

# Veles Water Weekly Report

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November 11<sup>th</sup> 2021

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## WATER FUTURES MARKET ANALYSIS

Welcome to ***WATERTALK***

by Joshua Bell

**CLICK THE LINK BELOW**

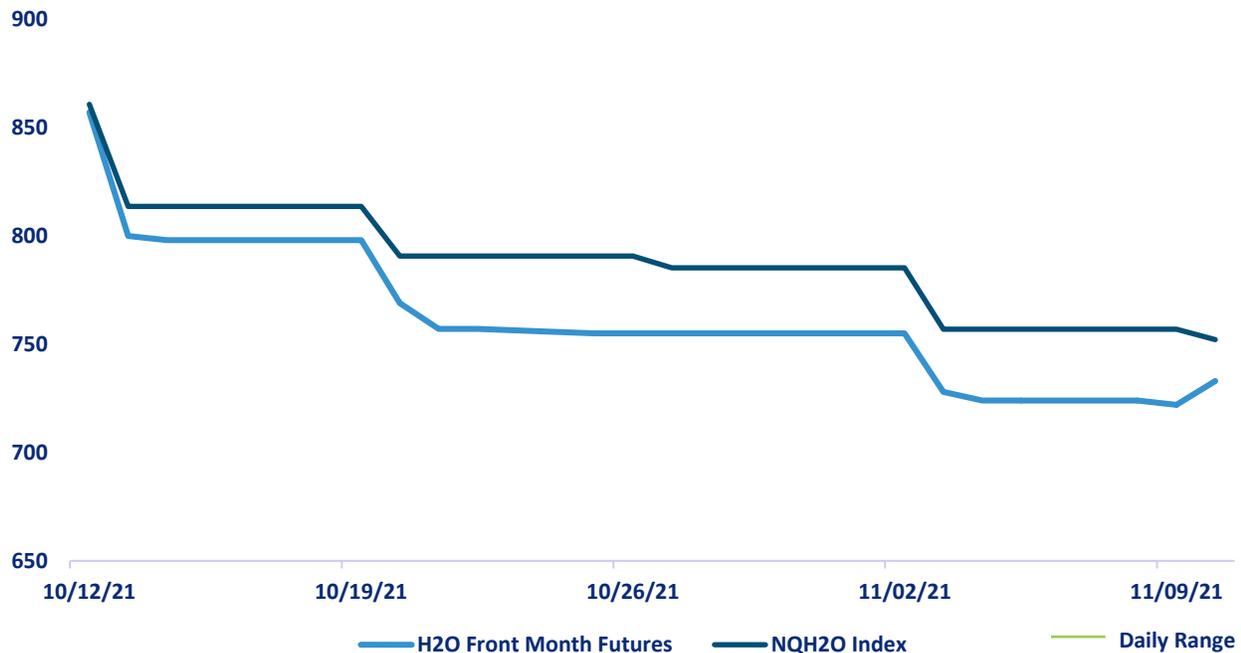
*"A 2 minute technical analysis video of H2O futures"*

<https://vimeo.com/644694387>



## NQH2O INDEX PRICE vs H2O FUTURES PRICE

1 Month Price Performance NQH2O Index vs H2O Futures



Price Chart Based upon Daily Close

The new NQH2O index level of \$752.10 was published on November 10<sup>th</sup>, down \$6.83 or 0.90%. During the past week the Futures have been closing at a discount to the index of \$19.10 - \$34.93, with a low of \$722 and a high of \$733.

NQH2O is up 50.47% YTD.

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

November 733@739

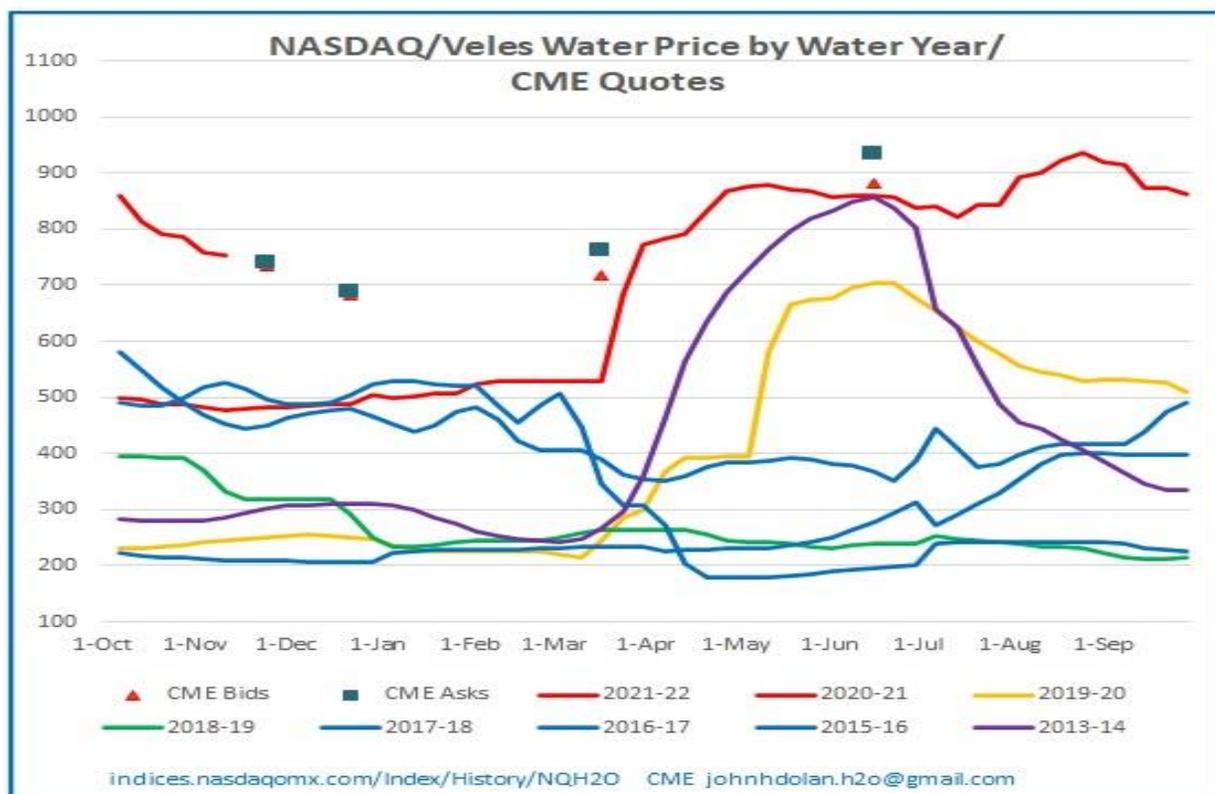
December 681@687

March 22 718@762

June 22 881@932



## NQH2O INDEX HISTORY



The graph above lays out the Nasdaq Veles water index by year, showing 2013- 2022. In very dry years, prices clearly rise through the spring, peaking in May to July (with the exception of 2015) as demand for water from farmers peaks. Prices then taper off heading into the winter on reduced demand, and the possibility of rain/snow.

The restricted ability to “carry” water, much like one can do with financial contracts, gives this index the same type of seasonal pattern that one sees on some other commodities.

The graph for 2021 is highlighted in red. It shows the same seasonal climb, but at record-high values above each of the last eight years since February.

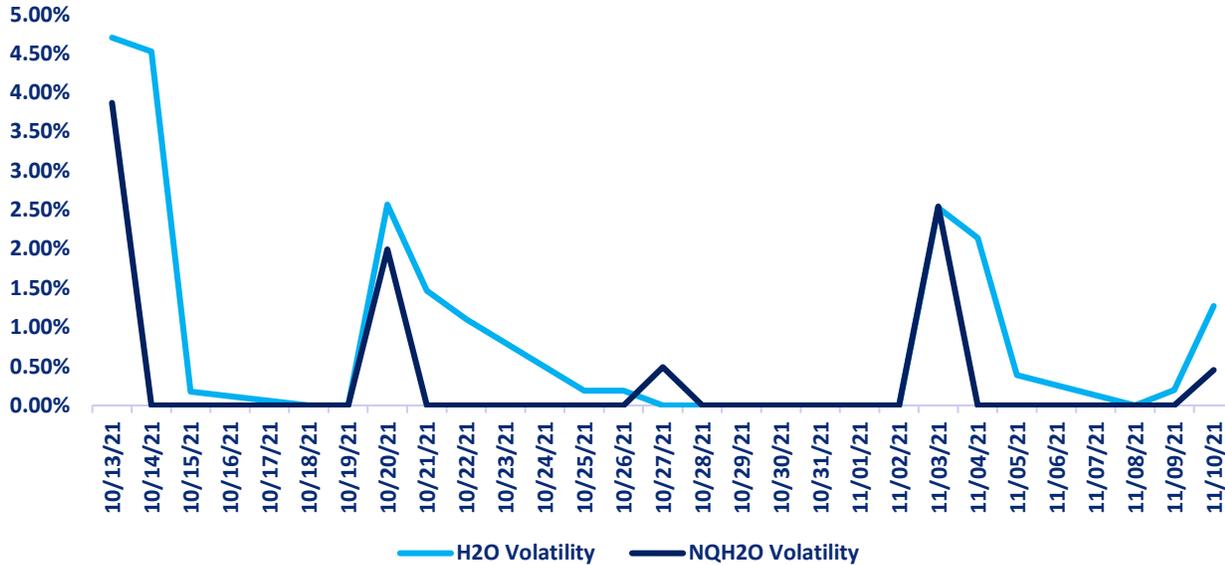
Current bids and offers in the market are still higher than historic prices showing that expectations are that this is an exceptionally dry year and prices may not fall seasonally as much as they have in prior dry years.

**(Reference: John H Dolan, CME Market Maker)**



## H2O FUTURES AND NQH2O INDEX VOLATILITY ANALYSIS

### Daily H2O Futures Volatility vs Daily NQH2O Index Volatility



#### DAILY VOLATILITY

Over the last week the November future volatility high has been 2.14% on November 4<sup>th</sup> with lows of 0% on November 8<sup>th</sup>.

ASSET	1 YEAR (%)	2 MONTH (%)	1 MONTH (%)	1 WEEK (%)
NQH2O INDEX	34.55%	5.45%	2.68%	2.444%
H2O FUTURES	N/A	8.62%	5.39%	3.76%

For the week ending on the November 10<sup>th</sup> the two-month futures volatility is at a premium of 3.17% to the index, down 0.08% from the previous week. The one-month futures volatility is at a premium of 2.71% to the index, up 1.32% from last week. The one-week futures volatility is at a premium of 1.31% to the index, up 0.7% from the previous week. These futures premiums in volatility are indicating the futures are anticipating greater moves in the index.

Above prices are all **HISTORIC VOLATILITIES** and **IMPLIED VOLATILITIES** will be introduced once an options market has been established. All readings refer to closing prices as quoted by CME.



# CENTRAL VALLEY PRECIPITATION REPORT

## Central Valley Precipitation Index



Central Valley average is calculated using data from 19 weather stations in the Central Valley, California.  
Data as of 10/11/2021

STATION	MTD (INCHES)	WEEK ON WEEK CHANGE (INCHES)	% OF 20 YEAR AVERAGE MTD	2022 WYTD VS 2021 WYTD %	2022 WY VS 20 YEAR AVERAGE TO DATE %
SAN JOAQUIN 5 STATION (5SI)	0.38	0.38	11.03%	267	217
TULARE 6 STATION (6SI)	0.02	0.02	0.81%	265	137
NORTHERN SIERRA 8 STATION (8SI)	2.33	1.74	45.07%	514	330
CENTRAL VALLEY TOTAL	2.73	2.14	18.97%	349	228

## RESERVOIR STORAGE

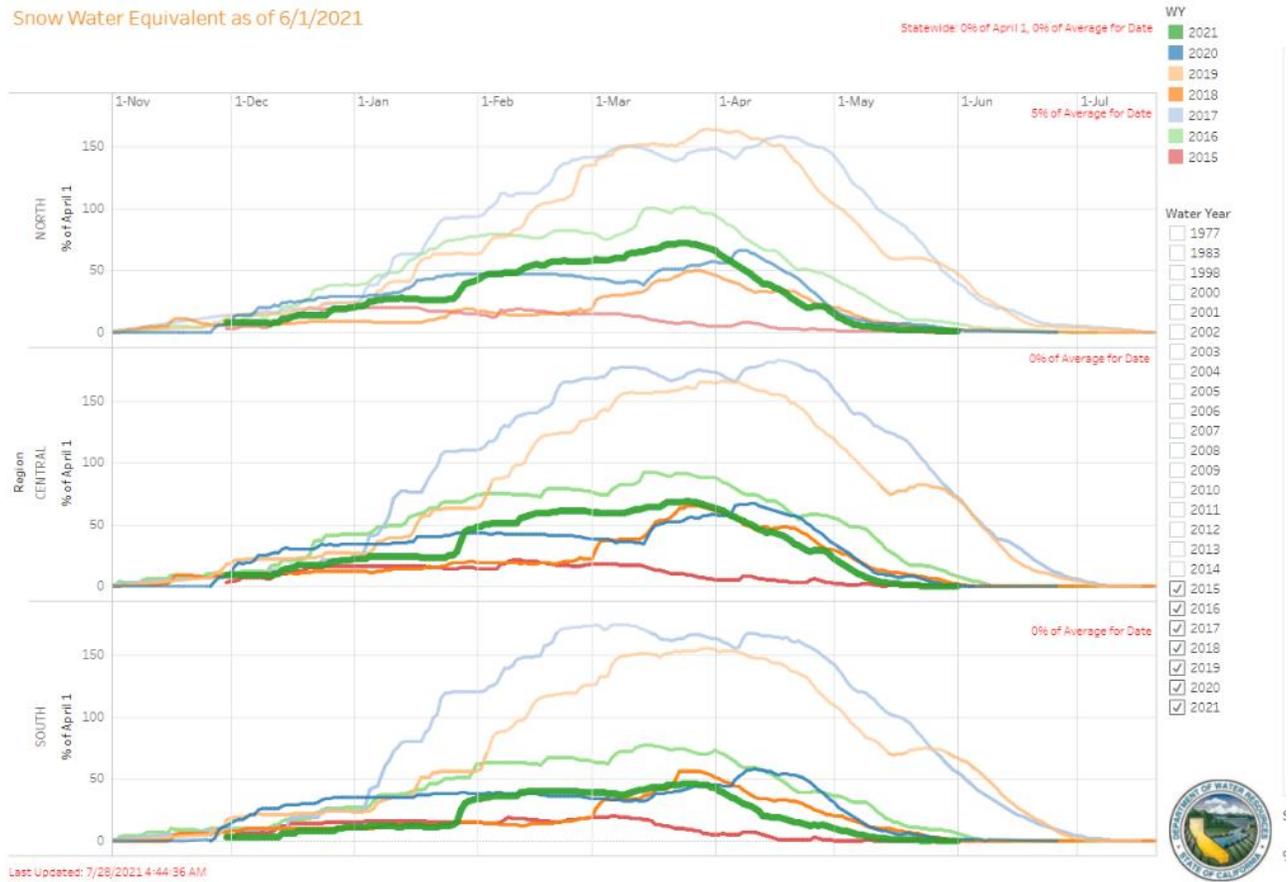
RESERVOIR	STORAGE (AF)	% CAPACITY	LAST YEAR % CAPACITY	HISTORIC ANNUAL AVERAGE CAPACITY %
TRINITY LAKE	692,733	28	53	49
SHASTA LAKE	1,043,686	23	45	43
LAKE OROVILLE	997,399	28	41	56
SAN LUIS RES	370,918	18	45	39

Reference: [California Water Data Exchange](https://www.waterdataexchange.com/)



# SNOWPACK WATER CONTENT

Snow Water Equivalent as of 6/1/2021



REGION	*SNOWPACK WATER EQUIVALENT (INCHES)	WEEK ON WEEK CHANGE %	% OF AVERAGE LAST YEAR	% OF 20 YEAR HISTORICAL AVERAGE	% OF HISTORICAL **APRIL 1ST BENCHMARK
NORTHERN SIERRA	0	0.00%	0	0	0
CENTRAL SIERRA	0	0.00%	0	0	0
SOUTHERN SIERRA	0	0.00%	0	0	0
STATEWIDE	0	0.00%	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.

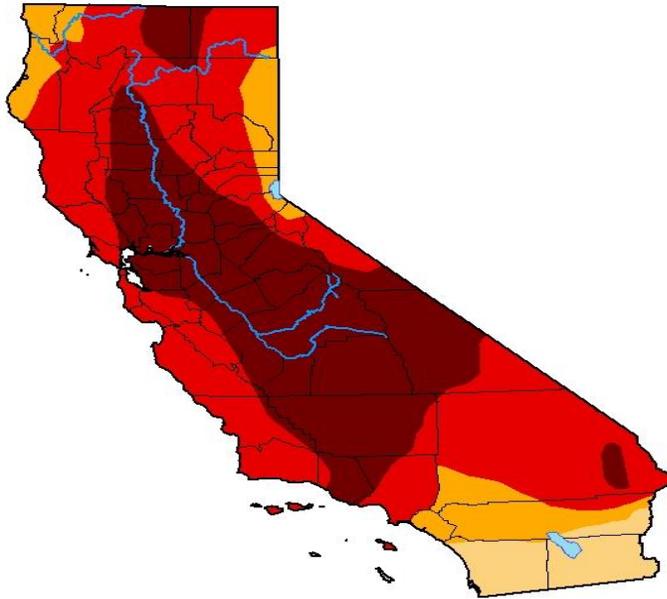
\*\* April 1<sup>st</sup> is used as the benchmark as it when the snowpack in California is generally deepest. It has been used the benchmark date since 1941 by DWR and can be used to predict spring river flow.



# DROUGHT MONITOR

## U.S. Drought Monitor California

**November 2, 2021**  
(Released Thursday, Nov. 4, 2021)  
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	0.00	100.00	100.00	93.81	83.33	38.74
<b>Last Week</b> 10-26-2021	0.00	100.00	100.00	93.81	83.33	38.74
<b>3 Months Ago</b> 08-03-2021	0.00	100.00	100.00	95.07	88.37	46.45
<b>Start of Calendar Year</b> 12-29-2020	0.00	100.00	95.17	74.34	33.75	1.19
<b>Start of Water Year</b> 09-28-2021	0.00	100.00	100.00	93.93	87.88	45.66
<b>One Year Ago</b> 11-03-2020	15.48	84.52	67.54	35.61	12.74	0.00

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:

Adam Hartman  
NOAA/NWS/NCEP/CPC



[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

### U.S. Drought Monitor Class Change - California 1 Week



November 2, 2021  
compared to  
October 26, 2021



- 5 Class Degradation
- 4 Class Degradation
- 3 Class Degradation
- 2 Class Degradation
- 1 Class Degradation
- No Change
- 1 Class Improvement
- 2 Class Improvement
- 3 Class Improvement
- 4 Class Improvement
- 5 Class Improvement

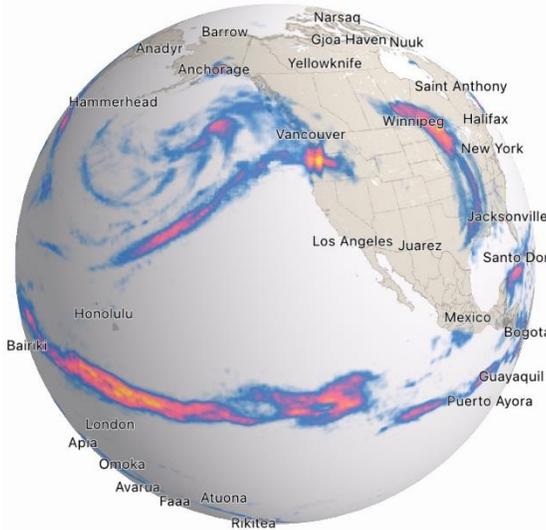
[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

The US Drought Monitor release their statistics with a 1-week lag to this report. Over the past week there has been a 0% change in drought conditions in California.

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 current satellite picture shows a frontal system off the Northwestern region of the US just making landfall in the Vancouver/Seattle region bringing some precipitation to the NW.

It is expected that while this front will bring further precipitation to the Northwestern US it may only reach the Northern California region in a weakened form early in the week but there is further moisture behind this front which may get to the CA regions by late next week.

There is limited frontal activity brewing in the sea south of Alaska but we do expect to see more signs of further frontal activity coming from this region over the next few weeks.

Ref. Dark Sky

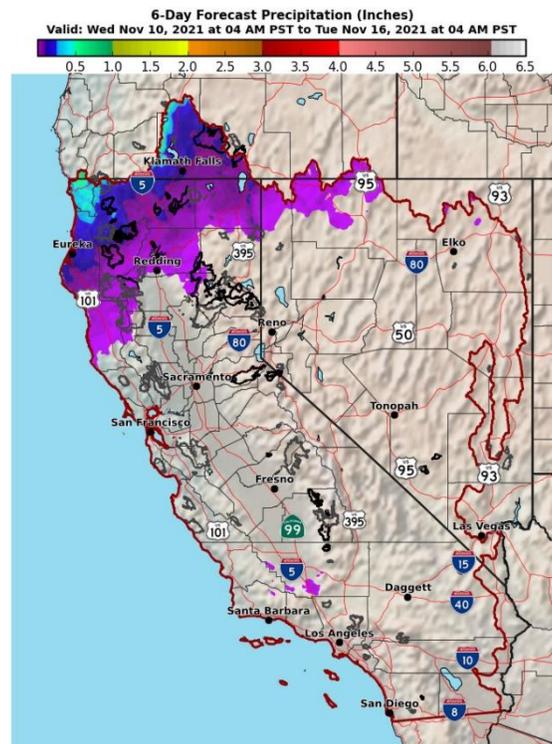
Once again Monsoonal effects are not prevalent on this satellite picture at present as it appears this moisture inflow from the South may have ceased for the year. Our long-term models are still showing the potential for greater precipitation to reach the SW and Western US this winter.

### 10 Day Outlook

High pressure will be the dominant feature through the rest of the week with the next moisture plume aimed at the Pacific Northwest.

The southern fringe may clip the upper Klamath River basin and far northern NV near the border with OR and ID. Expect amounts to be generally light...on the order of 0.25-inch or less.

Ridge of high pressure over the region will bring dry and warmer conditions for the weekend. Generally above normal temperatures (5 to 15 degrees) except valley fog may keep some valley locations closer to normal. Ridge may weaken and shift to the east early next week bringing a little cooler temperatures and a chance of precipitation across the north. The EC and GEM





## **VELES WATER WEEKLY REPORT**

and GFS Ensemble mean and WPC show some precipitation over Northern CA and Southern OR late

Monday. The forecast goes with WPC except mixed with EC for the last period.

Reference: National Weather Service / California Nevada RFC / Sacramento CA

## **WESTERN WEATHER DISCUSSION**

An active storm track across the Pacific Northwest and northern California has resulted in improving conditions during October, with improvements in northern California and the central Great Basin being attributed mainly to the strong atmospheric river event in late October, which dropped record 24-hour precipitation in several locations. This week the active storm track persisted, leading to improvements across parts of western Washington and the interior Pacific Northwest. Soil moisture has and stream flows have improved greatly for many areas in the central and northern Great Basin, warranting some improvements across southern Idaho, northeastern Nevada, and northern Utah. However, groundwater and reservoir levels are slow to respond and will need continued above-normal precipitation this season to recharge. Snowpack has started to build across the northern Rockies and the Cascades, and even into parts of the Sierra Nevada, but it is still early in the season to reap the benefits. D4 (exceptional drought) expansion was warranted in central Montana, as stream flows have fallen below the 2nd percentile, NASA SPoRT and CPC soil moisture have fallen below the 2nd percentile, vegetation indices show increased stress, and 30-60 day SPIs have fallen to D4 levels. In addition, parts of this new D4 area have experienced a record dry period spanning September to October. The timing of this dryness has also stunted winter wheat growth in the region. Status quo was warranted elsewhere in the West as antecedent 30-day wetness and improved soil moisture offsets the observed above-normal temperatures for the 7-day period.

Reference: Brad Rippey, U.S. Department of Agriculture  
Richard Heim, NOAA/NCEI



## WATER NEWS

### CALIFORNIA WATER NEWS

#### **Metropolitan Declares Drought Emergency**

With record dry conditions straining Southern California's water supplies, Metropolitan Water District's Board of Directors today declared a Drought Emergency and called for increased efforts to maximize conservation, especially in communities facing the greatest challenges.

The declaration comes as California grapples with unprecedented conditions on state water resources. Water years 2020 and 2021 were the driest two-year sequence on record for precipitation in the state. And in August, Lake Oroville – the main reservoir on the State Water Project – reached its lowest point ever since being filled in the 1970s.

As part of today's emergency declaration, Metropolitan's board called on its member agencies dependent on state project water to use increased conservation measures or other means to reduce their use of these limited supplies.

To help the region save water, the board also approved a series of measures to expand various rebate and water-efficiency programs.

"We need immediate action to preserve and stretch our limited State Water Project supplies," board Chairwoman Gloria D. Gray said. "Southern California on average gets about one-third of its water from Northern California via the state project. Next year, we'll be lucky to get a small fraction of that."

The California Department of Water Resources has indicated its initial SWP allocation next month will be zero. And if drought conditions continue, the state could do something it has never done before – provide only enough water as deemed necessary to protect the health and safety of Californians. Under this never-before-used provision of the SWP contract, the state has indicated it would constrain water deliveries to a level that may prevent any outdoor watering.

"We're reaching uncharted territory here and we need all Southern Californians to be part of the solution," Metropolitan General Manager Adel Hagekhalil said. "We need everyone to take action to reduce their water use immediately. This drought emergency declaration helps us all move in the same direction."

While the region's SWP supplies are particularly stressed this year, much of Southern California can turn to the Colorado River, local supplies and Metropolitan's stored water in the Colorado River system. This year, Metropolitan has taken extraordinary actions to preserve SWP supplies by instead delivering Colorado River water to as much of the region as possible. Metropolitan has rehabilitated the Greg Avenue Pump station, allowing Colorado River water to be pumped further west than it ever has before, into the San Fernando Valley and Southern Ventura County. Metropolitan member agencies, including Los Angeles Department of Water and Power, Three Valley Municipal Water



## VELES WATER WEEKLY REPORT

District and West Basin Municipal Water District, have agreed to take deliveries of Metropolitan's treated Colorado River water, rather than the untreated water from the SWP they would normally receive. Metropolitan is negotiating similar arrangements with other member agencies.

Still, some areas of Southern California remain dependent on SWP supplies, including some communities in Los Angeles, Ventura and San Bernardino counties served by Los Angeles Department of Water and Power, Calleguas Municipal Water District, Las Virgenes Municipal Water District, Upper San Gabriel Valley Municipal Water District, Three Valleys Municipal Water District, and Inland Empire Utilities Agency.

"Our Colorado River supplies are finite as well – there is a drought on that system, too – so we need everyone to use water wisely. But the urgency now is on the State Water Project. That's why we're calling for increased conservation in those dependent areas," Gray said.

Today's declaration marks the latest in a series of actions Metropolitan has taken to ramp up conservation in the Southern California. In August, Metropolitan's board declared a Water Supply Alert for the region, calling for consumers and businesses to voluntarily reduce their water use and help preserve the region's storage reserves. Some of Metropolitan's member agencies have already gone a step further by implementing new mandatory conservation measures or maintaining past ones.

Under the expanded conservation programs approved today, Metropolitan will provide an additional \$5.5 million to install high-efficiency toilets in older apartment buildings; increase its turf replacement program rebate from \$2 to \$3 a square foot for public agencies that replace grass with more water-efficient landscaping; and provide an additional \$1.5 million for its program to directly install water-efficient devices for income-qualified customers. In addition, the board approved a new \$2.6 million grant program to help public agencies detect and repair leaks in their distribution systems.

The Metropolitan Water District of Southern California is a state-established cooperative that, along with its 26 cities and retail suppliers, provide water for 19 million people in six counties. The district imports water from the Colorado River and Northern California to supplement local supplies, and helps its members to develop increased water conservation, recycling, storage and other resource-management programs.

Original Article: [Business Wire/ Metropolitan Water](#)

### **Vexed by dust pollution, officials around Mono Lake call on Los Angeles to cease water diversions**

For those who live near the briny shores of California's Mono Lake, October can be a dreaded month. That's when turbulent winds scour Mono's exposed lake bed, or "bathtub ring," and launch clouds of fine dust that blanket homes, ranch lands and scenic trails.



## VELES WATER WEEKLY REPORT

For 50 years, the vast lake has been a source of so-called PM10 particulate — a dust so fine that it can clog human airways, penetrate the lungs and aggravate serious heart and lung diseases, such as asthma.

“We’ve got a public health crisis on our hands,” grumbled Phil Kiddoo, enforcement officer for the Great Basin Unified Air Pollution Control District, which oversees a battery of monitoring devices that help chronicle the dust storms rolling off Mono Lake this time of year.

Kiddoo and others have long blamed the city of Los Angeles for generating this pollution hazard. Ever since World War II, the city has diverted water from the streams that feed into the lake on the arid eastern side of the Sierra Nevada range. Without an adequate source of replenishment, critics say, the lake has been left to slowly shrink, exposing more and more of its alkaline lake bed to the air.

Now, after two years of punishing drought, Mono County conservationists, tribal leaders and air regulators have launched a campaign to raise the level of the lake. They hope to accomplish this by stopping the Los Angeles Department of Water and Power from diverting water from the lake’s feeder streams.

The campaign hinges on the novel argument that Los Angeles can afford to stop diverting water here because Angelenos are now experts at conserving water.

For its part, the Department of Water and Power said Mono County officials should first study whether the dust is coming from somewhere else before they cast blame.

Mono officials such as Kiddoo have often spoken of possible legal action in the long-running dispute, but so far they have not resorted to the courts. Recently, however, a coalition of 18 environmental groups and the Great Basin district sent correspondence to the DWP saying that Los Angeles was conserving so much water that it could afford to stop diverting from Mono Lake’s feeder streams.

They pointed out that water use within the DWP’s service area has dropped by 22% since fiscal year 2013-2014, according to the DWP’s water management plan. Also, about 4 million Angelenos currently use 40 gallons less per person per day than they did 15 years ago, even with drier conditions.

The DWP has attributed those achievements to strategies including storm water capture, groundwater replenishment, recycling, low-flow toilets and \$2 billion worth of court-ordered dust control projects at dry Owens Lake, about 140 miles to the south. Those projects use gravel, vegetation and other methods to keep dust down at Owens Lake, instead of using large amounts of water.

Mono County officials say these measures have saved the DWP more than twice the 16,000 acre-feet of water the city typically exports from the Mono Basin in a year.

Original Article: [The LA Times by Louis Sahagun](#)



## VELES WATER WEEKLY REPORT

### California agency sues 3M, others over groundwater contamination

California's largest groundwater agency has sued 3M Co, Corteva Inc, the Chemours Co and other manufacturers and sellers of industrial and consumer products over claims they contain a toxic chemical that polluted drinking water in Los Angeles.

The Water Replenishment District of Southern California (WRD), which oversees drinking water supplied to 43 cities in Los Angeles County, alleges in a [complaint](#) made public Tuesday that the companies knew products ranging from firefighting foam to textiles and non-stick cookware would pollute groundwater with perfluoroalkyl and polyfluoroalkyl substances, or PFAS, but failed to warn against the risk.

The complaint, filed in Charleston, South Carolina federal court, seeks a ruling ordering the companies to pay for investigating and cleaning up wells that have been contaminated with the chemical compound. So far, WRD has approved \$34 million in expenditures to construct water-treatment plants to remove PFAS, according to the complaint.

The lawsuit is the latest to be filed in South Carolina multidistrict litigation involving PFAS-related claims.

Original Article: [Reuters by Sebastien Malo](#)

### The Current Drought: Time to Hope for the Best, Prepare for the Worst

Last month's atmospheric river brought much-needed precipitation to California, which has been in the grip of the second-driest and third-warmest two-year period on record. It was a balm to the drought-stricken state, and more than 600,000 acre-feet have arrived in the state's major reservoirs, but are our worries over? In a word, no.

California remains in a historic drought. We ended the 2021 water year in conditions similar to the end of 2014, year three of the last major drought. Future scenarios for the 2022 water year—shown in the figure—demonstrate that we'll need a generous year of rainfall to move the drought needle out of the danger zone. If dry conditions persist, as they did in 2015, drought impacts will be amplified. Even an above-normal water year won't take us out of drought: in 2016, for instance, we were able to fill up our reservoirs, but drought conditions persisted because reservoir managers made conservative decisions on water releases to avoid taking more risks. Only a wet year like 2017—or like 1978, which followed the driest two-year period on record and mirrors current conditions—will relieve the drought stress, although we could still see some persistent drought impacts in freshwater ecosystems and overdrafted groundwater basins.

We're here in part because the most recent drought has been so fast-moving. In the 2012–16 drought, it took more than three years for reservoir levels to drop to extreme drought levels. In the current drought, that drop took less than two years—reflecting the especially dry conditions in Northern California, where most major reservoirs are located. Climate change is exacerbating drought intensity: conditions deteriorated rapidly this summer, the hottest on record.



## VELES WATER WEEKLY REPORT

The conditions in the Sacramento River watershed are critical not only for the region itself, but also for Bay Area and Southern California cities and the San Joaquin Valley farms served by the Central Valley Project and the State Water Project. Water allocations from these projects were set to just 5% for SWP contractors and as low as 0% for some agricultural contractors of the CVP. One consequence is reduced crop acreage; for instance, around 110,000 acres less than in 2020 were planted—mostly rice and cotton—given the dry conditions, and anecdotal reports suggest both acreage and yield declines for other crops from reduced water deliveries and heat stress. While there will be some costs, overall agriculture has proven fairly resilient. The real question is what happens next year.

The reduction in surface water supplies has also spurred more groundwater pumping, accelerating declines in groundwater levels that occur naturally during droughts: almost a thousand drinking water wells have been reported dry, leaving residents of some low-income rural communities without water running through their taps.

Original Article: [Public Policy Institute of California by Alvar Escriva-Bou and Ellen Hanak](#)

### **‘We dread summers’: dangerous ‘fire weather’ days are on the rise in northern California**

On late summer and autumn days, when the hot, howling winds sting the skin and chap the lips, Holly Fisher starts to feel a bit unsettled. So do many of her neighbors in the town of Paradise, a name that evokes bitter irony in northern California.

“It feels eerie,” she said. Three years ago, this arid, blustery weather portended the Camp fire. It consumed the town, killed more than 80 people, and burned down Fisher’s home. As the region reeled in the aftermath, the same potent convergence of weather conditions – known as “fire weather” – helped fuel the North Complex fire in 2019, and the Caldor and Dixie fires this year.

Across the Sierra Nevada foothills, fire weather is increasingly becoming a distressing reality of life. Over the last half-century, global heating has dramatically increased the number of annual fire-weather days in the region, a Climate Central analysis of federal weather station data shows.

The Climate Central research reveals that the number of annual fire-weather days in what the National Oceanic & Atmospheric Administration (Noaa) defines as the Sacramento Drainage climate division climbed from an average of seven days in the early 1970s to 22 in 2020. This year there were 25.

Analysis of weather station and fire data also indicates that after the Dixie fire erupted in mid-July this year, nine of the ten days in which it grew the most explosively were characterized by fire weather conditions. The blaze tore through 1m acres of forest and razed much of the city of Greenville.

The new analysis found that a similar trend is bearing out across much of the US west. From the Pacific coast to the Great Plains, the number of fire-weather days is increasing. In some regions, fire weather has come to characterize nearly a quarter of the year.



## VELES WATER WEEKLY REPORT

The findings are consistent with a growing body of research suggesting that California is entering an unprecedented new era of fire. Climate scientists have found that in parts of the state, fall fire-weather days are expected to double by the end of the century. California's fire season, which has historically peaked in the late summer and autumn, has been expanding.

"Stringing together many extreme fire-weather days in a row allows fire sizes to quickly escalate," said John Abatzoglou, a climate and fire scientist at the University of California, Merced, who advised the Climate Central analysis and co-authored the research regarding fall fire weather.

"We used to have a lot more regional fire hotspots and now those hotspots are growing. It's a contagion and that is certainly compromising our ability to manage fire," said Abatzoglou, adding that the changes are creating "synchronous" fire risks across the region— and the world – making it more difficult for governments and agencies to backstop one another with firefighters and equipment.

Original Article: [The Guardian by Maanvi Singh](#)

### **Water Board Raises Fees & Water Pumping Rules Reevaluated**

The State Water Resources Control Board recently voted to further increase fees related to water quality and water rights. California has entered into a new strategic partnership with the U.S. Department of Transportation to address transportation challenges. Several lawmakers and agricultural organizations have expressed concern regarding a new joint operating plan for California water projects. While cotton growers have been struggling with a challenging water year, it appears that demand is picking back up and bringing better prices. The Agricultural Transportation Working Group detailed the challenges facing the ag supply chain and provided recommendations to Transportation Secretary Pete Buttigieg. The \$1.75 trillion plan includes provisions for significant climate investments, particularly in the agricultural sector.

Original Article: [AG Net West](#)

### **Flows to increase; water districts cry foul**

The Newsom administration has informed regional water districts that it will move forward with a plan to increase flows from San Joaquin River tributaries in an action that may create more water uncertainty for farmers.

A notice from the California Natural Resources Agency and state Environmental Protection Agency represents a departure from the state's earlier willingness to consider voluntary agreements with water districts, which includes aspects other than just flow increases. That departure means that the regulatory regime, adopted by the State Water Resources Control Board in 2018, will now move forward.

This first phase of the state's Bay-Delta Water Quality Control Plan requires districts along the Stanislaus, Tuolumne and Merced rivers to leave 30% to 50% of "unimpaired flows" in the San Joaquin River tributaries in an effort to help fish.



## VELES WATER WEEKLY REPORT

Districts, farmers and residents of the affected region have protested the plan, saying it would do little to restore salmon and other fish populations while cutting water supplies to the northern San Joaquin Valley.

David Van Klaveren of Hollandia Nursery in Modesto receives water from Modesto Irrigation District to irrigate 800 different varieties of plants, trees and shrubs that are sold to garden-center retailers in California and other states.

“Restricting water rights is a big deal, so it’s going to affect our farm ground in this area,” said Van Klaveren, who also grows almonds. “It is going to hurt our production (at the nursery) and production of food.”

California EPA Secretary Jared Blumenfeld and state Natural Resources Agency Secretary Wade Crowfoot signed an Oct. 20 letter sent to affected water districts. They included MID, Oakdale Irrigation District, Merced Irrigation District, Turlock Irrigation District, San Francisco Public Utilities District and South San Joaquin Irrigation District.

The letter thanked them for engagement over the past few years to develop voluntary agreements to improve conditions for fish and wildlife in the Sacramento-San Joaquin Delta and its major rivers.

The agreements were intended to form a framework for funding and managing river flows and habitat protection. But now state agencies said that they are moving forward with the 2018 plan adopted by the state water board.

“At this point,” Blumenfeld and Crowfoot said in their letter, “it is clear that despite considerable efforts, proposed voluntary actions by water agencies on the San Joaquin River tributaries have fallen short of needed flow and habitat improvements, and viable proposals are not being offered at this time.”

The officials said they would ask the state water board “to resume all activities necessary to implement the flow objectives established by the 2018 Bay-Delta Plan for the Lower San Joaquin River and its three major tributaries.”

Modesto and Turlock irrigation districts, which jointly operate Don Pedro Reservoir on the Tuolumne River, protested that state officials were abandoning negotiations.

“After more than two years and countless hours of active participation in voluntary agreement negotiations with the state, MID and TID are extremely disappointed that the Newsom administration has walked away from the table,” said Melissa Williams, Modesto Irrigation District public affairs manager. “It’s apparent that the state wants even more water but hasn’t expressed or justified the amount needed.”

Williams added, “Their framework unfairly shifts responsibility for delta protection to the senior water rights holders on the Tuolumne River and is unlikely to achieve the desired fishery and water quality outcomes, either locally or in the delta.”

MID and TID are among a number of water districts, municipalities and others that have active litigation over the unimpaired flows criteria. A coalition of environmental and fishing groups has also sued, claiming the board should have directed even larger flows toward fish.



## VELES WATER WEEKLY REPORT

California Farm Bureau filed its own lawsuit against the unimpaired-flows plan in February 2019, charging the water board failed to follow the California Environmental Quality Act and underestimated the harm the plan would cause to agricultural resources in the Central Valley.

Chris Scheuring, California Farm Bureau senior counsel, called the agencies' decision to cease negotiations "unfortunate."

"As a legal or policy matter, this is a huge water quality overlay in terms of basin planning under the water quality laws that is going to have a systemic conflict with the structure of water rights," he said. "It would have been good to find collaborative solutions that include fish-friendly practices that maybe don't impact flows quite so directly."

Scheuring added, "The hard path of litigation is probably not a good path for anybody. Water users are left with no choice but to follow that litigation forward, and that's unfortunate."

As the fight over water continues, Van Klaveren said, "We're just plowing ahead like we normally do until there are rulings or if somebody comes and chains our gates closed."

For many years, Van Klaveren said his family has irrigated with a mix of district and groundwater, which is reused and placed in holding ponds.

"We irrigate four days on the wells and three days out of the pond on recaptured water," Van Klaveren said. "We're using the best and highest efficiencies that we can because the more efficient you are, the more you're sustainable, the more (money) you make, and the more you can provide for your family, your neighbor and your community."

CalEPA and Resources Agency officials noted in the letter to districts that the voluntary agreement from the districts will be submitted to the state water board for a third-party and environmental review, followed by public participation.

Meanwhile, efforts to advance the second phase for of the Bay-Delta plan for the Sacramento River tributaries is ongoing with Sacramento River basin water users and water agencies that contract with the state and federal water projects.

Original Article: [Our Valley Voice by Christina Souza, California Farm Bureau Federation](#)

### **Data confirms salmon slaughter on California's main river**

State officials confirmed dire predictions of catastrophic fish kills due to sizzling water temperatures in California's largest river, announcing Thursday that just 2% of winter-run Chinook juvenile salmon likely survived the summer.

The alarming percentage of juvenile salmon killed on the Sacramento River surpasses the scope of die-offs recorded in the state's recent drought years and has officials sounding the alarm about the potential permanent collapse of the endangered species.

"The current drought situation is likely to produce very bad returns of fish 3-4 years from now and if we keep having these incredibly bad years, we will not dig out of our population decline," said Chuck Bonham, director of the California Department of Fish and Wildlife. "We've got to accept that reality."



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As in previous drought years like 2014 and 2015, the federal government and state have been unable to keep water temperatures cool enough to sustain both eggs and juvenile salmon at several important rivers and streams. The lack of rain, record-breaking heat and deliveries of subsidized water to contractors during the drought have created a perilous situation for fish and wildlife.

According to data presented during a state Senate fisheries committee hearing Thursday, an estimated 75% of winter-run Chinook eggs essentially cooked this summer on the upper Sacramento River. Worse, experts believe nearly all the remaining salmon that did hatch soon died from a combination of low river flows and natural or human-caused mortality.

“It appears that only 1-2% of these endangered baby salmon survived just the first few months of their lives,” testified Doug Obegi, water division director at Natural Resources Defense Council.

For comparison, an estimated 3% of Sacramento River winter-run Chinook juveniles survived in 2014 and just 5% in 2015, both of which were also extreme drought years. The lack of salmon able to return to spawn and replenish the population will again have significant impacts on the state’s commercial fishing industry down the road.

To account for the disastrous summer on the Sacramento and other rivers like the Klamath and Feather, fishing groups want the state and feds to ramp up fish hatchery operations that prevented the total collapse of salmon populations during the last drought.

Original Article: [Court House News by Nick Cahill](#)

### **Ag Groups and Lawmakers Concerned by New Operating Plan for Water Projects**

Several lawmakers and agricultural organizations have expressed concern regarding a new joint operating plan for California water projects. The environmental review process is being reinitiated for operating procedures for the Central Valley Project (CVP) and the State Water Project (SWP). A coalition of ag groups recently sent a letter to the leaders of the U.S. Department of Interior and the California Natural Resources Agency detailing concern for the action.

The group notes that the recent court filings “include an unprecedented and unvetted interim operations plan for the upcoming water year in California.” The coalition is comprised of groups including California Citrus Mutual, Western Agricultural Processors Association (WAPA), California Fresh Fruit Association, and the Agricultural Council of California. Several lawmakers including U.S. Senator Dianne Feinstein and Congressmen Jim Costa, John Garamendi, and Josh Harder have also sent letters raising concern about the issue. Most recently the California Republican Delegation sent a formal request calling for an oversight hearing on the action.

The issue centers on the 2019 biological opinions which dictate the operation of the CVP and SWP. Under the new joint operating plan, the 2019 biological opinions would not be



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considered while a new environmental review process is undertaken. The proposed interim operations plan has been described by the California Farm Water Coalition as a “potential disaster for thousands of California farmers.” Initially, the latest biological opinions had been supported by an array of interests as bringing some much-needed clarity to the water system in California. It had been roughly 10 years since the biological opinions had been updated with the latest information and science available. Concerns have been raised that an interim operating plan will be a regression in California’s water management.

“We thought that progress had been made in revising the original biological opinions to bring more science to the table. That was done under the Trump Administration and now they’re going to go backwards and are headed toward the previous biological opinions which ignores the science,” said WAPA President and CEO Roger Isom. “It’s going to hurt what was already a very impacted system. Not that we were seeing much water out of it, but this is only going to make it worse.”

Original Article: [Ag Net West by Brain German](#)

## US WATER NEWS

### **How much groundwater is rural Arizona using? NASA satellites could give us a better answer**

How much groundwater is rural Arizona using?

Good question.

There are basically no regulations on pumping outside of the state’s five Active Management Areas. So, whoever has the deepest well wins – an approach that is steadily draining aquifers all over the state.

Because there also are no reporting requirements in rural areas, reliable data on use is notoriously hard to come by. In the rare instances where it exists, it is often criticized for its accuracy.

But what if I told you we could gather objective, actionable data on use? And we could do it without metering everyone’s wells – an unpopular idea in rural Arizona that usually kills any effort to better manage limited and dwindling supplies?

I’m not throwing you a line. The technology exists.



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OpenET contains multiple years of evapotranspiration data that have been collected by NASA satellites. This information is measured down to the field level in Arizona and across the West, then overlaid on Google maps and made available to the public for free at [openetdata.org](https://openetdata.org).

Evapotranspiration – or ET – is important because it measures the water that either evaporates from land or water or that transpires from plants into the air.

It doesn't capture total water use. But ET can provide a robust picture of consumptive use – basically, the water that is used by humans or plants (or that has evaporated) and therefore can't be reused by others.

It's a metric that's often missing, but a key one to have on hand if communities want to better understand their groundwater demands.

OpenET has been years in the making, a massive project involving researchers from NASA, the U.S. Geological Survey, the Environmental Defense Fund and others. They spent considerable time field testing with farmers and water managers in Arizona and across the West, collecting on-the-ground measurements to confirm that what is measured via satellite and crunched via multiple computer models is accurate.

Turns out, it is.

Salt River Project is using the data to prioritize its forest-thinning efforts (because more ET could mean more overgrown areas) and track them afterward to see how effective they've been. This is critical work, not only to reduce the risk of catastrophic wildfire but to maximize the amount of water the forests produce for our reservoirs.

Because NASA's data is so granular, it also can help the utility track to the quarter-acre what is growing back in remote areas that have been torched. Elvy Barton, who heads SRP's forest management efforts, said she is already seeing higher ET in burned areas near the Mogollon Rim that were once home to ponderosa pine but now are covered in dense oak shrub, which is impeding critical pine regrowth.

A 9,000-acre area is now targeted for restoration.

Original Article: [AZ Central by Joanna Allhands](#)

### **\$1T infrastructure bill benefits Valley ag and rural communities**

The California Farm Bureau is applauding Congress for passing the Infrastructure Investment and Jobs Act, commending the benefits it extends to local agriculture and rural communities.

The one trillion dollar plan passed by congress late Friday night is set to fund improvement projects across the country and projected to create some 2 million jobs. In the bill are benefits for local agriculture and rural communities like water storage and conveyance, road and highway improvements and broadband internet for areas currently without coverage.

The Infrastructure Investment and Jobs Act is seen as a major accomplishment for the Biden Administration.



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Besides provisions for public transportation, roads, bridges, power, and the environment, the act also invests in projects important to Central Valley agriculture and rural communities.

California Farm Bureau president Jamie Johansson says, “Of the 8-billion dollars, there’s a billion dollars that goes toward storage projects whether that’s groundwater storage or surface storage projects. We have many new storage projects on the books that we haven’t been able to get over the finish line.”

Johansson says the bill covers the most pressing needs in the Central Valley — water. “We are seeing infrastructure needs with just simple repairs with the Friant-Kern Canal, which services a million acres of farmland in Kern and Tulare Counties. You also have the Delta-Mendota Canal which helps store water at the San Luis Reservoir coming out of the Central Valley Project. They’re long ignored but need to have repairs because those canals are operating between sometimes 16% to 60% of capacity, which only adds to a tighter squeeze on water supplies in California.”

“So, critically important projects. Like I said over a billion dollars assigned to that as well as also desalination plants along the coastline which can help because of course there’s a lot of demand as we move water around the state to our urban areas. There’s also over a billion dollars for rural water projects. Whether that’s for small water districts that need assistance whether it’s water quality issues or maybe even trying to hook up rural residents to a surface water supply rather than a groundwater supply.”

Johansson says this could bring about the proposed 1.5-million acre foot Sites Reservoir Project north of the Delta.

“Sites reservoir which is off-stream storage and would work in conjunction with the state water project and federal water project and could bring another million acre feet of water into the system which would have helped alleviate the dramatic drought that we have now just experienced in this past year. There’s optimism there that it really will create some kind of new storage.”

Original Article: [Your Central Valley by Justin Sacher](#)

### **It could take at least 500,000 acre-feet of water a year to keep Lake Mead from tanking**

Arizona, California and Nevada are moving forward with a plan to save another 500,000 acre-feet of water in Lake Mead annually until 2026.

We’re talking 500,000 acre-feet over and above the mandatory cuts that are spelled out in the 2019 Drought Contingency Plan (DCP). Each year. For five years.

Just to keep the lake from tanking.

That’s a significant amount of water.

That required a significant bit of negotiation.

'500-plus plan' took roughly 3 months



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The so-called “500-plus plan” is the result of a provision within DCP that required the Lower Basin states to “consult and determine what additional measures will be taken” to keep the lake from falling to a dangerously low elevation of 1,020 feet. The provision was triggered in August, when the monthly minimum probable forecast suggested Mead could hit 1,030 feet of elevation in 2023 (a stipulation that also was spelled out in DCP).

The three states began meeting then to talk about how much more water, beyond the tiered shortages in DCP, would be needed to protect the lake through the end of the agreement. They began independently modeling various scenarios – everything from doing nothing to saving up to 750,000 acre-feet a year beyond what they are already obliged to cut.

And now, roughly three months later, the three states have generally settled on a target: at least 500,000 acre-feet a year, on top of the cuts for whatever level of shortage we end up in that year.

Original Article: [AZ Central by Joanna Allhands](#)

### **Irrigation, Water Management Play Key Roles in Smoothing Drought Impacts**

A new study examining more than 100 years of agricultural production and weather data in the United States suggests stored water plays an important role in providing resilience to drought. The findings also suggest water management strategies, which differ across the U.S., play a key role in how different areas of the country respond to weather anomalies.

“We wanted to understand how agriculture responds to climate shocks,” said Eric Edwards, assistant professor in the Department of Agricultural and Resource Economics at North Carolina State University and a co-author of a paper describing the study. “The way that agriculture has adapted to climate shocks is generally through irrigation, but to what extent does having access to stored water matter?”

Access to stored water drives irrigation, whether that water is located in an underground aquifer or a dammed river. In addition to a dam and reservoir, surface water irrigation requires a network of canals and ditches. Conversely, farmers overlying an aquifer can just pump groundwater directly.

In the western U.S., irrigation makes agriculture possible in the mostly arid conditions. Water rights rules institutionally determine the order in which farmers get water and when they get it. In the eastern U.S., more precipitation and humidity have generally made farmers think of irrigation as superfluous, and water rights have not been codified. But that seems to be changing as the climate changes.

The study showed that – since around 1950 – access to stored water in more arid regions of the western United States helped farmers avoid losses of about 13% in crop yields during periods of drought. The 1950s stand as a watershed period for increased water



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in the western U.S., after the development of the Hoover Dam in 1936, and aquifer drilling and rural electrification in the 1940s, Edwards said.

“Our study showed that in the eastern U.S. since 1950, yields of corn and soybeans decreased during drought periods whether farmers had access to water or not,” Edwards said. “Meanwhile, in the arid western U.S., if you have access to water storage during drought periods, you don’t see any losses.” This may be because farmers in the eastern U.S. have not necessarily invested in irrigation systems to access stored water. “During drought periods, farmers ask themselves two important questions: Do I bring more land into cultivation? And should I intensify the amount of water I put on my land to increase yields relative to what I would have otherwise?” Edwards said. “Physical attributes and the institutional ways water is managed both influence the choices that farmers make.”

The study showed that farmers who have access to groundwater and surface water tend to bring more land into cultivation. Farmers who have access to groundwater but not surface water also tend to bring more land into cultivation.

Original Article: [NC State University News by Mick Kulikowski and Eric Edwards](#)

### **West Marin water project upheld by coast regulators**

State regulators have rejected a challenge against a West Marin project meant to alleviate worsening saltwater contamination in water wells.

The North Marin Water District is proposing a new well about a mile east of Point Reyes Station. It says the project would provide a new source of water unaffected by saltwater intrusion.

Two of the district’s three wells that serve about 1,800 coastal residents have long been subject to regular saltwater contamination because of their lower elevation near Tomales Bay as well as factors such as drought, sea-level rise and dam removal. The residents are in Point Reyes Station, Olema, Paradise Ranch Estates and Inverness Park. But two years of drought have caused saltwater concentrations in the water to reach levels that district officials say are no longer healthy to drink for ratepayers on salt-restricted diets. In response, the district took the unprecedented action of setting up an emergency water refilling station in Point Reyes Station last month for the residents.

The district’s third well at the Gallagher Ranch is further inland and is unaffected by this contamination, but does not produce the full amount of water as originally planned. In response, the district planned to build a second well at the ranch this year to add a redundant source of salt-free water and produce the 300 gallon-per-minute flow that it has been seeking.

An Inverness environmental organization, Save Our Seashore, challenged the county’s approval of the project earlier this year. The group’s founder, Gordon Bennett, said the district had not conducted adequate studies on the impacts that a second well would have on the water flows of the nearby Lagunitas Creek as well as the endangered and threatened fish species such as coho salmon and steelhead trout.



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The Marin County Planning Commission and Board of Supervisors both rejected appeals, prompting Bennett to take the issue to the California Coastal Commission on Oct. 15.

“I’m not opposed to the second Gallagher well that would eliminate the salt problem if its impacts on endangered and threatened fish on the creek are studied and properly mitigated,” Bennett told the commission. “But North Marin, again, did neither. So this isn’t about salt in the water, it’s about fish in the water.”

Original Article: [Marin Independent Journal by Will Houston](#)

### **UC Davis researchers awarded \$10 million to optimize groundwater, agricultural irrigation sustainability in long-term project**

Amid the unpredictable impacts of climate change, UC Davis has been recently awarded \$10 million in grant funding by the U.S. Department of Agriculture’s National Institute of Food and Agriculture. Researchers from a wide range of fields — from socioeconomics to agricultural groundwater and soil health — will collaborate to optimize groundwater and agricultural irrigation sustainability in the Southwest for farmers to improve crop yield and cost efficiency.

Isaya Kisekka, an associate professor of agrohydrology and irrigation at UC Davis, will be leading a massive collaborative study with a team of researchers from California, Arizona and New Mexico to develop climate adaptation strategies that effectively sustain groundwater quantity and quality as well as irrigated agriculture.

Kisekka introduced the climate issue that the study tackles and the limitations that farmers currently face.

“In California, we are always experiencing droughts and floods, the climate extremes,” Kisekka said. “During the drought, farmers typically rely on groundwater or in the past, they have relied on groundwater until 2014 when Gov. Brown passed a new law called the Sustainable Groundwater Management Act that limited how much water would be pumped in from groundwater. And so, if growers cannot pump groundwater during periods of severe drought, what can they do?”

Depleting and overdrafting groundwater can have serious consequences, leading to groundwater deterioration and land subsidence where the land starts to sink, affecting infrastructure like roads and canals. Kisekka and his team understand that many communities’ economies depend on irrigated agriculture, so balancing sustainability and production is the goal of the study.

“Growers have increasingly depended on groundwater during multi-year droughts and heat stress,” according to a recent UC Davis press release. “Part of the five-year project includes looking into aquifer systems in California’s Central Valley, central Arizona and the lower Rio Grande basin in New Mexico. These regions have all experienced unprecedented overdraft, which happens when more water is pumped from a groundwater basin than is replaced from sources, including rainfall.”



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California is the largest agricultural state in the country, with agricultural receipts exceeding \$50 billion, according to Kisekka.

Original Article: [The California Aggie by Brandon Nguyen](#)

### **NMSU professor investigates belief that modern irrigation saves water despite weak evidence**

A team of scientists, including a professor from NMSU, suggests in a recently published paper that reliance on modern irrigation technologies as a water-use efficiency strategy is a “zombie idea” – one that persists no matter how much evidence is thrown against it.

Water is scarce in many other places, and attempts to address the problem with irrigation, which is often the main water-using sector, have continued to focus on modern irrigation technologies. But evidence shows that this process worsens water scarcity, according to the international research team.

After reviewing more than 200 supporting research articles, the researchers found that technology adoption as a water-saving method for improving irrigation efficiency is ineffective and can even elevate water scarcity. Their findings were published in the peer-reviewed journal *Environmental Research Letters*.

“While water applications per acre are reduced on a farm, what had previously been aquifer recharge and return flow under flood irrigation is essentially eliminated. Not only that, but what is believed to be water savings is often put back into production,” said co-author Frank Ward, distinguished achievement professor in NMSU’s College of Agricultural, Consumer and Environmental Sciences.

“It’s an idea that sounds logical, but a hard look at the data shows just the opposite. Water-use efficiency investments can actually increase local water consumption and contribute to aquifer depletion,” Ward added. “We’ve known this for decades, but despite such knowledge, this idea persists and flourishes.”

Ward said recent evidence of increased irrigation efficiency tends to increase overall water consumption, but continues to be ignored while the reliability of future water supply is declining.

“We need to spread the word that irrigation modernization is no silver bullet to conserving water and sustaining our agricultural production systems,” he said.

The paper identifies several reasons why the idea that modern application technology, like drip irrigation, saves water consumption continues to persist, including beliefs and prior decisions that are hard to reverse.

The researchers suggest many key players continue to support what they call a “zombie idea.” These include those who sell water-use efficiency equipment; politicians who prefer simple solutions; and donor organizations who want easily implementable options rather than dealing with difficult choices.

“It may be easy for some of these groups to champion water-use efficiency, but they don’t have to bear the consequences when it fails to deliver real measured, long-term



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savings, and the measurement rarely happens,” Ward said. “We continually fail to understand the limitations of technology. Modern irrigation technology can reduce water applied to crops but will rarely reduce water consumption for the basin as a whole. Where the reduced applications are believed to translate to reduced water consumption, the reduced water application seen is often placed into new production.” Ward said farmers do not invest in modern irrigation technologies without financial incentives like subsidies because converting to a modern irrigation technology without support typically carries a high financial cost.

Ward said the consequences of these technologies are a growing concern worldwide, especially in arid regions that have tapped their non-renewable fossil aquifer supplies – deep underground reserves of water – to maintain farm production.

Original Article: [El Paso Herald Post by Carlos Andres Lopez](#)

### **As COP Begins its Second Week and After the Passage of the Infrastructure Bill, Walton Family Foundation Emphasizes the Need to Invest in and Scale Local Solutions to Protect Water**

As the second week of COP 26 begins on the heels of the House passage of the bipartisan infrastructure bill, the Walton Family Foundation's Environment Program, which works to protect water resources in the era of climate change, issued the following statement: "Whether it's droughts, floods, wildfires, or mega storms -- water is one of the clearest ways that people experience the impacts of climate change. That means water must also be central to solutions for a resilient climate future," said Moira McDonald, director of the Walton Family Foundation's Environment Program. "The passage of the bipartisan infrastructure bill means that there will be \$8.3 billion to help protect water in the West - and even more to support climate resilience nationally. That's a huge opportunity to support innovative solutions. If we meet the challenge of this moment, we can reach a future where nature and people can thrive together.

"More than 70% of the world's freshwater is used in food production. As we think about how to feed a growing population in a more sustainable way, we must think about solutions for protecting water, which means leveraging innovation to use less water while continuing to grow more food -- especially in the West where climate change is fueling drought.

"The people closest to a problem are also frequently closest to the solution. The leadership and thinking at COP is important because we need to think globally, but we also need to remember that the people working on the ground in communities around the country and across the globe have critical roles to play in finding the path forward."

Original Article: [PR News Wire](#)

### **Lewis County Considers Establishing Water Banking Program to Help Address Supply and Permitting Gaps**



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Lewis County is in the early steps of looking at establishing a water banking system to overcome supply and permitting challenges that have plagued residential, agricultural, commercial and industrial customers for years.

The Board of Lewis County Commissioners on Tuesday heard a presentation from Aspect Consulting, a contractor currently drafting a preliminary report for staff and commissioners.

It's likely the county will need to purchase water rights as an upstart for its bank, which in itself could be an expensive venture, though grant funding through a pilot project to establish new banks from the Washington State Department of Ecology will open up Nov. 17.

"Seeding" sources, or acquiring good-standing water rights, may also prove difficult, though Aspect identified three sources the county could look to purchase on the market soon: a portion of the TransAlta Water Bank and irrigation rights from Marwood Farms and Toledo-area U.S. Golden Eagle's land.

Lewis County Manager Erik Martin said water rights locally are simply tough to secure at the moment for developers, farmers and others.

"They often get tied up in the Department of Ecology for years when some people need to get access to water rights," he said. "The point is that if the county had a bank of water rights, it would make it in some cases much easier to access, be it for development, agriculture or whatever the reason."

Water banks are broadly defined by the Department of Ecology as moving "water between buyers and sellers to where it is needed most. Water banks in Washington provide mitigation for new uses by setting aside a water right so it can be allotted to new uses that would otherwise impair existing water rights."

Commissioner Lindsey Pollock, who brought the idea forward, said the county won't be trying to reinvent the wheel on banking. The county will likely base its program on similar active banks overseen by the Department of Ecology, but will need to base its service and function on the needs of the surrounding communities and watersheds.

"We'll need to make it fit our unique needs here," Pollock said.

For example, having additional water rights available through a bank could help "hotspot" communities, such as near Boistfort, Pe Ell and the Birchfield development in Onalaska that are in need of municipal use, Aspect's report says.

There are also currently no water rights set aside on a longterm basis for future commercial-industrial uses in Lewis County, and Aspect listed those uses as "high priority" due to the potential for job creation and tax revenue increase.

Mike Gallagher, the Department of Ecology's southwest region water resources manager, said Lewis County's case and circumstance for developing a water bank is quite unique to the nature of developing trusts in Washington state.

As TransAlta shuts its final coal burner in 2025, rights from the company's own water bank will likely be sold off to different entities and municipalities.

Original Article: [The Chronicle by Eric Rosane](#)



## **East Coast flooding is a reminder that sea level is rising as the climate warms – here’s why the ocean is pouring in more often**

The U.S. East Coast has been experiencing hurricane-like flooding in recent days, with Georgia and the Carolinas getting the latest round. High tides are part of the problem, but there’s another risk that has been slowly creeping up: sea level rise.

Since 1880, average global sea levels have risen by more than 8 inches (23 centimeters), and the rate has been accelerating with climate change.

Depending on how well countries reduce their greenhouse gas emissions in the coming years, scientists estimate that global sea levels could rise by an additional 2 feet by the end of this century. The higher seas means when storm surges and high tides arrive, they add to an already higher water level. In some areas – including Charleston, South Carolina, where an offshore storm and high tide raised water levels 8.4 feet on Nov. 6, 2021 – sinking land is making the impact even worse.

I’m a geoscientist who studies sea level rise and the effects of climate change. Here’s a quick explanation of two main ways climate change is affecting ocean levels and their threat to the world’s coasts.

Climate change, fueled by fossil fuel use and other human activities, is causing average global surface temperatures to rise. This is leading the ocean to absorb more heat than it did before the industrial era began. That, in turn, is causing ocean thermal expansion. Thermal expansion simply means that as the ocean heats up, sea water molecules move slightly farther apart. The farther apart the molecules are, the more space they take up. That expansion leads to the ocean rising higher onto land.

Original Article: [The Conversation by Jianjun Yin](#)

## **AZ relationship with water changed forever**

The ugly “bathtub ring” currently visible at Lake Mead is a stark visual example that all is not well with our water supply and water policy. The hardworking Colorado River, which supplies Lake Mead, has been overallocated for decades and now growth, drought, and climate change are lowering water levels even further.

Other Arizona rivers and creeks are facing a similar fate as the Colorado. Flowing rivers are in decline, water levels are decreasing and, in some places, drying up completely. For too long Arizona’s flowing rivers have been viewed as a resource to tame, exploit, and fuel growth. Water is taken from rivers with no thought for the needs of future generations, preserving riparian habitat, or saving the plants and animals that depend upon flowing water. Arizona has lost hundreds of miles of flowing rivers and riparian habitat. The right for a river to exist is neither recognized nor protected in our state.

While growth, drought, and climate change are all partly to blame for our declining rivers, Arizona has fallen behind other Western states in modernizing water use laws and protecting our environment. Under current Arizona law, surface water can be



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appropriated for designated beneficial uses, with water rights granted “first in time, first in right.”

Water uses that may have been appropriate 100 years ago continue today. High water-use crops, such as alfalfa and cotton, are depleting our rivers and aquifers. Municipalities, industries, and large mega-farms are free to pump unlimited quantities of groundwater (in most of the state), lowering the water table and starving flowing rivers of a water source. And, the final insult, the state does not recognize that groundwater and surface water are connected (except in a very narrow context that does not reflect reality).

Meanwhile, the Arizona Legislature is in full denial of Arizona’s water policy needs, refusing to hear bills that might limit groundwater pumping overdraft, examine surface water overallocation, and help preserve our remaining rivers and creeks. Instead, they are openly talking of fantastical plans to spend millions of dollars to look into piping flood water from the Mississippi or Missouri Rivers. The focus of our problem-solving must evolve from building the next big canal or pipeline, to preserving and better using what we have.

The solutions require new thinking, redirection of resources, and a greater respect for our natural environment. Treatment and re-use of wastewater helps to maintain flow in parts of the Santa Cruz and Salt rivers.

Southern California plans to reuse nearly all its wastewater, instead of dumping it in the ocean. Our state government and the Central Arizona Project are even paying California \$6 million to do so. Why can’t more be done to reuse water here in Arizona? Agriculture uses 70% of our water supply. Water-intensive crops and flood irrigation must change to conserve more water. Newer farming methods including hydroponics, greenhouses and drip irrigation systems offer much greater water efficiency. Rural groundwater pumping (outside of Active Management Areas and Irrigation Non-expansion Areas) needs to be measured and regulated to bring certainty and protection to existing groundwater users and to preserve groundwater tables that support our streams and rivers.

Arizona promotes itself as a world leader in water management. Yet rural wells and rivers are drying up since sustainable water management plans are hindered by laws no longer appropriate for these times. Our relationship with desert water has changed, and our water laws must change too.

Original Article: [Arizona Capitol Times by Lynda Person](#)

### **US Agency Decides Against Flooding Grand Canyon Amid Drought**

The U.S. Bureau of Reclamation decided not to send water rushing through the Grand Canyon this month to rebuild beaches for campers and sandbars for fish because of persistent drought, officials said.



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An abundance of sand in the Colorado River system gives the agency an opportunity to flood the waterway to spread the sediment throughout the canyon. Despite favorable conditions after a remarkable monsoon, the November flood is a no-go.

Officials determined opening the bypass tubes at the Glen Canyon Dam would have reduced the elevation of Lake Powell on the Utah-Arizona border by about 2 feet (61 centimeters) — contrary to actions taken over the summer to boost the lake by releasing water upstream and ensure the dam can generate power.

Any more time spent below 3,525 feet (1,074 meters) above sea level is considered risky, Lee Traynham, a program manager for the Bureau of Reclamation, told the Las Vegas Review-Journal.

The agency also cited the potential effects of releasing warmer water, the risk of non-native fish moving below the dam and projected losses in hydropower. The Western Area Power Administration already has been struggling to keep up with demand.

Original Article: [US News by Associated Press](#)

### **With less water on the Western Slope and in the Colorado River, the state wants new rules on how to measure and track what's there**

Colorado water managers are making more people track and report how much water they're using, as decades of drought have diminished supplies on the Western Slope.

For the first time, the state is also pushing for new rules that spell out how some rights-holders should measure their water use as each drop of Colorado River water becomes more valuable.

Kevin Rein, director of the Colorado Division of Water Resources, presented the rules to a full house at Jackson County's event center in Walden. The center, usually used for rodeos and 4-H agricultural clubs, was filled with farmers and ranchers concerned about their water.

The state's proposed rule would dictate how the farmers and ranchers in northwest Colorado would need to measure the amount of water they use. That includes types of measurement devices, how they're installed and verified, and how users would record and report their usage to the state.

Colorado has a state statute that gives water managers the authority to require water measurement if there's a need, but the law is vague and doesn't specify how that should be done. The new rules could change that for users in water Division 6, which includes the Yampa, White and North Platte River Basins.

The audience started to ask questions: Why is this happening now? And why are these rules needed here? One rancher wanted to know why the rules don't apply to the whole state.

Director Rein explained. Historically, there's been plenty of water in northwestern Colorado, so there was never a need to make people measure their water use.



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Now, with a warmer climate, those sources are becoming less reliable. The Yampa River and the White River both produce less water than they did 20 years ago, and both of these rivers feed into the Colorado River.

As the state is making water users in northwestern Colorado measure their usage, officials are also introducing new regulations on how those measurements should be made.

The rules haven't been finalized, but state water planners hope to develop standards that generate more consistent and reliable measures to get a more accurate picture of how water is being used.

Rein says the plan eventually is to have similar rules across the Western Slope.

"There's a lot of value in measuring the water use on the West Slope," Rein said. "It demonstrates to the most accurate degree how we use water in Colorado."

Much of the water on the Western Slope feeds the Colorado River, on which more than 40 million people rely. Colorado is part of a 100-year-old agreement, called the Colorado River Compact, to share this water with six other states and Mexico.

If it ever comes to a point where Colorado can't send enough water downstream to meet those obligations, Rein said state officials need to know where all that water is going.

"The urgency for these rules is good, accurate water administration to the benefit of Colorado water users. And good, accurate data if there is a compact compliance obligation in the future," Rein said.

That data could be crucial if downstream states make a legal complaint that Colorado and other upstream states have broken the agreement and aren't keeping enough water in the Colorado River, which is drying up from climate change, drought and overuse.

Lake Powell and Lake Mead, the two largest reservoirs in the U.S., hit their lowest levels on record this summer. Each one is filled with Colorado River water.

Original Article: [CPR News by Michael Elizabeth Sakas](#)

### **Forum session highlights new Utah water bank law**

A new Utah law looks to address increasing demand for water through the use of water banks.

The 2020 measure promotes temporary, voluntary, locally directed leasing arrangements for the use of water rights, Emily Lewis, an attorney currently acting as the Utah water banking project manager, said Wednesday during a session on the new law on the first day of Colorado Mesa University's annual Upper Colorado River Basin Water Forum.

The virtual forum, being put on by CMU's Hutchins Water Center, concludes today.

Water banking, as described by the Utah project's website, [www.utahwaterbank.org](http://www.utahwaterbank.org), "in its simplest form ... facilitates the voluntary temporary transfer of the use of water rights from one user to another." Lewis said discussions about a water banking project in Utah became more serious as pressures on water grew due to a booming population,



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more development, and drought and climate disruption, and concerns grew about things such as environmental and water-quality issues.

The Utah initiative is seen as a means of sustaining agriculture by providing alternatives to permanent “buy and dry” water transfers, according to the project website. It protects water rights while providing more flexibility that can facilitate things such as help meet growing municipal and industrial water demand and securing instream flows that benefit recreation, the environment and water quality.

Lewis said ultimately what the initiative is doing is promoting development of market tools favorable to local water users.

The initiative is an exploratory one, slated to sunset in 10 years, but it could be extended if found to be useful. Work currently is taking place to advance a few pilot projects, including one in the Price, Utah, area that would involve temporary fallowing of land for environmental benefits. Kevin Cotner, a farmer and president of the Carbon Canal Co., which would participate in that initiative, said the canal company isn't 100% sold on it internally but he thinks it's extremely close. He said he thinks the biggest benefit would be protecting water rights, as farmers face the threat of some of their water rights ending up at risk at some point as a result of conservation practices.

Original Article: [The Daily Sentinel by Dennis Webb](#)

## GLOBAL WATER NEWS

### **China unveils regulation on groundwater management**

Chinese Premier Li Keqiang has signed a State Council decree unveiling a regulation on the management of groundwater.

The new regulation, which will take effect on Dec. 1, has set out specific rules for groundwater in the areas of survey and planning, conservation and protection, over-exploitation treatment, pollution control, and supervision and management.

Local water administrations and natural resource and ecological environment authorities should conduct survey and evaluations on groundwater conditions, and make underground protection and pollution control arrangements accordingly, it said.

To enhance groundwater conservation and protection, the total amount of groundwater extracted as well as groundwater levels will be placed under control, according to the document.

Except under special circumstances, groundwater that is not replenished easily should not be exploited.



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The regulation has also stipulated that the designation of areas where the exploitation of groundwater is prohibited or restricted should be standardized, and provincial-level authorities should make plans for local groundwater over-exploitation treatment.

It said that work shall be done to strengthen the control of activities polluting groundwater; refine the rules that prevent groundwater pollution caused by soil pollution, production and construction activities; and enhance monitoring and management. Violations of the regulation will entail legal responsibilities, it stated.

Original Article: [Macau Business by Xinhua News Agency](#)

### **Supreme Court confirms water rights can be transferred**

The Supreme Court of Appeal (SCA) has ruled that water rights holders are entitled to transfer such rights, in accordance with the National Water Act (NWA), and that the trading in such rights is not unlawful.

This follows three appeals, including by the South African Association of Water Users Associations, against a judgment by the Pretoria High Court in June 2020 that water use rights cannot be transferred.

The court heard three separate applications where the applicants sought a declaratory order contending for a proper interpretation of Section 25 of the NWA relating to the transfer of water use rights.

The Pretoria High Court dismissed the applicants for a declaratory order on the correctness of a circular by the Department of Water and Sanitation (DWS), which was published in January 2018, in which the department determined that water use entitlements could not be transferred.

Original Article: [Creamer Media's Engineering News by Marleny Arnoldi](#)

### **MPs pass compromise to cut sewage dumping by water companies**

A government compromise aimed, ministers said, at cutting raw sewage dumping by water companies was passed by MPs on Monday after Conservative rebels backed ministers.

Campaigners for clean water said they were disappointed that what they viewed as a less stringent amendment had been approved. They said the government's compromise was too weak and did not impose a legal duty on water companies to stop releasing raw sewage into waterways.

But Rebecca Pow, an environment minister, told MPs that the government's amendment did place a clear legal duty on water companies to deliver improvements to storm overflows. She said the government had taken its wording from the Lords amendment, which was supported by 22 Tory rebels last week, to place a duty on water firms in England to progressively reduce sewage discharges from storm overflows.



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Luke Pollard, the shadow environment secretary, said the bill as amended was not bold or tough enough. “Britain is again the dirty man of Europe. Not one English river is in a healthy state ... People want to see fast and bolder action from ministers.”

Neil Parish, the Conservative MP for Tiverton and Honiton, who voted against the government last week, said it had his support on Monday.

But he warned: “We have to make sure that we apply lots of heat to water companies to make sure they put in the investment into curing the problem ... and make sure the Environment Agency and Ofwat do use their teeth against these companies.”

Philip Dunne, Conservative MP for Ludlow, who also voted against the government previously, also supported ministers on Monday.

The government amendment passed on Monday states: “A sewerage undertaker whose area is wholly or mainly in England must secure a progressive reduction in the adverse impact of discharges from the undertaker’s storm overflows ... reducing adverse impacts on the environment, and reducing adverse impacts on public health.”

Original Article: [The Guardian by Sandra Laville](#)

### **Economist Brian Easton asks: What is the Three Waters restructuring actually about?**

While the restructuring proposal talks about ‘three waters’ – fresh, waste and storm water – it is really about the massive infrastructural requirements to manage them. Another three waters – estuarine and marine water, natural water bodies (streams and lakes) and groundwater/aquifers – are not included because their management is not so dependent on huge capital assets.

The capital value of the infrastructure is thought to be about \$40b but projections suggest they may eventually cost as much \$185b if we get it up to the quality we want. (Statistics New Zealand thinks it is our sixth biggest industry by value of its capital stock, behind housing, real estate transport, electricity and education and above health, central government, telecommunications and mining.)

It is generally accepted, even by the managers, that the three waters are managed badly. Among the incidents cited are a gastroenteritis outbreak in Havelock North which made more than 5000 people sick, 45 hospitalised and possibly three dead, while Wellington City's ageing pipes regularly burst, spilling sewage over the streets. Not to be left out, Auckland beaches get polluted after heavy rain, while some residents of Karitane and Waikouti (north of Dunedin) were told not to drink their tap water because of its lead levels. Nationally it is thought that the drinking water of a fifth of those on town supply – 800,000 New Zealanders – is not ‘demonstrably safe’. In his recent report to Parliament on the local government sector the Auditor-General tells us that the amount councils spent renewing pipes and other plant was 74 per cent of depreciation for water supply, 64 per cent for wastewater and just 39 per cent for stormwater; these are higher rates than for earlier years. (The special case of Christchurch, which has had to spend up large post-quake, is excluded.)



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It is said that, despite being local councils' largest asset, most of the infrastructure is underground out of sight and out of mind, so its management has low priority.

The government's resolution is to set up standalone agencies to manage the three waters infrastructure – to put the pipes 'above the ground'. That seems a sensible way of dealing with the invisibility.

But it is an incomplete explanation for it ignores the fact that the revenues of local councils are very dependent on local authority rates which are clumsy and difficult to raise. Strapped for cash, councils will inevitably underfund the invisible. This dimension was hardly touched designing the new water care entities (WCEs).

When she first announced the restructuring, the Minister for Local Government said it would reduce local body rates. It was a stupid thing to say because somebody is going to have to pay for the rising costs of managing the three waters, especially given the proposed expansion and quality ambition. To simplify, that payer is YOU. At the time I thought she might have had in mind that we would all pay water charges rather than the equivalent of rates to the four entities. Current indications are that the rates option is the favoured one, at least initially, so there wont be much change, although I shant be surprised if the new entities are ineluctably drawn to charging for their water. You will still be paying.

Original Article: [Interest NZ by Brian Easton](#)

### **13 reservoirs with less than 40% water**

On the last day of October and compared to the previous month, there was an increase in the volume stored in two river basins and a decrease in 10.

The data indicates that the Barlavento basin was the one with the lowest water availability at the end of October (13.9%).

The Lima (23.4%), Ave (35.9%), Sado (40.8%) and Mira (42.7%) basins also had lower water availability at the end of October.

According to SNIRH data, the Guadiana (75.6%), Mondego (67.5%), Douro (67.2%), West (63.8%), Tagus (60.4%), Cávado ( 58.9%) and Arade (56.5%) had the highest levels of storage at the end of October.

The October 2021 storages by watershed are lower than the October storage averages (1990/91 to 2020/21), except for the Douro, Mondego, Ribeiras do Oeste, Guadiana and Arade basins.

Each hydrographic basin can correspond to more than one reservoir.

Original Article: [The Portugal News](#)

### **Delhi: Water supply likely to be hit in several areas today. Details here**

In what comes as a potential worry for citizens of the national capital, water supply will remain affected today (that is, Sunday, November 7) across several parts of Delhi due to an increase in ammonia pollution in the Yamuna river impacting operations at treatment plants.



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In a press note posted from its official Twitter handle on Saturday evening, the Delhi Jal Board (DJB) informed media agencies of the possible supply disruption and said it had already taken steps for rationalisation of water throughout the national capital to meet the shortage.

The board said that due to an increase in ammonia pollution in the Yamuna, pumping from Sonia Vihar, Bhagirathi, Wazirabad, Chandrawal, and Okhla water treatment plants have been affected. As a result, water supply in multiple areas of Delhi was affected on Saturday evening and is likely to carry over on Sunday morning and evening as well, according to the statement.

The DJB said water supply in east Delhi, north-east Delhi, south Delhi, parts of areas under the New Delhi Municipal Council, and Malviya Nagar PPP areas may be affected.

Original Article: [Hindustan Times by Joydeep Bose](#)

### **‘All the trees have died’: Iraqis face intensifying water crisis**

Four years ago, the stream running through Iraq’s al-Hamra village dried up. Now, “all the trees have died”, said Abdullah Kamel who used to farm citrus fruit in the village in Saladin governorate north of Baghdad.

The farmers subsequently tried digging wells but found the groundwater was too salty and not suitable for farming. “It killed the trees and all our crops,” said Kamel.

Pulling a pomegranate from a nearby tree, he cracked it open on the dusty earth. Pale, crumbly seeds fell out. “The seeds are not edible,” he said.

The lands around al-Hamra, which used to be fields and orchards, have become like a desert within the space of a few years, said Kamel, with the streambed reduced to a dry ditch.

“I had to leave farming,” he added. “I started looking for another job and it’s all because [of] the lack of water.”

Seven million people are at risk because of a lack of water in Iraq, according to a recent report by aid groups in the region. Rising temperatures, low levels of rainfall, and lack of access to river water are increasing the danger and severity of droughts, researchers warn.

Climate change is one of the factors that has led to desertification and drought in Iraq, said Rebrwar Nasir Dara, a lecturer in geology at Salahaddin University.

He added reduced water levels in the Tigris and Euphrates rivers are exacerbating this. Diminishing water levels in the two rivers that feed Iraq are partly attributed to numerous dam projects upstream in Turkey and Iran, countries that in turn are facing increasing water demands from their own citizens amid the climate crisis.

“The discharge of water through those rivers that originated in Iran and Turkey is now decreased by 50 percent,” said Dara.

Original Article: [Aljazeera by Melissa Pawson](#)



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