — touching everything from homeowners and commercial property to environmental and water quality liability.

Debra Costa, senior vice president and vintner practice leader at Heffernan Insurance Brokers who insures vintners across Napa and Sonoma, told *Insurance Business* that "there was a lot of pullback in California.... our first claim in the 2015 there was a big fire in Lake County. Then we had the 2017 wildfires....coined as the wine country fires. And then we had...all these named wildfires, year over year over year... we have wildfires all around us. It's not going away. Climate change is not going away."

The expanded emergency declaration is expected to speed access to state and federal disaster recovery funds, but insurers on the ground will likely be called upon to engage early in mitigation, remediation, and claims triage efforts.

As the fire continues to burn through areas of economic significance – including some of Napa's agricultural heartland – loss adjusters are preparing for a wave of early assessments once containment levels allow.

While Napa is no stranger to wildfire devastation, the region's layered risk – from infrastructure strain to tourism disruption and now environmental exposure – is pushing insurance stakeholders to revisit assumptions about recovery timelines and resilience strategies.

Original Article: Insurance Business by Chris Davis

US WATER NEWS

Launching a North American Water Dialogue

Across North America, access to clean, reliable water remains strikingly unequal. While Canada holds 20% of the world's freshwater resources, many communities in the United States and Mexico struggle with scarcity, contamination, and inadequate infrastructure. From drought-plagued Sonora and Nuevo León to depleted aquifers in Arizona and California, the continent's water crisis is both urgent and uneven. Even in Canada, water scarcity is an increasing concern due to rising demand from human activity, climate change, and regional droughts. Indigenous communities are particularly affected, facing long-standing challenges in accessing safe drinking water due to inadequate infrastructure and chronic underinvestment.

These disparities are now colliding with powerful economic and demographic forces— climate change, urban growth, industrial expansion, and the rapid rise of water-intensive sectors like energy, data centers, and semiconductors. The result is growing stress on

shared water systems, rising social tensions, and an increasingly visible threat to North America's competitiveness and environmental security.

While bulk water exports from Canada to drought-stricken areas is unlikely due to environmental risks, potential depletion of domestic water systems, the creation of risky dependencies, and most importantly domestic politics, there is another way forward. The time has come to launch a North American Water Dialogue: a sustained, inclusive, and forward-looking platform for regional cooperation on water access, resilience, and innovation. This dialogue would bring together national, state/provincial, and local governments; Indigenous leaders; industry; civil society; and scientific communities across the continent to examine shared challenges, explore best practices, and chart a course for equitable and sustainable water governance.

It is far too early to talk of building a regional water strategy. Water issues are deeply local, often politically sensitive, and embedded in distinct legal and institutional traditions. Efforts to coordinate water governance across borders must begin with trust, transparency, and mutual learning. A dialogue would allow for constructive engagement without imposing rigid frameworks. It would offer a space for:

- Mapping disparities in water access, quality, and infrastructure investment across the continent.
- Identifying shared pressures, such as aquifer depletion, extreme weather, urban demand surges, and rising industrial use.
- Sharing policy innovations, such as tiered pricing systems, water reuse mandates, and rights-based access frameworks.
- Aligning research and data collection, especially on groundwater systems and transboundary watersheds.
- The intersection of water with food and energy and the challenge of balancing priorities in all three areas.

Toward a Continental Conversation

This is not a call for top-down harmonization or sweeping regulatory integration. Rather, it is a call for open, sustained, and inclusive conversation—one that reflects the region's diversity and builds pathways to collaboration from the ground up. While the dialogue's outcomes would not focus on binding agreements, they might include research projects, pilot programs, voluntary commitments, or policy guidance—potential building blocks for future alignment.

Original Article: Circle of Blue by Duncan Wood

'Peak water security' crisis leaves millions across US at risk, research finds

As the United States passes a tipping point in water security, new research reveals that millions of Americans now face a growing crisis in accessing clean, affordable water.

The findings, published in *PLOS Water* and *PLOS One*, were produced by a multi-university team co-led by Dr. Wendy Jepson, professor of geography and director of Environmental Programs at Texas A&M University.

"Our research shows water insecurity in the U.S. is not just a problem of pipes and infrastructure—it's a human issue that affects health, daily life and dignity," Jepson said. "Even in the wealthiest country, millions face challenges getting safe and affordable water, often without anyone realizing it."

A call for immediate water reform

The research team calls on utility industries, public agencies and policymakers to recognize the scope of the crisis, and reform water management approaches.

"Our goal was to bring water insecurity out of the shadows so decision-makers could build equitable, sustainable water systems for all Americans," Jepson said.

The team emphasizes that addressing the water crisis requires more than fixing pipes; it demands that policies treat water as a basic human need and that they prioritize the needs of those most affected.

Logic model depicting water insecurity at the individual and household levels, and how they can be integrated into clean water infrastructure projects. Credit: Dr. Wendy Jepson/Texas A&M University College of Arts and Sciences.

The triple threat behind the water crisis

The studies outline how a "triple threat" of degrading infrastructure, accelerating climate change and sluggish or inadequate policy responses have pushed the U.S. past a critical point of clean and clear access to water—what the researchers call "peak water security."

This triple threat disproportionately impacts low-income households and historically marginalized communities, which face higher rates of water contamination, shutoffs and exclusion from infrastructure improvements.

"We know water insecurity exists in the U.S.," said Dr. Amber Pearson, co-author and associate professor at Michigan State University. "But we've lacked the right tools to measure it."

A new tool to track America's water crisis

To measure and track the crisis, the researchers introduced a new tool: the Household Water Insecurity Experiences (HWISE), a survey-based measurement originally created for lower-income countries but scaled to the U.S. context.

The tool uses data from more than 1,000 households in over 15 at-risk communities across 2,770 Americans. Using the tool, the researchers are evaluating how well it predicts real-world outcomes and metrics like reliance on bottled water and stress related to water access.

While the study is ongoing, the researchers believe the tool will have major implications for targeted infrastructural investments, integrated public health efforts and strategies aimed at closing the water equity gap.

"This scale will help us understand the real, everyday struggles families face and guide more fair policies and investments," Pearson said.

This interdisciplinary research team's project included experts from Texas A&M University (College Station and Galveston campuses), Michigan State University, the University of Miami, Arizona State University, San Jose State University, Portland State University and others.

Original Article: Phys.org by Zaid Elayyan

TSMC Arizona begins construction on new industrial water plant

TSMC Arizona has broken ground and begun construction this month on a planned 15-acre Industrial Reclamation Water Plant (IRWP). The IRWP is designed to achieve "Near Zero Liquid Discharge" which means the company will have the ability to reuse nearly every drop of water. At start-up, the IRWP will reach 85% recycling rate with a plan to reach 90% or better. The start of construction on the IRWP reflects the company's commitment to sustainable operations and coincides with World Water Week (August 24-28, 2025).

"One of the many reasons we chose Phoenix for our US operation was the state's and city's thoughtful and thorough planning, including a water supply plan for 100 years. We know that water is a constant concern in the region. We will be a responsible corporate neighbor in our use of natural resources, including water," said Rose Castanares, President of TSMC Arizona. "The 'near zero' discharge design of our IRWP is a proof point of TSMC Arizona's green manufacturing plans, and our commitment of conservation so that the water supply will be maintained for a growing Phoenix community."

This plant will convert industrial wastewater back to the "ultrapure" standard required in the chipmaking process. Ultrapure water is used to wash away microscopic particles that can create defects in semiconductor wafers, especially in advanced technologies such as the 4nm chips produced by TSMC Arizona. TSMC Arizona already reaches 65% recycling from its current in-house water resource center, which converts industrial wastewater for use in support systems such as air scrubbers and cooling towers.

"This project demonstrates how Phoenix can grow and innovate while conserving our most precious resource – water," said Mayor Kate Gallego. "The IRWP at the TSMC site aligns economic growth with Phoenix's water security commitments, providing an important example of the type of high-value, sustainable investments that are possible. By recycling and conserving water at this scale, we support advanced manufacturing and the good jobs that come with it, protect our desert environment and neighborhoods, and deliver a resilient future for generations to come."

The new IRWP will support TSMC Arizona's first two fabs at the company's north Phoenix site and will be operational in 2028. The IRWP capacity will be expanded to accommodate the needs of future fabs. The IRWP and overall conservation efforts will significantly reduce the water supply required from the City of Phoenix.

TSMC currently operates industrial water plants in Taiwan, achieving a milestone in 2022 as the world's first application of industrial-grade recycled water in advanced semiconductor manufacturing. The design of the Arizona plant incorporates design features from its Taiwan facilities, but also considers the uniqueness of Phoenix's water quality as compared to water in Taiwan. The primary difference is the water hardness as Phoenix's water has higher levels of magnesium and calcium.

TSMC implements a comprehensive water conservation strategy that aligns with the United Nations Sustainable Development Goals. The company includes achieving a water positive rate of over 65% by 2030 as one of the goals for all TSMC fabs around the world.

Water positive is the concept of water conservation that actively contributes to the sustainable management and restoration of water resources. This involves implementing practices and technologies that reduce water consumption, improve water quality, and enhance water availability.

The company also just released its 2024 Sustainability Report which covers its annual ESG performance metrics. Environmental metrics for TSMC Arizona will be incorporated into future reports.

Original Article: AZ Big Media

Colorado dams' cost soars to $2.7 billion, scaring key customer as builders scramble to cut plan

Northern Water has halted some design and construction contracts and is cutting back its multibillion dollar, two-dam supply project after its biggest customer said it was pulling out, officials said, as they detailed how the budget for their decades-long ambition suddenly jumped to $2.69 billion from $2 billion.

Four design-and-build contracts for the Northern Integrated Supply Project, meant to serve growth in 15 communities and water agencies, were pulled from the bidding process for at least three to four months while engineers consider how costs could be cut, Northern Water General Manager Brad Wind said in an interview Monday. The Fort Collins-Loveland Water District, serving about 60,000 people, was responsible for about 20% of the water supply and construction costs, the largest share, when it said Aug. 8 that it would no longer participate in the project.

Inflation in construction expenses, including salaries and materials, legal and permitting costs extended by environmental challenges, and a $100 million mitigation settlement with Save the Poudre all sent project costs soaring in 2025, Wind said.

"We're taking a brief pause," Wind said, given Fort Collins-Loveland saying it would withdraw from NISP and was securing other water supplies to meet growth. "But that's given us an opportunity to step back and begin processes to resize the project, something that might be a little smaller, do some value engineering associated with that in preparation for continuing on with the project. But it's certainly still a very viable project and an important one for the region."

NISP isn't the only water project that is seeing costs rise.

Denver Water has seen construction costs on the Gross Dam expansion project surge $34 million, according to spokesman Todd Hartman, with a current price tag for construction alone at $565 million, up from $531 million in 2021, when the contract was signed. But the total cost of the project tops out at $819 million when counting other costs including environmental mitigation.

The $819 million Gross Reservoir project total has recently been published in the agency's budget, but has not been widely cited as the true cost. The fate of the project is still up in the air — federal courts have allowed dam construction to continue for safety reasons, but a federal district court judge declared the construction permit issued by the U.S. Army Corps of Engineers to be illegal because of inadequate environmental reviews.

Contracting that Northern Water has stopped includes key pieces such as inlet canals to the proposed Glade Reservoir northwest of Fort Collins. Northern Water has already awarded and will continue with the design-construction project to move U.S. 287 out of the bottom of the valley that will become Glade, to higher ground nearby. The highway must be moved even if Glade Reservoir is downsized, officials said.

Options to cut building costs for the Glade portion of the delivery system include anything from lowering the height of the dam, to smaller inlets and outlets and pumping equipment if demand has dropped from a large customer like Fort Collins-Loveland dropping out, Wind said.

"We just want to evaluate what components of the project could be kind of right-sized, become smaller and still meet the needs of the remaining participants," he said.

Fort Collins-Loveland said budget updates since the Save the Poudre settlement was announced in March had pushed the price of NISP water 50% higher than what developers would be willing to pay for new water hookups.

No other members have come forward to threaten withdrawal, Wind said.

After Fort Collins-Loveland, the next biggest shareholders of NISP among 14 other towns and districts are Erie at 16.25% or 6,500 acre-feet of water supply; Fort Morgan at 9% or 3,600 acre-feet; and Central Weld at 8.75% or 3,500 acre-feet. One acre foot of water is generally enough to supply the needs of two to three average households for a year.

Original Article: Water Education Colorado by Michael Booth

Western states seek to end long-running water dispute over dwindling Rio Grande

A simmering feud over management of one of North America's longest rivers reached a boiling point when the U.S. Supreme Court sent western states and the federal government back to the negotiating table last year.

Now the battle over waters of the Rio Grande could be nearing resolution as New Mexico, Texas and Colorado announced fresh settlement proposals Friday designed to rein in groundwater pumping along the river in New Mexico and ensure enough river water reliably makes it to Texas.

New Mexico officials say the agreements allow water conservation decisions to be made locally while avoiding a doomsday scenario of billion-dollar payouts on water shortfalls.

Farmers in southern New Mexico increasingly have turned to groundwater as hotter and drier conditions reduced river flows and storage. That pumping is what prompted Texas to sue, claiming the practice was cutting into water deliveries.

It will be up to the special master overseeing the case to make a recommendation to the Supreme Court.

If endorsed by the court, the combined settlements promise to restore order to an elaborate system of storing and sharing water between two vast, adjacent irrigation districts in southern New Mexico and western Texas.

Still, tough decisions await New Mexico under its new obligations.

Divvying up a dwindling resource

In 1939, when New Mexico was a young, sparsely populated state, it ratified a compact with Texas and Colorado for sharing the waters of the Rio Grande. The agreement defined credits and debits and set parameters for when water could be stored upstream. From the San Luis Valley in Colorado to below Elephant Butte Reservoir in New Mexico, the compact called for gages to monitor the river, ensuring downstream obligations were met.

Meeting the nearly century-old metrics has become harder as snowpacks shrink in the mountains that feed the Rio Grande. Thirsty soil soaks up more snowmelt and runoff before it reaches tributaries, warmer temperatures fuel evaporation, and summer rainy seasons that once boosted flows and recharged reservoirs are more erratic.

The equation is further complicated by growing populations. The Rio Grande provides drinking water for about 6 million people and helps to irrigate millions of acres of cropland in the U.S. and in Mexico.

While the Colorado River gets all the headlines, experts say the situation along the Rio Grande is just as dire.

Triple whammy

The proposed settlements would provide a detailed accounting system for sharing water with Texas.

New Mexico could rely on credits and debits from year to year to navigate through drought and wet periods, though it could be responsible for additional water-sharing obligations if deliveries are deferred too long.

The international group Sustainable Waters is wrapping up an extensive study on how the river's water is being used.

Brian Richter, the group's president, said that over the last couple of decades, New Mexico has lost more than 70% of its reservoir storage along the river while groundwater has been extracted faster than it can be replenished. Add to that New Mexico has fallen behind in its water deliveries to Texas.

Richter called it a triple whammy.

"We're definitely in a precarious situation and it's going to become more challenging going forward," he said. "So I think it's going to require sort of a major reenvisioning of what we want New Mexico's water future to look like."

The parties in the case say the proposed agreements will facilitate investments and innovation in water conservation.

"The whole settlement package really provides for the long-term vitality, economic vitality, for the communities in both New Mexico and Texas," said Hannah Riseley-White, director of the Interstate Stream Commission.

New Mexico would have two years to adopt a plan to manage and share water along its southernmost stretch of the Rio Grande. The state can still pump some groundwater while monitoring aquifer levels.

"The burden is on New Mexico," said Stuart Somach, lead attorney for Texas in the Rio Grande dispute.

All dried up

In Albuquerque, it looks grim.

It's common to have stretches of the Rio Grande go dry farther south, but not in New Mexico's largest city. Prior to 2022, it had been four decades since Albuquerque had seen the muddy waters reduced to isolated puddles and lengthy sandbars.

Kayakers make their way down the Rio Grande between Rio Rancho and Albuquerque, New Mexico, May 31, 2020. (AP Photo/Susan Montoya Bryan, File)

Aside from a changing climate, water managers say the inability to store water in upstream reservoirs due to compact obligations exacerbates the problem.

Many of the intricacies of managing the Rio Grande are as invisible to residents as the water itself.

Sisters Zoe and Phoebe Hughes set out to take photos during a recent evening, anticipating at least a sliver of water like usual. Instead they found deep sand and patchwork of cracked, curled beds of clay.

"It's so dystopian. It's sad," Phoebe Hughes said, adding that the river isn't so grand now.

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Looking for a silver lining, the two collected pieces of riverbed clay, hoping they could fashion it into something. Other curious visitors played in the sand and walked dogs.

Downstream, Elephant Butte stands at less than 4% of capacity. The reservoir is an irrigation lifeline for farmers, fuels a hydropower station and serves as a popular recreation spot.

Reducing use

The settlements call for reducing groundwater depletions to a rate of 18,200 acre-feet per year. While that's about one-sixth of the drinking water supplied to New York City each day, for the arid West, it's a monumental amount.

New Mexico officials expect to achieve most of those reductions from buying water rights from willing sellers, meaning more than 14 square miles (36 square kilometers) of farmland would be retired.

Many details — and the price tag — have yet to be worked out, the general counsel for the New Mexico state engineer's office told state lawmakers this month. The Legislature in 2023 set aside $65 million toward the settlements and related infrastructure projects, and the state is tapping additional federal dollars. But it will still need more funds, experts say.

Riseley-White said it will take a combination of efforts, including long-term fallowing programs, water conservation and more efficient irrigation infrastructure.

"There isn't one answer. It's going to be necessarily an all-of-the-above approach," she said, acknowledging that there will be less water in the future.

Attorney Sam Barncastle, who worked for years on behalf of irrigators, worries small farming operations and backyard gardeners could ultimately be pushed out.

"Farmland does not come back once it's gone," she said.

Peppers and pecans

The overall idea is to avoid abruptly curtailing water for users, but farmers in southern New Mexico have concerns about how much water will be available and who will be able to use it.

New Mexico is the nation's No. 2 pecan producer, and the sprawling orchards would die without consistent water. The state also is home to world-renowned chilies — a signature crop tightly woven into New Mexico's cultural identity.

Ben Etcheverry, a board member of the New Mexico Chile Association, said farmers have transitioned to drip irrigation to save water and energy but are continually told they have to do more with even less water and pay higher rates.

"It just becomes a game of whack-a-mole while we try to do better," he said. "Every time we do better, it seems they turn it into a punishment."

Original Article: AP News by Susan Montoya Bryan and Morgan Lee

$400M water investment fund announced for US-Mexico border

The North American Development Bank (NADBank) on Friday announced a $400 million Water Resiliency Fund designed to boost water conservation and alternative sources of water for the U.S./Mexico border region.

Border Report Live: US, Mexico at odds over water payments

The funds are available for farmers, ranchers, municipalities and water districts on both sides of the border. And it comes after NADBank last year told Border Report that the binational bank planned to invest in more border conservation and diversification projects.

"Today's check is pretty big from NAD bank. It's a pretty big investment," U.S. Rep. Tony Gonzales, R-Texas, said.

"In parts of South Texas, water is life. And to have an organization like NADBank go out there and make a significant investment that not only helps the United States, but also helps our neighbors and partner, Mexico, is absolutely critical and fundamental," said Gonzales who wasat NADBank's 2025 Summit in San Antonio to help announce the funds.

NADBank Managing Director John Beckham said the Water Resiliency Fund (WRF) will provide up to $400 million in financing for priority infrastructure projects aimed at conserving and diversifying water supply sources in the U.S.-Mexico border region.

This includes desalination plans, technology for municipalities and water districts to re-use storm water runoff, and projects with irrigation districts to reduce water loss, the binational bank says.

The goal is to develop new water sources and for the border region to not rely so much on the dwindling Rio Grande, which is not meeting the growing border's water needs.

"Our goal is to enhance the capacity of the region, private and public sector farmers and cities to optimize this precious resource," Beckham said.

Last year, Texas' only sugar mill shut down in Santa Rosa, in Hidalgo County, causing 500 job losses, because of a lack of water for Rio Grande Valley farmers to grow the thirsty crops.

Hidalgo and Cameron counties both declared water emergencies and the issue became a top priority in the Texas Legislature's general session this year.

The fund will match up to 50% of investment costs and offer $300 million in below-market loans, and up to $100 million in grant funding.

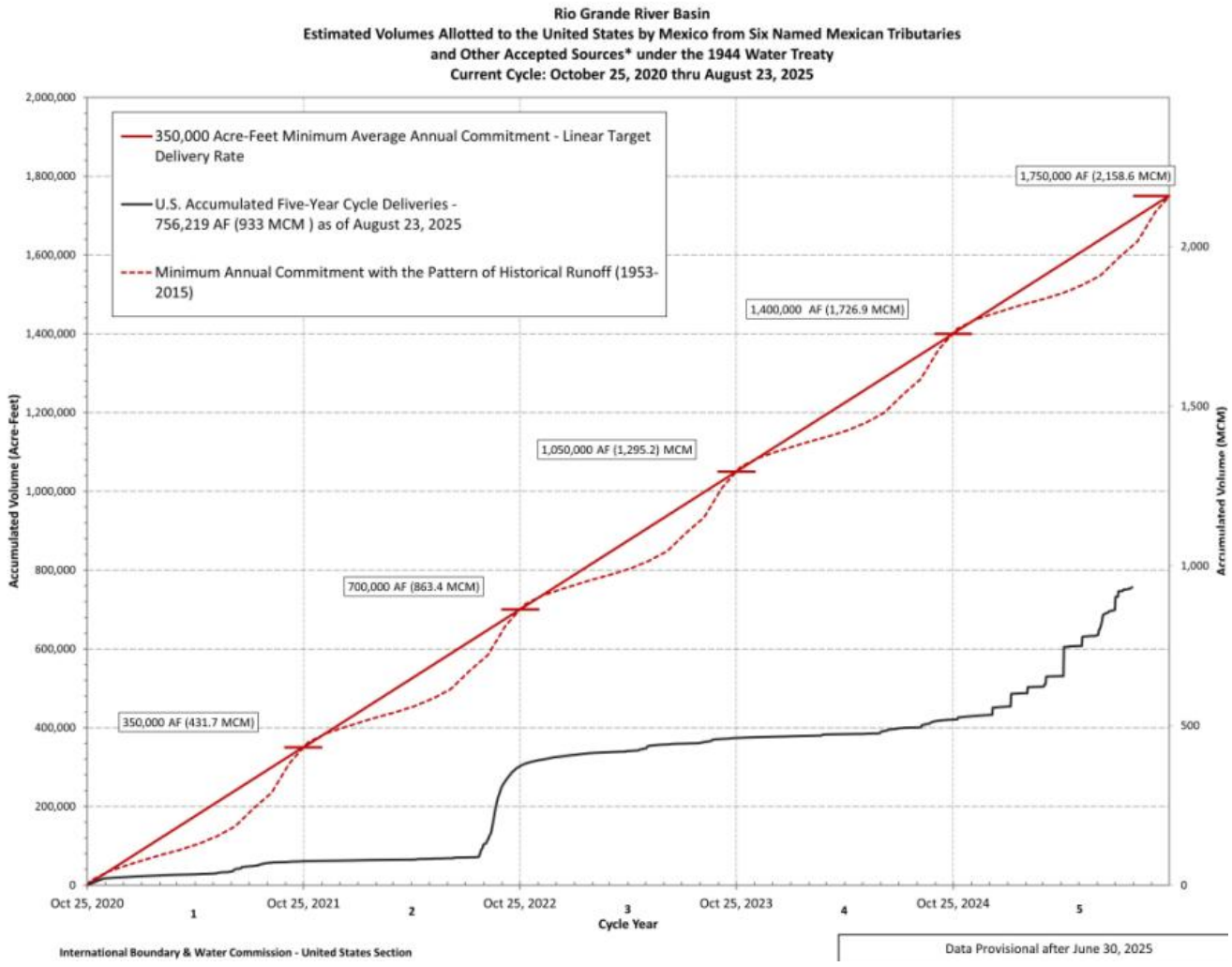
Beckham said they met with leaders from throughout South Texas — including Cameron County Judge Eddie Trevino, and Hidalgo County Judge Richard Cortez — as well as irrigation district managers in the Lower Rio Grande Valley to come up with this fund.

"This initiative is designed to catalyze investment in strategic infrastructure that improves the region's water resilience through more efficient usage and diversification

of sources, all of which will bolster our ability to withstand droughts and extreme weather events," Beckham said.

The funds come as Mexico is approaching an October deadline to pay the United States 1.75 million acre-feet of water via the Rio Grande, though it is doubtfull they'll be able to do.

Due to drought, overpopulation and poor infrastructure, Mexico has so far paid the United States just over 756,000 acre-feet of water, as of Aug. 23, according to the U.S. Section of the International Boundary and Water Commission.



(IBWC Graphic)

Several Mexican officials on Friday were at the conference and praised the new water funds.

"It is certainly one of the best financing strategies for the water infrastructure needed on both sides of the U.S./Mexico border. We share the same desert and the same extraordinary drought conditions we have been enduring," said Mario Mata, executive director of Chihuahua State Water and Wastewater Board.

Raul Quiroga, secretary of the Water Resources for Social Development for the northern Mexican state of Tamaulipas says it's "critical" to the binational basin.

"The Water Resiliency Fund is an instrument that will allow us to implement water infrastructure projects on both sides of the border, which will undoubtedly help achieve more efficient water use, particularly among major users such as irrigation districts and municipal water systems, which will support efforts to address the deficit we have in the Rio Grande basin," Quiroga said.

He also praised Mexican President Claudia Sheinbaum for her commitment to improve Mexican water infrastructure. He said she has pledged that Mexico will invest $7.164 billion in pesos (over $384 million in U.S. dollars) to improve water conservation and technology in border irrigation districts of Bajo Río Bravo, which is in Tamaulipas and oversees water through Falcon Dam and Anzalduas Canal, as well as Bajo Río San Juan, that includes Monterrey, in the state of Nuevo León, and the Coahuilla, which borders Eagle Pass, Texas and the Big Bend area.

Beckham said the new WRF also will work with legislation passed by Texas lawmakers this year that will help smaller utilities collaborate to build regional infrastructure to maximize water plans.

Original Article: Border Report by Sandra Sanchez

4 ways Project Blue might find water despite Tucson veto

hile the developer of Project Blue has made it clear it still wants to buy energy from Tucson Electric Power despite defeat at the hands of the Tucson City Council, its path to finding water for its planned data-center complexes is much more hazy.

Project Blue developer Beale Infrastructure has declined to answer questions from reporters or public officials about where it intends to get water for its first data-center complex, planned for 290 acres on the far southeast side near the Pima County Fairgrounds. Pima County Supervisor Matt Heinz, a supporter of the project, said he was told "stay tuned" upon asking Beale officials about their expected water supply.

Beale had previously proposed to the City of Tucson and county officials to have drinking-quality water delivered to the site for its first two years of operation, followed by reclaimed water delivered there by an 18-mile pipeline for which the company promised to pay the construction cost. It had also promised the project would be "water positive," meaning it would offset the data centers' water use by helping other users conserve or by buying additional supplies or water rights.

A new Arizona data center in Mesa (by Meta) is an example of such complexes' footprints.

Star files

But the Tucson City Council unanimously rejected this approach after hundreds of local residents expressed skepticism about the city's ability to enforce these requirements.

Here is a look at four possible methods the company could use to run its data centers, including one that would require little water use. We've also included a fifth, for explanatory purposes, because residents ask about it, that is almost certainly not available.

1. Well drilling

Beale Infrastructure could sink groundwater wells on its far southeast side site outside Tucson. Under the 1980 Arizona Groundwater Management Act, it's legal for an industrial user to drill wells in urban areas such as Tucson as long as it meets certain standards.

For one, an industrial well driller must meet state "well spacing" requirements. They amount to documenting in a formal analysis that the new well won't significantly lower existing, nearby wells, said Kathleen Ferris, a water researcher for Arizona State University's Kyl Center for Water Policy.

"There's a provision you can’t cause more than 10 feet of drawdown over a 5-year period. They can mitigate the harm (and still drill) by paying people or doing other things," said Ferris, a former Arizona Department of Water Resources director who helped draft the 1980 groundwater law.

The Kyl Center is preparing to release a new report on large-quantity water users that makes a pointed remark relevant to Tucson's situation with Project Blue. "Refusing to serve large-volume water uses within a provider’s water service area does not necessarily protect the provider against all of the impacts of large-volume water users," a draft of the report said.

If a proposed industrial use would lie within three miles of the exterior boundaries of the service area of a city, town or private water company, the applicant must first request water service from that entity, the report said. But if its request is denied, and the industrial use meets other statutory requirements, the ADWR director must issue the permit.

A general industrial use permit of that type authorizes the holder to withdraw groundwater for up to 50 years, subject to renewal under the same criteria, the Kyl Center report said.

While the permit rules can protect neighboring wells from depletion, the underlying aquifer can still legally be depleted, said Ferris and Sarah Porter, the Kyl Center's director.

The state groundwater law requires subdivision developers who rely on groundwater to buy renewable water supplies, such as Colorado River water and recharge them into the aquifer to compensate for their pumping. But that replenishment requirement doesn't apply to industries, other businesses or multi-family developers.

"In short, if a municipal water provider declines to serve a new industrial use, the industry may arrive in the region anyway and meet demands with local groundwater sources, contributing to aquifer depletion," the Kyl Center report said.

2. 'Net Zero' water consumption

If the Project Blue developer wants to use groundwater without depleting the aquifer, one tactic could be for Beale to buy long-term storage credits to groundwater at another location and not pump that water. The credits are created when a person, company or other entity stores Central Arizona Project or treated sewage effluent underground. The owner of the credits is then allowed to pump about the same amount of groundwater as what was stored anywhere else in the Tucson Active Management Area, a political subdivision created by the state to manage groundwater in the Tucson metro area.

This is a common technique employed by cities, private water companies and developers across Arizona's three major urban areas: the Tucson and Phoenix areas and Pinal County. All three comprise state-run Active Management Areas for groundwater.

"I expect (a big user such as Project Blue) would still try to show they are water neutral and replenish the aquifer, although they wouldn't have to," Porter said.

A big Apple data center plant in Mesa has been buying long-term storage credits to compensate for its water use, she said. During the Project Blue controversy before the Tucson City Council, Beale Infrastructure and city officials had also raised the possibility of the company buying such credits to compensate for its water use, as one way of making the development "water positive."

One tactic that has been mentioned would be for Beale to buy water rights to groundwater and Central Arizona Project water held by farmers in the Marana area, although that idea has been mentioned mainly as a potential supply for data centers that the company has talked about building in that area.

As the prospect of additional cuts in Central Arizona Project deliveries increases due to worsening Colorado River flows, "the market for these (long-term) credits is heating up and getting more expensive," Porter said.

"These are so much more valuable now," she said.

3. CAP water

Buying Central Arizona Project water is almost certainly closed to Project Blue, even though CAP water has over the last 40 years, propped up many farms, cities and businesses seeking a path to get off groundwater.

Historically, cities, mines and other industries and tribes have dipped into municipal and industrial supplies of the Colorado River-based CAP. But today, "all CAP M&I (Municipal and Industrial) priority water is already allocated," said DeEtte Person, a spokeswoman for the Central Arizona Water Conservation District, which runs the project.

CAP still has rights to allocate about 45,000 acre-feet a year of what's known as non-Indian agricultural water, or NIA for short. But that water is more likely than municipal

water to get cut off during future Colorado River shortages under the federal system setting priorities for who gets river water.

Neither the state nor the federal government plans on allocating any of that water in the near term, "because of the current hydrologic conditions and the very low reliability of that supply," Person said.

"Accordingly, there remain very few mechanisms available to acquire access to CAP supplies," except for taking water deliveries as a customer of an existing CAP entitlement holder, Person said. Given the current pinch on water supplies all over the state, that course seems unlikely in most cases.

4. Pima County Water District

Nearly 5 years before Project Blue's existence became publicly known this year, Pima County officials approved a water district to serve the very area where the project is proposed. But today, that option looks unlikely because it would require the drilling of wells there, which county staff and the Board of Supervisors chairman oppose.

Back in November 2020, the board voted to create a Domestic Water Improvement District covering about 1,950 acres in the area of the Pima County Fairgrounds — land that was considered ripe for future industry. The land lies near the Houghton Road-Interstate 10 interchange that was being upgraded to handle increasing traffic volumes. Officially, the county called the entire area the Southeast Employment and Logistics Center. Then-County Administrator Charles Huckelberry wrote in a memo that it was "highly desirable for large-scale logistics and manufacturing based on proximity to Interstate 10." in a second memo, the administrator wrote, "A potable water system needs to be developed and permitted to allow growth to continue in this area."

A year later, the Arizona Department of Water Resources, which has to approve the creation of new water districts, gave the Pima district a go-ahead for the district's initial establishment. But "nothing further has been done by the county since then," Deputy County Administrator Carmine DeBonis told the Star Thursday.

"The whole topic of how to serve water to industrial or manufacturing uses really leads us to the idea it’s best for some form of renewable supply to be served there," DeBonis said. "A domestic water improvement district would have relied on pumping groundwater, which isn’t a direction the county is interested in going."

Supervisors' Chairman Rex Scott, who took office two months after the board approved the district's creation, said that when he took office in 2021, he worked with staff to oppose the city of Tucson's first effort to charge different water rates for city and unincorporated county residents. Following up on that, the board passed a resolution asking the city of Tucson to reconsider its policy that doesn't allow the city to serve water to some unincorporated areas because that policy can cause water users there to turn to groundwater.

Given that, "I agree with our staff's opposition to that plan" to create the water district, Scott said.

5. No-water cooling

Around the country, some companies that operate data centers are tackling their excessive water consumption by moving to technologies that cools centers mainly with air — which requires much less water.

Beale Infrastructure has hinted in a press statement that it could consider following that course, and several sources in Pima County government have said they expect that will happen.

Traditional evaporative cooling systems used by some "hyperscale" data centers run by big technology companies serving large cloud-computing operations can consume around 462,000 gallons of water daily, putting pressure on water-stressed regions and raising concerns about long-term sustainability, **reported the online Data Centre magazine in July.**

"To address this, companies including Microsoft, Evolution Data Centres, Vertiv and Bridge Data Centres are moving towards zero-water cooling," the magazine reported. "Using closed-loop systems, engineered fluids and hybrid designs, these operators are replacing evaporative methods with alternatives that conserve resources without compromising performance." The end user of the Project Blue data centers would be Amazon Web Services, according to a 2023 Pima County memo.

In August 2024, Microsoft began deploying a closed-loop, liquid cooling system that eliminates the need for evaporative water entirely by recirculating the water after its first use, the magazine reported.

The system recirculates coolant continuously, reducing annual water use significantly. The system is being pilot-tested at sites in Phoenix and Mt. Pleasant, Wisconsin, with all future Microsoft data centers to follow this design, the magazine said.

But a drawback to these water-saving efforts by data centers is that they use more energy, some scientists say.

Jennifer Allen, a Pima County supervisor who opposes Project Blue, likened the differences between the two kinds of centers to the differences between swamp cooling and refrigerated air conditioning. The first uses far less energy but far more water, whereas refrigerated air uses far more energy but far less water, she said.

Cooling data centers without consuming water makes them more energy-intensive, Shaolei Ren, an associate professor of electrical and computer engineering at the University of California, Riverside, was quoted as saying in July by KCUR radio in Kansas City, Missouri.

“If you use more energy, there will be more carbon footprint,” he said.

He pointed to differences in energy efficiency between a pair of Google data centers as an example: one in Reno and one in Las Vegas. Ren said Google's Las Vegas data center uses a lot of water for cooling, while the Reno data center doesn't use water. But the Reno center uses almost twice the energy for cooling as the one in Las Vegas, he said.

Separately, responding to questions from the Star, Ren pointed to a 2022 study of two data centers in the Phoenix area, one relying on water for cooling and the other air-cooled. The air-cooled center fared almost 13% worse than the water-cooled center in energy efficiency but around 66% more efficient in its water use.

Ren added that those tradeoffs pose a difficult choice: reduce freshwater use but accept higher electricity demand — potentially from climate change-causing fossil fuels.

Original Article: Tucson.com by Tony Davis

Arizona, Nevada and Mexico will again get less Colorado River water in 2026

Arizona, Nevada and Mexico will again live with less water from the Colorado River as drought lingers in the West, federal officials announced Aug. 15.

The Colorado River is a critical lifeline to seven U.S. states, 30 Native American tribes, and two Mexican states. The cuts are based on projections for levels at federal reservoirs — chief among them Lake Powell and Lake Mead — released every August by the U.S. Bureau of Reclamation.

Arizona will again go without 18% of its total Colorado River allocation, while Mexico loses 5%. The reduction for Nevada — which receives far less water than Arizona, California or Mexico — will stay at 7%. California won't face any cuts because it has senior water rights and is the last to lose in times of shortage.

Low reservoir levels at Lake Mead have triggered mandatory cutbacks every year since 2022, with the deepest cuts in 2023, which hit farmers in Arizona the hardest.

The Trump administration gave a mid-November deadline for states to reach a preliminary agreement, or risk federal intervention. Negotiations have faced delays as states push back against how much water they should each give up.

The original 1922 Colorado River Compact was calculated based on an amount of water that doesn't exist in today's climate. That leaves the Upper Basin states of New Mexico, Colorado, Wyoming and Utah to share far less water after the required amount is sent to the to the "Lower Basin" states of Nevada, Arizona and California.

States are considering a so-called natural flow approach to managing the river — where the Lower Basin would receive a certain percentage of the average natural flow from the prior few years.

Original Article: Colorado Politics by Associated Press

Officials issue warning as major US water supply faces historic shortage: 'It's a pretty significant issue'

The Yakima Basin in Washington state is entering its third consecutive year of severe drought, marking what officials are calling the third-worst water shortage in the region's recorded history.

What's happening?

According to Apple Valley News, reservoirs across the Yakima Basin were operating at less than 40% capacity as of Aug. 1, well below normal for this time of year.

The U.S. Bureau of Reclamation announced that senior water rights holders will still get their full share, but those with junior rights are receiving only about 40% of their usual allocation.

"So we're in the third year of a consecutive drought. It's a pretty significant issue for the communities in the Yakima Basin, both for fish and agriculture," said Chad Stuart, Yakima field office manager for the bureau, per Apple Valley News.

The problem stems from three straight years of reduced mountain snowpack and declining rainfall. Snowmelt and seasonal precipitation normally recharge the basin's reservoirs, but with each passing dry year, the water deficit has only deepened.

Why is this drought concerning?

This pattern reflects a troubling trend linked to our planet's overheating caused by pollution from burning coal, oil, and gas. While droughts have always occurred naturally, the scientific consensus shows that human activity is supercharging extreme weather events, making them more intense and long-lasting.

Rising global temperatures disrupt natural water cycles by increasing evaporation rates and shifting precipitation patterns. Warmer air can hold more moisture, leading to more extreme swings between wet and dry periods.

Mountain snowpack, which serves as nature's water storage system for much of the western United States, is melting earlier and faster, reducing the steady water supply that rivers and reservoirs depend on throughout the growing season.

If these trends continue, agricultural losses, increased wildfire risk, and stressed water systems will become an even bigger challenge for communities across the country

What's being done about the drought?

The Bureau of Reclamation is implementing the Yakima Basin Integrated Plan, which focuses on conservation, groundwater development, and habitat restoration to create a more resilient water system.

Communities across the country are developing innovative drought solutions. For instance, cities like Los Angeles have invested nearly $1 billion into wastewater conversion facilities.

Water conservation at home also makes a difference. Every gallon saved helps communities stretch their water supplies during increasingly unpredictable weather

patterns. But most of all, staying educated regarding these critical climate issues is the best way to stay resilient against them.
Original Article: The Cool Down by Samantha Hindman

GLOBAL WATER NEWS

Debt-for-Climate Swaps and the Evolving Role of Banks in Green Finance: Credit Suisse's Legacy and UBS's Strategic Expansion into a Scalable ESG Market

The global climate finance landscape is undergoing a seismic shift as Debt-for-Climate Swaps (DFCS) emerge as a critical tool to address the dual crises of sovereign debt and environmental degradation. These swaps, which redirect debt obligations toward climate action, have gained traction in small island and developing countries, where fiscal constraints often stifle investments in sustainability. The role of banks in facilitating these transactions has evolved dramatically in recent years, shaped by Credit Suisse's pioneering efforts and UBS's strategic expansion into a scalable ESG market.

Credit Suisse's legacy in DFCS is marked by its early adoption of innovative structures. From 2020 to 2025, the bank reconfigured debt swaps to include private investors, enabling landmark deals such as the $364 million Belize Blue Loan in 2021 and a $150 million Barbados agreement in 2022 [1]. These transactions demonstrated how trilateral arrangements—combining sovereign nations, creditors, and NGOs—could unlock fiscal space for conservation. However, Credit Suisse's collapse in 2023 raised questions about the continuity of such initiatives.

UBS which acquired Credit Suisse, has since stepped into this niche, leveraging its predecessor's expertise to expand DFCS into new frontiers.

UBS's current strategy reflects a recalibration of ESG priorities. While the bank has delayed its net-zero operational target from 2025 to 2035 and exited the Net Zero Banking Alliance [2], it remains deeply engaged in climate finance. A notable example is its $300 million debt-for-climate swap for Barbados in 2025, which includes joint guarantees from the European Investment Bank and the Inter-American Development Bank. This deal aims to free up $130 million over 15 years for climate-resilient infrastructure, such as upgraded sewage treatment plants [3]. UBS has also launched a natural-capital engagement program and hosted its first biodiversity finance conference, signaling a broader commitment to nature-based solutions [3].

The scalability of DFCS, however, remains a challenge. While swaps like Ecuador's $1.6 billion blue bond in 2023—facilitated by the IDB and USDFC—showcase the potential for large-scale impact, critics argue that smaller swaps often lack the financial heft to drive

transformative change [4]. Additionally, the complexity of negotiations and conditionalities can deter participation. UBS's approach to mitigating these risks includes partnerships with multilateral institutions and the integration of sustainability-linked debt, which ties repayment terms to climate performance metrics [3].
Original Article: AInvest by Theodore Quinn

India likely to receive above-average monsoon rainfall in September

India is likely to get above-average monsoon rainfall in September after receiving 5% above-normal rains in August, the state-run weather department said on Sunday.
Above-normal rainfall could damage India's summer-sown crops like rice, cotton, soybean, corn, and pulses, which are typically harvested from mid-September.
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All regions, except northeastern states and the southern states of Tamil Nadu and Kerala, are likely to receive rainfall equating to 109% of the 50-year average in September, the India Meteorological Department (IMD) said.
The monsoon is the lifeblood of India's nearly $4 trillion economy, delivering almost 70% of the rainfall needed to water farms and replenishing aquifers and reservoirs.
Nearly half of India's farmland is not irrigated and depends on the annual June-September rains for crop growth.
Original Article: Reuters by Rajendra Jadhav

Climate-Driven Glacier Decline and Its Implications for Water-Security-Linked Assets in Central Asia

Central Asia's glaciers are melting at an alarming rate—four times faster than the global average—posing existential risks to water security, agriculture, and energy systems. By 2025, the region has lost 14–30% of its glaciers over the past 60 years, with the 2022–2024 period marking the largest three-year glacial mass loss on record [1]. This decline threatens to disrupt the water supply for 64 million people, as glaciers feed 80% of the region's river runoff, including the Amu Darya and Syr Darya rivers [2]. For investors, the stakes are clear: water insecurity is reshaping risk profiles in agriculture, hydropower, and transboundary governance, while also creating opportunities in climate-resilient infrastructure and regional cooperation.

Agriculture: A Sector on the Brink

The agricultural sector, which employs up to 50% of Central Asia's workforce and contributes 5–24% of GDP, is under siege. A 2025 heatwave, exacerbated by climate change, pushed temperatures 15°C above normal, reducing wheat harvests in Kazakhstan by 26% and threatening fruit crops in Tajikistan [3]. Glacial melt has also shifted seasonal water availability, creating drier late summers that strain irrigation

systems. Uzbekistan and Turkmenistan, which rely on inefficient Soviet-era infrastructure, now face over 72% water overexploitation [4]. The Asian Development Bank's *Glaciers to Farms* initiative, mobilizing $3.5 billion in funding, aims to address this by promoting drip irrigation and crop diversification [5]. However, without urgent modernization, crop failures and rural-urban migration could deepen economic instability.

Energy: Hydropower's Fragile Future

Hydropower, which accounts for 90% of electricity in Tajikistan and Kyrgyzstan, is equally vulnerable. Earlier glacial melt has disrupted seasonal river flows, reducing the reliability of power generation [6]. Meanwhile, downstream countries like Uzbekistan and Turkmenistan face water shortages for thermal power plant cooling and irrigation [7]. The World Bank estimates that achieving climate resilience in Central Asia's energy sector will require $77 billion annually by 2030 [8]. Opportunities lie in diversifying energy portfolios: the European Bank for Reconstruction and Development (EBRD) has already invested €2.26 billion in renewable projects, including a 200 MW solar plant in Uzbekistan [9].

Ask Aime: How will Central Asia's glacier melting impact water security and agriculture in the region?

Transboundary Governance: A Looming Crisis

Water disputes between upstream and downstream nations are intensifying. Tajikistan and Kyrgyzstan, which control glacial meltwater, face pressure from Uzbekistan and Kazakhstan to share resources for agriculture and energy [10]. The collapse of Soviet-era water-sharing agreements has left a vacuum, with no binding legal frameworks to enforce equitable distribution [11]. The ADB's *Glaciers to Farms* program includes early warning systems and digital water governance tools to mitigate conflicts [12]. Yet, geopolitical tensions with Afghanistan and China—both of which draw from the same river systems—remain unresolved [13].

Investment Opportunities: Resilience as a Commodity

Despite the risks, Central Asia offers compelling opportunities for climate-resilient investments:

1. **Water-Saving Technologies**: Drip irrigation and solar-powered systems could reduce water waste by 40% in Uzbekistan [14].
2. **Renewable Energy**: The EBRD's 500 kV transmission line in Uzbekistan is a model for integrating renewables into grids [15].
3. **Transboundary Cooperation**: The water-food-energy nexus approach, supported by the World Bank, could boost GDP by 5% through shared resource management [16].

The EU's €12 billion Global Gateway investment package for Central Asia underscores the region's strategic importance [17]. For stakeholders, the key is balancing short-term

adaptation (e.g., modernizing irrigation) with long-term mitigation (e.g., glacier preservation research).

Conclusion: A Call for Global Collaboration

Central Asia's glacier crisis is a microcosm of global climate risks. While the region's water-dependent sectors face existential threats, the scale of international funding—$3.5 billion from the ADB alone—demonstrates the potential for transformative solutions. Investors must act swiftly, prioritizing projects that align with both climate resilience and geopolitical stability. As glaciers vanish, the window for action narrows.

Original Article: AInvest by Marcus Lee

World Bank urges fresh push on economic threat of pollution

Degraded land, polluted air and water stress pose a direct global economic threat but using natural resources more efficiently could cut pollution by half, one of the World Bank's senior managing directors told Reuters.

The damage is particularly acute for low-income countries most at threat from poverty, climate change and biodiversity loss, Axel van Trotsenburg said.

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Speaking alongside the publication of a new report on Monday, he said around 80% of people in low-income nations were exposed to all three and the World Bank was committed to responding even as many countries cut aid budgets.

"Our commitment... is ending poverty on a liveable planet, full stop. We will not waver on this," van Trotsenburg said.

Among the most impacted countries are Burundi, where 8 million people face water risk and air pollution, and 7 million face land degradation. In Malawi, 12 million people face all three risks, the report said.

More broadly, 90% of the world's population face at least one of the challenges, with the report urging countries to repurpose subsidies currently spent on harmful activities.

The report is published against a fractious political backdrop ahead of November's COP30 climate talks in Brazil. The World Bank and other multilateral lenders are also awaiting the outcome of a U.S. review, opens new tab of their operations ordered by President Donald Trump in February.

The World Bank would provide data-backed evidence to inform discussions on environmental degradation among its member governments, van Trotsenburg said.

The report estimated that forests help around half of the world's rain clouds form and said deforestation cut rainfall at a cost of $14 billion a year for the nine-country Amazon region alone, a material hit for the affected nations.

It also means landscapes are less able to store and release moisture slowly over time. That amplifies the effects of droughts and results in a $379 billion hit, or 8% of global agricultural economic output.

While ecological threats were often seen as being distant, the report zeroed in on economic impacts happening now.

"We've often had this mantra that we believed countries need to grow first, pollute and clean up later. What this evidence is telling you is that is simply false," the bank's chief economist for sustainable development and report co-author, Richard Damania, said.

Original Article: Reuters by Simon Jessop and Marc Jones

Note the attachment is not an inducement to trade and Veles Water does not give advice on investments.